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May 13, 2026

VIA ELECTRONIC MAIL

Planning and Land Use Management Committee
Los Angeles City Council
200 N. Spring Street, Room 395
Los Angeles, CA 90012
clerk.plumcommittee@lacity.org
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South Valley Area Planning Commission
200 N. Spring St., Room 395
Los Angeles, CA 90012
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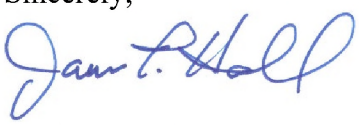
Re: Appeal Justifications Referenced Documents – 4230 N. Saltillo Street; Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA; ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

Dear Honorable Members of the PLUM Committee and South Valley Area Planning Commission:

This Firm represents Girard Tract Community Preservation ("Appellant") in the above-referenced appeal of the South Valley Area Planning Commission's ("South Valley APC") March 4, 2026, determination sustaining the Zoning Administrator's adoption of a Class 3 Categorical Exemption (CEQA Guidelines § 15303) for the proposed two-story single-family residence at 4230 N. Saltillo Street. Appellant has cited to a variety of reference materials in its prior justification letters dated December 1, 2025 and May 5, 2026. As a courtesy, this letter is intended to provide copies of the cited source documents to ensure that they are made part of the Administrative Record. Please see these citations attached as **Exhibits 1-11.**

I may be contacted at jamie.hall@channellawgroup.com if you have any questions, comments or concerns.

Sincerely,



Jamie T. Hall

Encls. **Exhibits 1-11**

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 1

December 1, 2025 Letter – Footnote 1

Chapter 49 Requirements for Wildland-Urban Interface Fire Areas

CALIFORNIA FIRE CODE — MATRIX ADOPTION TABLE
CHAPTER 49 — REQUIREMENTS FOR WILDLAND-URBAN INTERFACE FIRE AREAS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter			X																				
Adopt Entire Chapter as amended (amended sections listed below)																							
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

User note:

About this chapter: *In addition to the building construction requirements in the California Building Code and California Residential Code, this chapter contains requirements for development and construction in Local Responsibility Areas (LRA) designated as Very High Fire Hazard Severity Zones and areas designated by the Board of Forestry and Fire Protection as State Responsibility Areas (SRA). While many of these provisions are found in Title 14 and Title 19 of the California Code of Regulations, they are replicated here for the code user. The local jurisdiction has the authority to apply the same regulations to LRA when the regulations are adopted by local ordinance.*

The requirements in this chapter reference the process for adoption of Very High Fire Hazard Severity Zones in the LRA; criteria for evaluating existing subdivisions that are at significant fire risk and are without an adequate secondary egress; and criteria for fire safety provisions required in the Safety Element of a city or county General Plan.

The chapter includes mitigation strategies to reduce the hazards of fire originating within a structure spreading to wildland and fire originating in wildland spreading to structures. These strategies are included in the following requirements:

1. *Development of fire protection plans.*
2. *Development of landscape plans and long-term vegetation management.*
3. *Creation and maintenance of defensible space to protect structures and subdivisions.*

Section 4901 General

4901.1 Scope
This chapter contains minimum requirements to mitigate conditions that might cause a fire originating in a structure to ignite vegetation in the Wildland-Urban Interface Fire Area, and conversely, a wildfire burning in vegetative fuels to transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities or result in large property losses.

4901.2 Purpose
The purpose of this chapter is to provide minimum standards to reduce the likelihood of life and property loss due to a wildfire through the use of performance and prescriptive requirements for construction and development in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Moderate, High or

Very High Fire Hazard Severity Zone.

Section 4902 Definitions

4902.1 General

For the purpose of this chapter, certain terms are defined as follows:

DIRECTOR. Director of the California Department of Forestry and Fire Protection (CAL FIRE).

FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.

FIRE HAZARD SEVERITY ZONES. Geographical areas designated pursuant to California Public Resources Codes, Sections 4201 through 4204 and classified as Very High, High or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

The California Code of Regulations, Title 14, Section 1280 entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

FIRE-RESISTANT VEGETATION. Plants, shrubs, trees and other vegetation that exhibit properties, such as high moisture content, little accumulation of dead vegetation, and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.

[Note: The following sources contain examples of types of vegetation that can be considered fire-resistant vegetation. (Fire-resistant Plants for Home Landscapes, A Pacific Northwest Extension publication; Home Landscaping for Fire, University of California Division of Agriculture and Natural Resources; Sunset Western Garden Book)]

IGNITION-RESISTANT MATERIAL. A type of building material that complies with the requirements in Section 704A.2 in the *California Building Code*.

LOCAL RESPONSIBILITY AREAS (LRA). Areas of the state in which the financial responsibility of preventing and suppressing fires is the primary responsibility of a city, county, city and county, or district.

STATE RESPONSIBILITY AREAS (SRA). Lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing wildfires is primarily the responsibility of the state.

WILDFIRE. Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code, Sections 4103 and 4104.

WILDFIRE EXPOSURE. One or a combination of radiant heat, convective heat, direct flame contact and burning embers being projected by vegetation fire to a structure and its immediate environment.

WILDLAND-URBAN INTERFACE (WUI). A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

Section 4903 Plans

4903.1 General

The fire code official is authorized to require the owner or owner's authorized agent to provide a fire protection plan. The fire protection plan shall be prepared to determine the acceptability of fire protection and life safety measures designed to mitigate wildfire hazards presented for the property under consideration.

The fire protection plan shall be prepared by a registered design professional, qualified landscape architect, qualified fire safety specialist or similar specialist acceptable to the fire code official and shall analyze the wildfire risk of the building, project, premises or region to recommend necessary changes.

The fire code official is authorized to require a preliminary fire protection plan prior to the submission of a final fire protection plan.

4903.2 Contents

The fire protection plan shall be based on a project-specific wildfire hazard assessment that includes considerations of location, topography, aspect, and climatic and fire history.

The plan shall identify conformance with all applicable state wildfire protection regulations, statutes and applicable local ordinances, whichever are more restrictive.

The plan shall address fire department access, egress, road and address signage, water supply in addition to fuel reduction in accordance with Public Resources Code (PRC) 4290; the defensible space requirements in accordance with PRC 4291 or Government Code 51182; and the applicable building codes and standards for wildfire safety. The plan shall identify mitigation measures to address the project's specific wildfire risk and shall include the information required in Section 4903.2.1.

4903.2.1 Project Information

The final fire protection plan shall be reviewed and approved prior to start of construction.

4903.2.1.1 Preliminary Fire Protection Plan

When a preliminary fire protection plan is submitted, it shall include, at a minimum, the following:

1. *Total size of the project.*

2. *Information on the adjoining properties on all sides, including current land uses, and if known, existing structures and densities, planned construction, natural vegetation, environmental restoration plans, roads and parks.*

3. *A map with all project boundary lines, property lines, slope contour lines, proposed structure foundation footprints, and proposed roads and driveways. The map shall identify project fuel modification zones and method of identifying the fuel modification zone boundaries.*

4903.2.1.2 Final Fire Protection Plan
The final fire protection plan shall include items listed in Section 4903.2.1.1 and the following:

1. *A map identifying all proposed plants in the fuel modification zones with a legend that includes a symbol for each proposed plant species. The plan shall include specific information on each species proposed, including but not limited to:*

    a. *The plant life-form;*

    b. *The scientific and common name; and*

    c. *The expected height and width for mature growth.*

2. *Identification of irrigated and non-irrigated zones.*

3. *Requirements for vegetation reduction around emergency access and evacuation routes.*

4. *Identification of points of access for equipment and personnel to maintain vegetation in common areas.*

5. *Legally binding statements regarding community responsibility for maintenance of fuel modification zones.*

6. *Legally binding statements to be included in covenants, conditions and restrictions regarding property owner responsibilities for vegetation maintenance.*

Section 4904 Fire Hazard Severity Zones

4904.1 General
Lands in the state are classified by the Director in accordance with the severity of wildfire hazard expected to prevail in those areas and the responsibility for fire protection, so that measures may be identified which will reduce the potential for losses to life, property and resources from wildfire.

4904.2 Classifications
The Director classifies lands into fire hazard severity zones in accordance with California Public Resources Code, Sections 4201 through 4204 for State Responsibility Areas and accordance with Government Code, Sections 51175 through 51189 for areas where a local agency is responsible for fire protection.

4904.3 Local Agency Requirements
Within 30 days after receiving a transmittal from the director that identifies Very High Fire Hazard Severity Zones, a local agency shall make the information available for public review. The information shall be presented in a format that is understandable and accessible to the general public, including, but not limited to, maps. A local agency shall post a notice at the office of the county recorder, county assessor and county planning agency identifying the location of the map provided by the director pursuant to Government Code, Section 51178. If the agency amends the map, pursuant to subdivision (b) or (c) of Section 51179, the notice shall instead identify the location of the amended map.

4904.3.1 Local Agency Ordinances
A local agency shall designate, by ordinance, Very High Fire Hazard Severity Zones in its jurisdiction within 120 days of receiving recommendations from the director pursuant to Section 51178. The local agency shall transmit a copy of an ordinance adopted pursuant to Section 51179 (a) to the State Board of Forestry and Fire Protection within 30 days of adoption, as specified in Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 1.

4904.3.2 Local Agency Discretion
A local agency may, at its discretion, include areas within the jurisdiction of the local agency, not identified as Very High Fire Hazard Severity Zones by the director, as Very High Fire Hazard Severity Zones following a finding supported by substantial evidence in the record that the requirements of Government Code Section 51182 are necessary for effective fire protection within the area.

Section 4905 Wildfire Protection Building Construction

4905.1 General
Materials and construction methods for exterior wildfire exposure protection shall be applied within geographical areas where a wildfire burning in vegetative fuels may readily transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities or result in large property losses.

4905.2 Construction Methods and Requirements Within Established Limits

Within the limits established by law, construction methods intended to mitigate wildfire exposure shall comply with the wildfire protection building construction requirements contained in the *California Building Standards Code*, including the following:

1. *California Building Code, Chapter 7A,*
2. *California Residential Code, Section R337,*
3. *California Referenced Standards Code, Chapter 12-7A.*

4905.3 Establishment of Limits

The establishment of limits for the Wildland-Urban Interface (WUI) Fire Area's required construction methods shall be designated pursuant to the California Public Resources Code for State Responsibility Areas and California Government Code for Local Responsibility Areas (LRA) in Very High Severity Zones or by a local agency following a finding supported by substantial evidence in the record that the requirements of this section are necessary for effective fire protection within the area.

Section 4906 Vegetation Management

4906.1 General

Planting of vegetation for new landscaping shall be selected to reduce non-fire-resistant vegetation in proximity to a structure and to maintain vegetation as it matures.

4906.2 Application

All new plantings of vegetation in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone shall comply with Sections 4906.3 through 4906.5.3.

4906.3 Landscape Plans

Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

4906.3.1 Contents

Landscape plans shall contain the following:

1. *Delineation of the 30-foot (9144 mm) and 100-foot (30.5 m) fuel management zones from all structures.*
2. *Identification of existing vegetation to remain and proposed new vegetation.*
3. *Identification of irrigated areas.*
4. *A plant legend with both botanical and common names, and identification of all plant material symbols.*
5. *Identification of ground coverings within the 30-foot (9144 mm) zone.*

4906.4 Vegetation

All new vegetation shall be fire-resistant vegetation in accordance with this section.

Exception: *Trees classified as non-fire-resistant vegetation complying with Section 4906.4.2.1.*

To be considered fire-resistant vegetation, it must meet at least one of the following:

1. *Be identified as fire-resistant vegetation in an approved book, journal or listing from an approved organization.*
2. *Be identified as fire-resistant vegetation by a licensed landscape architect with supporting justification.*
3. *Plants considered fire-resistant vegetation and approved by the local enforcing agency.*

4906.4.1 Shrubs

All new plantings of shrubs shall comply with the following:

1. *Shrubs shall not exceed 6 feet (1829 mm) in height.*
2. *Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet (3048 mm).*
3. *Shrub groupings shall be separated from other groupings a minimum of 15 feet (4572 mm).*
4. *Shrub groupings shall be separated from structures a minimum of 30 feet (9144 mm).*

5. *Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet (3048 mm), whichever is greater.*

4906.4.2 Trees

Trees shall be managed as follows within the 30-foot (9144 mm) zone of a structure:

1. *New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure.*
2. *The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet (3048 mm).*
3. *Existing trees shall be trimmed to provide a minimum separation of 10 feet (3048 mm) away from chimney and stovepipe outlets per Title 14, Section 1299.03.*

4906.4.2.1 Non-Fire-Resistant Vegetation

New trees not classified as fire-resistant vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum 30 feet (9144 mm) from any combustible structure.

Section 4907 Defensible Space

4907.1 General

Hazardous vegetation and fuels shall be managed to reduce the severity of potential exterior wildfire exposure to buildings and to reduce the risk of fire spreading to buildings as required by applicable laws and regulations.

Defensible space will be managed around all buildings and structures in State Responsibility Areas (SRA) as required in Public Resources Code 4291.

4907.2 Application

Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:

1. *All unincorporated lands designated by the State Board of Forestry and Fire Protection as a State Responsibility Area (SRA).*
2. *Land designated as a Very High Fire Hazard Severity Zone by the Director.*
3. *Land designated in ordinance by local agencies as a Very High Fire Hazard Severity Zone pursuant to Government Code Section 51179.*

4907.3 Requirements

Hazardous vegetation and fuels around all buildings and structures shall be maintained in accordance with the following laws and regulations:

1. *Public Resources Code, Section 4291.*
2. *California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 3, Section 1299.03.*
3. *California Government Code, Section 51182.*
4. *California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07.*

Section 4908 Fire Safe Development Regulations

4908.1 General

Pursuant to PRC 4290 all residential, commercial and industrial building construction within state responsibility areas approved after January 1, 1991, and within lands classified and designated as an LRA Very High Fire Hazard Severity Zone, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021, shall comply with the SRA Fire Safe Development Regulations as specified in Title 14, Division 1.5, Chapter 7, Subchapter 2.

4908.2 Subdivision Map Findings

Pursuant to Government Code (GC), Section 66474.02, before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in an SRA or an LRA Very High Fire Hazard Severity Zone, as both are defined in GC Section 51177, a legislative body of a county, except as provided in GC Subsection 66474.02(c), shall make findings regarding compliance with the SRA Fire Safe Regulations and the availability of structural fire protection and suppression services. These findings and accompanying map shall be transmitted to the Board of Forestry and Fire Protection and comply with the requirements in Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 1.

Section 4909 Subdivision Review Survey

4909.1 Subdivision Identification

Pursuant to Public Resources Code Section 4290.5 and Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 2, the Board, in consultation with the Office of the State Fire Marshal, shall survey local governments to identify existing subdivisions, as defined in Article 2, located in an SRA area or an LRA Very High Fire Hazard Severity Zone without a secondary egress route that is at significant fire risk.

4909.2 Fire Safety Recommendations

The Board, in consultation with the Office of the State Fire Marshal and the local government that identified the subdivision, shall develop recommendations to improve the subdivision's fire safety. The Board shall provide the final recommendations to the local government that identified the subdivision and to the residents of the subdivision.

4909.3 Implementation

The Board shall maintain a list of the subdivisions identified and the status of the implementation of the recommendations provided.

4909.4 Re-survey

Beginning July 1, 2021, the Board shall conduct this survey every 5 years.

Section 4910 General Plan Safety Element

4910.1 General

Pursuant to Government Code Section 65302(g)(3), the safety element of a city or county's General Plan shall be reviewed and updated as necessary to address the risk of fire for land classified as SRA, as defined in Section 4102 of the Public Resources Code, and land classified as an LRA Very High Fire Hazard Severity Zone, as defined in Section 51177.

4910.2 Submission to the Board of Forestry and Fire Protection and Local Fire Agencies

Pursuant to Government Code Section 65302.5(b)(1), the draft element of, or draf amendment to, the safety element of a county or a city's general plan shall be submitted to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to territory in the city or county at least 90 days prior to either of the following: the adoption or amendment to the safety element of its general plan for each county that contains state responsibility areas; or the adoption or amendment to the safety element of its general plan for each city or county that contains a Very High Fire Hazard Severity Zone as defined pursuant to subdivision (i) of Section 51177.

4910.3 Review by the Board of Forestry and Fire Protection and Local Fire Agencies

The State Board of Forestry and Fire Protection shall, and a local agency may, review the draft or an existing safety element and recommend changes to the planning agency within 60 days of its receipt regarding the requirements in Government Code Section 65302.5(b)(2). The review by the Board of Forestry and Fire Protection is governed by Title 14, Division 1.5, Chapter 7, Article 6.

4910.4 Adoption of the Safety Element

Prior to the adoption of its draft element or draft amendment, the board of supervisors of the county or the council of a city shall consider the recommendations, if any, made by the State Board of Forestry and Fire Protection and any local agency that provides fire protection to territory in the city or county. The board of supervisors or city council shall respond to the Board of Forestry and Fire Protection and any local agency providing fire protection in compliance with Government Code Section 65302.5(b)(3) and (b)(4) and Title 14, Division 1.5, Chapter 7, Article 6.

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 2

May 5, 2026 Letter – Footnote 5

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE

DATE: March 20, 2018*

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1. INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as sensitive natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to botanical field surveys and assessments of special status plants and sensitive natural communities so that reliable information is produced and the potential for locating special status plants and sensitive natural communities is maximized. These protocols may also help those who prepare and review environmental documents determine when botanical field surveys are needed, how botanical field surveys may be conducted, what information to include in a botanical survey report, and what qualifications to consider for botanical field surveyors. These protocols are meant to help people meet California Environmental Quality Act (CEQA)[1] requirements for adequate disclosure of potential impacts to plants and sensitive natural communities. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[2] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants.[3]

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* Minor editorial revisions were made to this document on February 3, 2021

1 Available at: https://files.resources.ca.gov/ceqa/

2 Available at: https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/techbio/

3 U.S. Fish and Wildlife Service Survey Guidelines: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

Department of Fish and Wildlife Trustee and Responsible Agency Mission

The mission of the California Department of Fish and Wildlife (CDFW) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish & G. Code, § 1802). CDFW, as trustee agency under CEQA Guidelines section 15386, provides expertise in reviewing and commenting on environmental documents and provides protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) and Native Plant Protection Act (NPPA) provide additional protections for such species, including take prohibitions (Fish & G. Code, § 2050 *et seq.*; Fish & G. Code, § 1908). As a responsible agency, CDFW has the authority to issue permits for the take of species listed under CESA and NPPA if the take is incidental to an otherwise lawful activity; CDFW has determined that the impacts of the take have been minimized and fully mitigated; and the take would not jeopardize the continued existence of the species (Fish & G. Code, § 2081, subd. (b); Cal. Code Regs., tit. 14 § 786.9, subd. (b)). Botanical field surveys are one of the preliminary steps to detect special status plant species and sensitive natural communities that may be impacted by a project.

Definitions

Botanical field surveys provide information used to determine the potential environmental effects of proposed projects on special status plants and sensitive natural communities as required by law (e.g., CEQA, CESA, and federal Endangered Species Act (ESA)).

Special status plants, for the purposes of this document, include all plants that meet one or more of the following criteria:

- Listed or proposed for listing as threatened or endangered under the ESA or candidates for possible future listing as threatened or endangered under the ESA (50 C.F.R., § 17.12).
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish & G. Code, § 2050 et seq.).[4] In CESA, "endangered species" means a native species or subspecies of plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish & G. Code, § 2062). "Threatened species" means a native species or subspecies of plant that,

[4] Refer to current online published lists available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline

although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA (Fish & G. Code, § 2067). "Candidate species" means a native species or subspecies of plant that the California Fish and Game Commission has formally noticed as being under review by CDFW for addition to either the list of endangered species or the list of threatened species, or a species for which the California Fish and Game Commission has published a notice of proposed regulation to add the species to either list (Fish & G. Code, § 2068).

- Listed as rare under the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish & G. Code, § 1901).
- Meet the definition of endangered, rare, or threatened species under CEQA Guidelines section 15380, subdivisions (b) and (d), which may include:
    - Plants tracked by the California Natural Diversity Database (CNDDB) as California Rare Plant Rank (CRPR) 1 or 2;[5] and
    - Plants that may warrant consideration on the basis of declining trends, recent taxonomic information, or other factors. This includes plants tracked by the CNDDB as CRPR 3 or 4.[6]
- Considered locally significant plants, that is, plants that are not rare from a statewide perspective but are rare or uncommon in a local context such as within a county or region (CEQA Guidelines, § 15125, subd. (c)), or as designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include plants that are at the outer limits of their known geographic range or plants occurring on an atypical soil type.

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status plants or their habitat. CDFW's *List of California Terrestrial Natural Communities*[7] is based on the best available information, and indicates which natural communities are considered sensitive at the current stage of the California vegetation classification effort. See the Vegetation

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5 See CNDDB's Special Vascular Plants, Bryophytes, and Lichens List for plant taxa with a CRPR of 1 or 2: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline

6 CRPR 3 plants (plants about which more information is needed) and CRPR 4 plants (plants of limited distribution) may warrant consideration under CEQA Guidelines section 15380. Impacts to CRPR 3 plants may warrant consideration under CEQA if sufficient information is available to assess potential impacts to such plants. Impacts to CRPR 4 plants may warrant consideration under CEQA if cumulative impacts to such plants are significant enough to affect their overall rarity. Data on CRPR 3 and 4 plants should be submitted to CNDDB. Such data aids in determining and revising the CRPR of plants. See CNDDB's Special Vascular Plants, Bryophytes, and Lichens List for plant taxa with a CRPR of 3 or 4: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline

7 Available at: https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#natural communities lists

Classification and Mapping Program (VegCAMP) website for additional information on natural communities and vegetation classification.[8]

2. BOTANICAL FIELD SURVEYS

Evaluate the need for botanical field surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs in an area that may be directly or indirectly affected by a project (project area), and it is unknown whether or not special status plants or sensitive natural communities occur in the project area;
- Special status plants or sensitive natural communities have historically been identified in a project area; or
- Special status plants or sensitive natural communities occur in areas with similar physical and biological properties as a project area.

Survey Objectives

Conduct botanical field surveys in a manner which maximizes the likelihood of locating special status plants and sensitive natural communities that may be present. Botanical field surveys should be floristic in nature, meaning that every plant taxon that occurs in the project area is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status plants or that are restricted to lists of likely potential special status plants are not considered floristic in nature and are not adequate to identify all plants in a project area to the level necessary to determine if they are special status plants.

For each botanical field survey conducted, include a list of all plants and natural communities detected in the project area. More than one field visit is usually necessary to adequately capture the floristic diversity of a project area. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the special status plants and sensitive natural communities in the project area is also useful to assess the significance of a particular plant population or natural community.

Survey Preparation

Before botanical field surveys are conducted, the botanical field surveyors should compile relevant botanical information in the general project area to provide a regional context. Consult the CNDDB[9] and BIOS[10] for known occurrences of special status plants and sensitive natural communities in the project area prior to botanical field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties (e.g., soils) of the project area

[8] Available at: https://www.wildlife.ca.gov/Data/VegCAMP
[9] Available at: https://www.wildlife.ca.gov/Data/CNDDB
[10] Available at: https://www.wildlife.ca.gov/Data/BIOS

and surrounding ecoregion.[11] Then, develop a list of special status plants and sensitive natural communities with the potential to occur within the vegetation and habitat types identified. The list of special status plants with the potential to occur in the project area can be created with the help of the CNDDB QuickView Tool[12] which allows the user to generate lists of CNDDB-tracked elements that occur within a particular U.S. Geological Survey 7.5' topographic quad, surrounding quads, and counties within California. Resulting lists should only be used as a tool to facilitate the use of reference sites, with the understanding that special status plants and sensitive natural communities in a project area may not be limited to those on the list. Botanical field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on a list. Include in the botanical survey report the list of potential special status plants and sensitive natural communities that was created, and the list of references used to compile the background botanical information for the project area.

Survey Extent

Botanical field surveys should be comprehensive over the entire project area, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects could occur, such as those from fuel modification, herbicide application, invasive species, and altered hydrology. Surveys restricted to known locations of special status plants may not identify all special status plants and sensitive natural communities present, and therefore do not provide a sufficient level of information to determine potential impacts.

Field Survey Method

Conduct botanical field surveys using systematic field techniques in all habitats of the project area to ensure thorough coverage. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct botanical field surveys by traversing the entire project area to ensure thorough coverage, documenting all plant taxa observed. Parallel survey transects may be necessary to ensure thorough survey coverage in some habitats. The level of effort should be sufficient to provide comprehensive reporting. Additional time should be allocated for plant identification in the field.

Timing and Number of Visits

Conduct botanical field surveys in the field at the times of year when plants will be both evident and identifiable. Usually this is during flowering or fruiting. Space botanical field survey visits throughout the growing season to accurately determine what plants exist in the project area. This usually involves multiple visits to the project area (e.g., in early, mid, and late-season) to capture the floristic diversity at a level necessary to determine

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[11] Ecological Subregions of the United States, available at: http://www.fs.fed.us/land/pubs/ecoregions/toc.html

[12] Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. When creating a list of special status plants with the potential to occur in a project area, special care should be taken to search all quads with similar geology, habitats, and vegetation to those found in the project area.

if special status plants are present.[13] The timing and number of visits necessary to determine if special status plants are present is determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which botanical field surveys are conducted.

Reference Sites

When special status plants are known to occur in the type(s) of habitat present in a project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those special status plants are identifiable at the times of year the botanical field surveys take place and to obtain a visual image of the special status plants, associated habitat, and associated natural communities.

Use of Existing Surveys

For some project areas, floristic inventories or botanical survey reports may already exist. Additional botanical field surveys may be necessary for one or more of the following reasons:

- Botanical field surveys are not current;[14]
- Botanical field surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g., vernal pool habitats or riverine systems);
- Botanical field surveys did not cover the entire project area;
- Botanical field surveys did not occur at the appropriate times of year;
- Botanical field surveys were not conducted for a sufficient number of years to detect plants that are not evident and identifiable every year (e.g., geophytes, annuals, and some short-lived plants);
- Botanical field surveys did not identify all plants in the project area to the taxonomic level necessary to determine rarity and listing status;
- Fire history, land use, or the physical or climatic conditions of the project area have changed since the last botanical field survey was conducted;
- Changes in vegetation or plant distribution have occurred since the last botanical field surveys were conducted, such as those related to habitat alteration, fluctuations in abundance, invasive species, seed bank dynamics, or other factors; or

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[13] U.S. Fish and Wildlife Service Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants available at: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

[14] Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components, may require multiple annual surveys to fully capture baseline conditions. In habitats dominated by long-lived perennial plants, such as forests, surveys that were not conducted within the previous five years may not adequately represent the current baseline conditions and should be re-conducted.

- Recent taxonomic studies, status reviews or other scientific information has resulted in a revised understanding of the special status plants with potential to occur in the project area.

Negative Surveys

Adverse conditions from yearly weather patterns may prevent botanical field surveyors from determining the presence of, or accurately identifying, some special status plants in the project area. Disease, drought, predation, fire, herbivory, or other disturbance may also preclude the presence or identification of special status plants in any given year. Discuss all adverse conditions in the botanical survey report.[15]

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that the plant occurrence no longer exists at a location, particularly if adverse conditions are present. For example, botanical field surveys over a number of years may be necessary if the special status plant is an annual or short-lived plant having a persistent, long-lived seed bank and populations of the plant are known to not germinate every year. Visiting the project area in more than one year increases the likelihood of detecting special status plants, particularly if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may help ensure that the timing of botanical field surveys was appropriate.

3. REPORTING AND DATA COLLECTION

Adequate information about special status plants and sensitive natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants and sensitive natural communities and will guide the development of avoidance, minimization, and mitigation measures. The information necessary to assess impacts to special status plants and sensitive natural communities is described below. For comprehensive, systematic botanical field surveys where no special status plants or sensitive natural communities were found, reporting and data collection responsibilities for botanical field surveyor remain as described below, excluding specific occurrence information.

Special Status Plant and Sensitive Natural Community Observations

Record the following information for locations of each special status plant and sensitive natural community detected during a botanical field survey of a project area.

- The specific geographic locations where the special status plants and sensitive natural communities were found. Preferably this will be done by use of global positioning system (GPS) and include the datum[16] in which the spatial data was

[15] U.S. Fish and Wildlife Service Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants available at: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

[16] NAD83, NAD27 or WGS84

collected and any uncertainty or error associated with the data. If GPS is not available, a detailed map (1:24,000 or larger) showing locations and boundaries of each special status plant population and sensitive natural community in relation to the project area is acceptable. Mark occurrences and boundaries as accurately as possible;

- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If a special status plant is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of each special status plant in each life stage such as seedling, vegetative, flowering, and fruiting;
- The density of special status plants, identifying areas of relatively high, medium and low density of each special status plant in the project area; and
- Digital images of special status plants and sensitive natural communities in the project area, with diagnostic features.

Special Status Plant and Sensitive Natural Community Documentation

When a special status plant is located, data must be submitted to the CNDDB. Data may be submitted in a variety of formats depending on the amount and type of data that is collected.[17] The most common way to submit data is the Online CNDDB Field Survey Form,[18] or equivalent written report, accompanied by geographic locality information (GPS coordinates, GIS shapefiles, KML files, topographic map, etc.). Data submitted in digital form must include the datum[19] in which it was collected.

If a sensitive natural community is found in a project area, document it with a Combined Vegetation Rapid Assessment and Relevé Field Form[20] and submit the form to VegCAMP.[21]

Voucher Collection

Voucher specimens provide verifiable documentation of special status plant presence and identification and a scientific record. This information is vital to conservation efforts and valuable for scientific research. Collection of voucher specimens should be

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17 See https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data for information on acceptable data submission formats.

18 Available at: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data

19 NAD83, NAD27 or WGS84

20 Available at: https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/Submit

21 Combined Vegetation Rapid Assessment and Releve Field Forms can be emailed to VegCAMP staff. Contact information available at: https://www.wildlife.ca.gov/Data/VegCAMP

conducted in a manner that is consistent with conservation ethics, and in accordance with applicable state and federal permit requirements (e.g., scientific, educational, or management permits pursuant to Fish & G. Code, § 2081, subd. (a)). Voucher collections of special status plants (or possible special status plants) should only be made when such actions would not jeopardize the continued existence of the population. A plant voucher collecting permit[22] is required from CDFW prior to the take or possession of a state-listed plant for voucher collection purposes, and the permittee must comply with all permit conditions.

Voucher specimens should be deposited in herbaria that are members of the Consortium of California Herbaria[23] no later than 120 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant collector names and permit numbers on specimen labels (if applicable).

Botanical Survey Reports

Botanical survey reports provide an important record of botanical field survey results and project area conditions. Botanical survey reports containing the following information should be prepared whenever botanical field surveys take place, and should also be submitted with project environmental documents:

Project and location description

- A description of the proposed project;
- A detailed map of the project area that identifies topographic and landscape features and includes a north arrow and bar scale;
- A vegetation map of the project area using Survey of California Vegetation Classification and Mapping Standards[24] at a thematic and spatial scale that allows the display of all sensitive natural communities;
- A soil map of the project area; and
- A written description of the biological setting, including all natural communities; geological and hydrological characteristics; and land use or management history.

Detailed description of survey methodology and results

- Names and qualifications of botanical field surveyor(s);
- Dates of botanical field surveys (indicating the botanical field surveyor(s) that surveyed each area on each survey date), and total person-hours spent;
- A discussion of the survey preparation methodology;
- A list of special status plants and sensitive natural communities with potential to

[22] Applications available at: https://www.wildlife.ca.gov/Conservation/Plants/Permits

[23] A list of Consortium of California Herbaria participants is available at: http://ucjeps.berkeley.edu/consortium/participants.html

[24] Available at: https://www.wildlife.ca.gov/data/vegcamp/publications-and-protocols

occur in the region;

- Description(s) of reference site(s), if visited, and the phenological development of special status plant(s) at those reference sites;
- A description and map of the area surveyed relative to the project area;
- A list of all plant taxa occurring in the project area, with all taxa identified to the taxonomic level necessary to determine whether or not they are a special status plant;
- Detailed data and maps for all special status plants and sensitive natural communities detected. Information specified above under the headings "Special Status Plant and Sensitive Natural Community Observations," and "Special Status Plant and Sensitive Natural Community Documentation," should be provided for the locations of each special status plant and sensitive natural community detected. Copies of all California Native Species Field Survey Forms and Combined Vegetation Rapid Assessment and Relevé Field Forms should be sent to the CNDDB and VegCAMP, respectively, and included in the project environmental document as an Appendix;[25]
- A discussion of the potential for a false negative botanical field survey;
- A discussion of how climatic conditions may have affected the botanical field survey results;
- A discussion of how the timing of botanical field surveys may affect the comprehensiveness of botanical field surveys;
- Any use of existing botanical field surveys and a discussion of their applicability to the project;
- The deposition locations of voucher specimens, if collected; and
- A list of references used, including persons contacted and herbaria visited.

Assessment of potential project impacts

- A discussion of the significance of special status plant populations in the project area considering nearby populations and total range and distribution;
- A discussion of the significance of sensitive natural communities in the project area considering nearby occurrences and natural community distribution;
- A discussion of project related direct, indirect, and cumulative impacts to special status plants and sensitive natural communities;
- A discussion of the degree and immediacy of all threats to special status plants and sensitive natural communities, including those from invasive species;
- A discussion of the degree of impact, if any, of the project on unoccupied,

[25] It is not necessary to submit entire environmental documents to the CNDDB.

potential habitat for special status plants; and

- Recommended measures to avoid, minimize, or mitigate impacts to special status plants and sensitive natural communities.

4. BOTANICAL FIELD SURVEYOR QUALIFICATIONS

Botanical field surveyors should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with plants of the region, including special status plants;
- Familiarity with natural communities of the region, including sensitive natural communities;
- Experience with the CNDDB, BIOS, and Survey of California Vegetation Classification and Mapping Standards;
- Experience conducting floristic botanical field surveys as described in this document, or experience conducting such botanical field surveys under the direction of an experienced botanical field surveyor;
- Familiarity with federal, state, and local statutes and regulations related to plants and plant collecting; and
- Experience analyzing the impacts of projects on native plant species and sensitive natural communities.

5. SUGGESTED REFERENCES

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Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 3

May 5, 2026 Letter – Footnote 9, 27

Staff Summary for February 11-12, 2026

17. Mountain Lion

Today's Item **Information ☐** **Action ☒**

Consider and potentially act on the petition, the Department's status review report, and comments received to determine whether listing southern California/central coast evolutionarily significant unit (ESU) of mountain lion (*Puma concolor*) as endangered under the California Endangered Species Act is warranted.

Summary of Previous/Future Actions

• Received petition	June 2019
• Transmitted petition to Department	July 2019
• Public receipt of petition and approved Department's request for 30-day extension	August 2019
• Received Department's petition evaluation report	February 2020
• Determined petitioned action may be warranted, initiating Department's status review	April 2020
• Approved Department's request for six-month extension	April 2021
• Received Department's status review report	December 10-11, 2025
• **Today, potentially determine if listing is warranted**	**February 11-12, 2026**

Background

On June 25, 2019, the Commission received a petition from the Center for Biological Diversity and the Mountain Lion Foundation to list southern California/central coast mountain lion as endangered under CESA (Exhibit 1). At its April 2020 meeting, the Commission determined that listing may be warranted, and subsequently provided notice regarding southern California/central coast mountain lion's protected, candidate species status. The notice prompted the Department's status review of the species, as required by California Fish and Game Code Section 2074.6.

Petition

The petitioners propose listing mountain lion populations south of San Francisco Bay in the California Coast, Transverse, and Peninsular mountain ranges, the Sonoran Desert, part of the Central Valley, and part of the Mojave Desert; the petitioners identify those mountain lions as a single, evolutionarily significant unit (ESU), which petitioners refer to as the Southern California/Central Coast ESU. Alternatively, the petitioners propose the Commission determine whether one or more of the six genetic populations described in the petition comprise one or more ESUs and meet the criteria for listing as threatened or endangered.

Status Review Report

The Commission received the Department's status review report at the December 2025 Commission meeting (exhibits 2 and 3). The status review report represents the Department's final written review of the status of southern California/central coast mountain lion, delineates

each of the categories of information and required components, and incorporates additional relevant information provided, possessed, and received.

The Department finds that mountain lions within an area encompassing nearly all of the area identified by the petitioners represent discrete and biologically significant genetic populations, both individually and collectively. The Department evaluated the area where the populations exist and, informed by a federal policy for evaluating whether populations qualify for listing under the federal Endangered Species Act when below the taxonomic subspecies level, find that the southern California/central coast mountain lion population qualifies as a distinct population segment (DPS) using the federal standard. Evidence shows that mountain lion populations within this area are functionally (if not entirely) isolated; the population within the area is significant due to its markedly different genetic characteristics, large occupied area, and connectivity to Mexico and Arizona populations; and the populations within the DPS are small and could become extinct in the foreseeable future without habitat conservation and restored connectivity. Therefore, the Department recommends listing the southern California/central coast mountain lion population as threatened under CESA and identifies management recommendations and recovery measures.

At today's meeting, the Commission may consider the petition, the Department's written petition evaluation and status review report, written and oral comments received, and the remainder of the administrative record, to determine if listing southern California/central coast mountain lion as endangered under CESA is warranted. Findings will be adopted at a future meeting.

Significant Public Comments

1. An Amador County Fish and Wildlife Commission member shares concerns that mountain lions in California are increasingly losing their fear of humans, leading to rising depredations, vehicle strikes, and unreported removals. They suggest implementing a regulated, fee-based hunting system with quotas to improve management, data collection, and conservation while maintaining current mortality levels. (Exhibit 5)
2. Several members of the agricultural community express opposition to listing mountain lion as threatened, stating that population data from the status review report is inaccurate and manipulated, while restrictions on lethal depredation have led to rising livestock losses, urban attacks, and financial harm to ranchers. They argue that unmanaged lion populations diminish deer and other wildlife, create fire hazards from abandoned grazing lands, and require active management to protect communities, agriculture, and ecological balance. Samples of letters are included in Exhibit 6.
3. The California Farm Bureau opposes listing the southern California/Central oast mountain lion DPS as threatened, based on claims of unreliable population estimates, inappropriate boundary expansions, and rising human-lion conflicts driven by prey declines rather than extinction risk. It argues that a CESA listing would restrict management tools, increase depredation incidents and public safety risks, and should be limited to the originally petitioned area if approved. (Exhibit 7)
4. The California Cattlemen's Association (CCA) opposes listing mountain lion under CESA, contending the species is not threatened statewide and that listing would

violate Proposition 117, which provides a process for ranchers to obtain take permits for depredating lions. CCA asserts that CESA protections would conflict with Proposition 117, jeopardize livestock protection, impose costly regulatory burdens on construction and ranching, and create legal inconsistencies; if listing occurs, CCA urges the Commission to adopt regulations ensuring take permits remain available under Proposition 117 and to clarify that current non-lethal "pursuit/hazing" policies do not satisfy legal obligations. (Exhibit 8)

5. Tejon Ranch urges the Commission to recognize its extensive conservation efforts, including permanently protected habitat and connectivity measures that address key threats like fragmentation and barriers. The ranch states that the proposed DPS boundary is overly broad, encompassing unsuitable areas, and calls for science-based adjustments while ensuring listing decisions do not undermine successful private conservation commitments. (Exhibit 9)
6. The California Building Industry Association and the Building Industry Association of Southern California urge the Commission to address mapping inaccuracies before listing mountain lions as threatened. The association states that outdated habitat maps could wrongly classify urbanized areas as suitable habitat, leading to unnecessary and costly studies and mitigation for development projects, and asserts that the primary risk to mountain lions is genetic isolation caused by existing transportation infrastructure, rather than new development. (Exhibit 10)
7. Thirteen commenters oppose listing mountain lion, contending that listing would increase safety risks (i.e., expanded protections will worsen conflicts) and restrict management options for problem lions. They state that mountain lions are abundant and the methods used for population evaluation are too narrow, calling for practical strategies like relocation, connectivity solutions, or controlled hunting to balance conservation with public safety. Samples are provided in Exhibit 11.
8. The Center for Biological Diversity supports the Department's recommendation to list southern California and central coast mountain lions as threatened under CESA and has forwarded a letter co-signed by 70 conservation organizations. The letters assert that severe genetic isolation, inbreeding, and human-caused mortality are primary threats. They emphasize that maintaining connectivity through wildlife crossings, habitat preservation, and land-use planning is essential to prevent extinction and sustain ecosystem health. The organizations urge the Commission to adopt the Department's recovery recommendations, restrict harmful rodenticides, and implement measures that promote coexistence and biodiversity. (Exhibit 12)
9. Various organizations and wildlife experts support listing the mountain lion evolutionarily significant unit under CESA, citing severe threats like habitat fragmentation, road mortality, rodenticide poisoning, and inbreeding that put small, isolated populations at high risk of extinction. They emphasize the species' critical ecological role and call for science-based actions such as habitat protection, wildlife crossings, and connectivity improvements to ensure long-term survival. (Exhibit 13)
10. Supporters urge the Commission to list southern California and central coast mountain lions as threatened under CESA, citing urgent threats from habitat fragmentation, vehicle strikes, and development that isolate populations and increase extinction risk. They emphasize the species' ecological importance and advocate for science-based

protections, including habitat conservation, wildlife corridors, and crossings to maintain genetic diversity and ecosystem health. Samples are provided in Exhibit 14.

11. Three letter-writing campaigns were received urging the Commission to list southern California and central coast mountain lions as threatened, citing severe threats from habitat loss, fragmentation, and genetic isolation. They emphasize that protecting critical habitat and wildlife corridors is essential for connectivity, recovery, and long-term survival of these populations, and request science-based actions to safeguard California's ecosystems for future generations. Samples of the three letter campaigns are provided in Exhibit 15.
12. Rancho Mission Viejo (RMV) underscores its commitment to conservation through the Southern Subregion Habitat Conservation Plan (SSHCP), which permanently protects large habitat blocks and wildlife linkages vital for mountain lions. RMV states it has conserved over 20,000 acres and built wildlife crossings and fencing to support safe movement, and that the SSHCP already meets key management recommendations and should count toward mountain lion protection if listed under CESA. (Exhibit 16)

Recommendation

Commission staff: Determine that listing mountain lion as threatened is warranted, as recommended by the Department.

Department: List the Central Coast and Southern California Distinct Population Segment of mountain lions, as delineated in the Department's status review report, as threatened under CESA.

Exhibits

1. Petition, received June 25, 2019
2. Department memo, received December 10, 2025
3. Department status review report, dated December 2025
4. Department presentation
5. Email from Dan Epperson, District 2 Supervisor, Amador County Fish and Wildlife Commissioner, received January 2, 2026
6. Sample of letters of opposition from the agricultural community
7. Letter from Steven Fenaroli, Director of Policy Advocacy, California Farm Bureau, received January 29, 2026
8. Letter from Kirk Wilbur, Vice President of Government Affairs, California Cattlemen's Association, received January 29, 2026
9. Letter from Hugh McMahone, Executive Vice President, Real Estate, Tejon Ranch Company, received January 29, 2026
10. Cosigned Letter from Nick Cammarota, Senior Vice President & General Counsel, CBIA, and Jeff Montejano, Chief Executive Officer, BIA, received January 29, 2026
11. Sample of emails of opposition from members of the public
12. Letter from Tiffany Yap, PhD, Urban Wildlands Science Director, Center for Biological Diversity and cosigned letter from 70 conservation organizations, received January 29, 2026

13. Letters of support from various conservation organizations
14. Sample of emails of support
15. Sample of emails of support from three letter campaigns
16. Letter from Laura Coley Eisenberg, Senior Vice President, Regulatory Compliance & Open Space Management, Rancho Mission Viejo, received January 17, 2026

Motion

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2075.5 of the California Fish and Game Code, finds the information contained in the petition to list southern California/central coast ESU of mountain lion, and the other information in the record before the Commission, **warrants** listing the Central Coast and Southern California Distinct Population Segment of mountain lion, as delineated in the Department's status review report, as a threatened species under CESA, consistent with the Commission staff and Department recommendations. Findings will be adopted at a future meeting.

OR

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2075.5 of the California Fish and Game Code, finds the information contained in the petition to list southern California/central coast ESU of mountain lion, and the other information in the record before the Commission, **does not warrant** listing mountain lion as a threatened species under CESA.

BEFORE THE CALIFORNIA FISH AND GAME COMMISSION

A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA)



A Mountain Lion in the Verdugo Mountains with Glendale and Los Angeles in the background. Photo: NPS

Center for Biological Diversity and the Mountain Lion Foundation

June 25, 2019





Notice of Petition

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR) and Division 3, Chapter 1.5, Article 2 of the California Fish and Game Code (Sections 2070 *et seq*.) relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Species Name: Mountain Lion (*Puma concolor*). Southern California/Central Coast Evolutionarily Significant Unit (ESU)

II. RECOMMENDED ACTION: Listing as Threatened or Endangered

The Center for Biological Diversity and the Mountain Lion Foundation submit this petition to list mountain lions (*Puma concolor*) in Southern and Central California as Threatened or Endangered pursuant to the California Endangered Species Act (California Fish and Game Code §§ 2050 et seq., "CESA"). This petition demonstrates that Southern and Central California mountain lions are eligible for and warrant listing under CESA based on the factors specified in the statute and implementing regulations. Specifically, petitioners request listing as Threatened an Evolutionarily Significant Unit (ESU) comprised of the following recognized mountain lion subpopulations:

1. Santa Ana Mountains
2. Eastern Peninsular Range
3. San Gabriel/San Bernardino Mountains
4. Central Coast South (Santa Monica Mountains)
5. Central Coast North (Santa Cruz Mountains)
6. Central Coast Central

Alternatively, as detailed in the petition, in the event the Commission determines that these six populations collectively either do not comprise a single Southern California/Central Coast ESU or otherwise do not meet the criteria for listing as Threatened, petitioners request the Commission consider whether any of these populations, singularly or in combination, comprise one or more ESUs and meet the criteria for listing as Threatened or Endangered pursuant to CESA.

III. AUTHORS OF PETITION:

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I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature:  Date: 6/25/19

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Executive Summary

The Center for Biological Diversity and the Mountain Lion Foundation submit this petition to list mountain lions (*Puma concolor;* cougar, puma) in Southern and Central Coastal California as "threatened" or "endangered" pursuant to the California Endangered Species Act (CESA) (California Fish and Game Code §§ 2050 et seq.). Following Section 670.1, Title 14, California Code of Regulations, petitioners present scientific information regarding life history, population trend, range, distribution, abundance, kind of habitat necessary for survival, factors affecting the ability to survive and reproduce, degree and immediacy of threat, impact of existing management efforts, suggestions for future management, availability of sources and information, and a detailed distribution map.

Specifically, petitioners request listing as a "threatened species" an evolutionarily significant unit (ESU) comprised of the following recognized mountain lion subpopulations:

1. Santa Ana Mountains
2. Eastern Peninsular Range
3. San Gabriel/San Bernardino Mountains
4. Central Coast South (Santa Monica Mountains)
5. Central Coast North (Santa Cruz Mountains)
6. Central Coast Central

As demonstrated in this petition, mountain lions in these areas comprise an ESU (referred to as the "Southern California/Central Coast ESU") and meet the statutory definition of a "threatened species."

The California Fish and Game Commission has long recognized that ESUs can be designated and listed under CESA, and this interpretation of CESA has been upheld by the courts. *See California Forestry Assn. v. California Fish & Game Com.* (2007) 156 Cal.App.4th 1535, 1540 ("Consistent with the policy of the CESA, we will hold that the term 'species or subspecies' includes evolutionarily significant units"); *Central Coast Forest Assn. v. Fish & Game Com.* (2018) 18 Cal.App.5th 1191, 1197, fn. 4 [*"CCFA II"*] ("An ESU is included within the term 'species or subspecies' in sections 2062 and 2067."). While the ESU concept has primarily been applied to fish, the Commission recently listed an ESU of a mammal, the Pacific Fisher, as a "threatened species." *See* 14 C.C.R. 670.5(b)(6)(J) ("Fisher (*Pekania pennant*) Southern Sierra Nevada Evolutionarily Significant Unit").

Under CESA, a "threatened species" is "a native species or subspecies of a … mammal… that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts . . . ." Cal. Fish & Game Code § 2067. An animal is an "endangered species" when it is "in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." Cal. Fish & Game § 2062.

Certain populations of the Southern California/Central Coast mountain lion ESU are already "in serious danger of becoming extinct" (*e.g.* Santa Ana and Santa Monica mountains), and if assessed separately, would individually meet the definition of an "endangered species." When considered as a whole, the Southern California/Central Coast ESU is not at imminent risk of extinction but still faces significant and growing threats that ultimately threaten the viability of the entire ESU; it consequently meets the definition of a "threatened species."

Currently, there is no reliable estimate of mountain lion abundance in California. In 1984 the California Department of Fish and Wildlife (CDFW) estimated between 4,000-6,000 adult mountain lions in the state (Mansfield and Weaver 1984). However, CDFW acknowledges that this estimate is outdated and likely overestimates mountain lion abundance. CDFW is currently undertaking a large-scale research effort to estimate mountain lion numbers throughout California.

While reliable absolute abundance estimates are unavailable, recent genetic research has led to estimates of effective population size for California mountain lion populations.[1] These estimates highlight the genetic isolation among California mountain lion populations and raise significant concerns for the continued viability of mountain lions in Southern California and along the Central Coast.

Researchers have recently identified 10 genetically distinct mountain lion populations in California (Figure ES-1) (derived from Gustafson et al. 2018). Nine of these populations occur almost exclusively in California, while one is centered in Nevada but extends into the northeastern corner of California.

The abundance of mountain lions in the North Coast and inland populations (Western Sierra Nevada, Eastern Sierra Nevada, and the genetic cluster centered in the state of Nevada) is not well established; however, these populations are better connected than Southern California and Central Coast mountain lions, and they show relatively high levels of genetic diversity. Gustafson et al. (2018) suggest that these four populations may comprise an ESU. While these populations should be monitored and managed to ensure their continued viability, petitioners do not seek protection of these populations as an ESU under CESA at this time.

Considering the genetic source-sink dynamics among the remaining six populations, petitioners demonstrate that the populations along the Central Coast and in Southern California collectively comprise an ESU that warrants protection under CESA.[2] The Southern California/Central Coast ESU is comprised of six genetically distinct mountain lion populations: Central Coast North (CC-N, which includes mountain lions in the Santa Cruz Mountains and East Bay), Central Coast

[1] At its simplest, effective population size is the number of animals contributing offspring to the next generation. It is an important measure of the genetic health of a population.

[2] As explained *infra* at Section 3.0, these remaining populations can be grouped into one or several potential ESUs. Petitioners believe that for purposes of listing under CESA, treating them as a single ESU is supported by the best available science. Moreover, a single ESU also is the most pragmatic from a management perspective, as recovery of the individual populations ultimately depends upon maintaining and/or reestablishing connectivity between them. *See CCFA II,* 18 Cal.App.5th 1191, 1237 ("[T]he nature of the ESU designation is such that genetics alone are not determinative: One must look beyond genetics to questions of policy to determine which populations to include in an ESU.")(quotations omitted).

Central (CC-C), Central Coast South (CC-S, which includes the mountain lions in the Santa Monica Mountains), San Gabriel/San Bernardino Mountains (SGSB), Santa Ana Mountains (SAM), and Eastern Peninsular Range (EPR) (Gustafson et al. 2018).

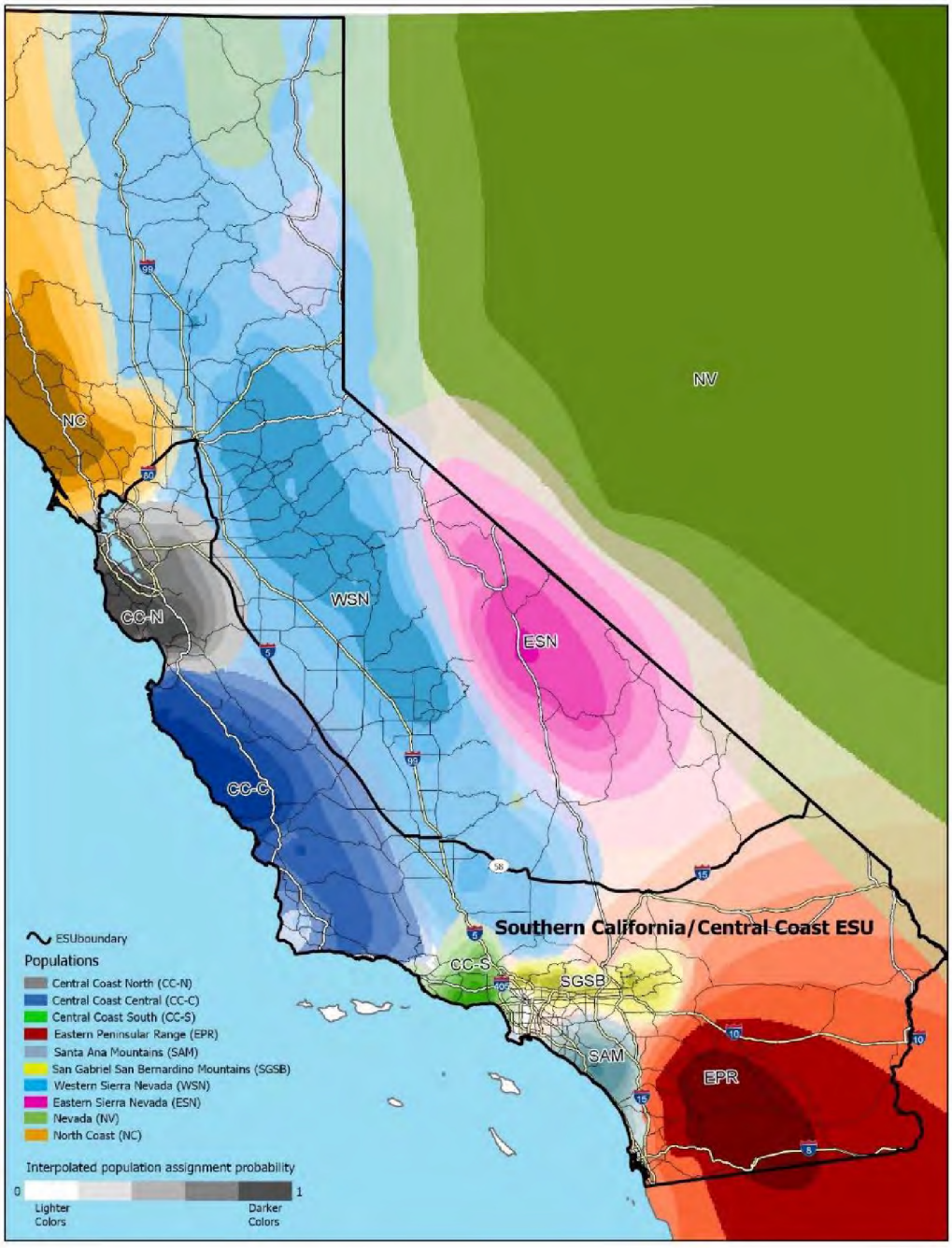

Figure ES-1. Map of genetically distinct mountain lion populations and major roadways in California based on data collected from 1992-2016 (the division and status of these populations could change over time and with further research). The black lines show the proposed Southern California/Central Coast ESU boundary. Derived from Gustafson et al. (2018). Genetics data source: Kyle Gustafson, PhD, Department of Biology and Environmental Health, Missouri Southern State University, and Holly Ernest, DVM, PhD, Department of Veterinary Sciences, Program in Ecology, University of Wyoming, Laramie. Roads data source: ESRI.

The boundary of the Southern California/Central Coast ESU is proposed in Figure ES-1, and includes mountain lions that occur south of the San Francisco Bay and I-80, west of I-5 to the intersection of I-5 and SR-58, south of SR-58 to I-15, south of the I-15 from the SR-58 intersection to the California-Nevada border, and, for the purposes of CESA, as far south as the California-Mexico border. These boundaries are recommended as they include virtually all mountain lions associated with the six populations comprising the ESU and are also unambiguous and readily discernable for purposes of management. We recommend including mountain lions in the Tehachapi and Sierra Pelona Mountains south of SR-58 in this ESU. While most mountain lions sampled from this region share some genetic affinities with Western Sierra Nevada (WSN) animals, many also show genetic connections with CC-S, SAM, EPR and SGSB mountain lions. This area serves not just as a connecting link between mountain lion populations comprising the Southern California/Central Coast ESU, but also between this ESU and all other California mountain lions and is therefore essential for the overall genetic health of mountain lions in the state.

While Southern California and Central Coast mountain lions face a multitude of threats, the greatest challenges stem from habitat loss and fragmentation and the consequent impact on their genetic health. Most of the populations comprising the ESU have low genetic diversity and effective population sizes, which puts them at increased risk of extinction (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016; Gustafson et al. 2018; Benson et al. 2019). The populations most at risk are the SAM, CC-S, SGSB, and CC-N populations. Due to extreme isolation caused by roads and development, the SAM and CC-S, populations exhibit high levels of inbreeding, and, with the exception of the endangered Florida panther, have the lowest genetic diversity observed for the species globally (Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2018; Benson et al. 2019). The SGSB and CC-N similarly have low observed genetic diversity and effective population sizes, and they reside in areas of significant isolation and habitat fragmentation, which also puts them at increased risk (Gustafson et al. 2018). And although the CC-C and EPR populations have slightly higher levels of genetic diversity and effective population sizes, high rates of development, habitat loss and fragmentation, and human-caused mortalities in both areas could lead to a similar fate of isolation, genetic drift, low effective population size, and increased risk of extinction in the foreseeable future.

Although minimum viable effective population size has been found to vary depending on the species (Frankham 1995; Traill et al. 2010), general conservation management practice over the past few decades has followed a 50/500 rule, under which an effective population size of 50 is assumed sufficient to prevent inbreeding depression in the short term (over the duration of five generations) and an effective population size of 500 is sufficient to retain evolutionary potential in perpetuity (Traill et al. 2010; Frankham et al. 2014). It is clear that Central Coast and Southern California mountain lion populations are genetically compromised and face significant risk of extinction in both the short- and long-term. Five of the six populations have effective population sizes well below 50 (from lowest to highest: CC-S, SGSB, SAM, CC-N, EPR), and one population (CC-C) is just barely above that threshold at $N_e = 56.6$ (Table ES-1) (Gustafson et al. 2018).

Table ES-1. Effective population size from Gustafson et al. (2018) and estimated total adult population of Central Coast and Southern California Mountain Lion Populations.

Population	Effective Population Size (N_e)	Estimated Total (Adult) Population (N)[1]
Central Coast North (CC-N)	16.6	33-66
Central Coast Central (CC-C)	56.6	113-226
Central Coast South (CC-S)	2.7[2]	5-10
Santa Ana Mountains (SAM)	15.6[3]	31-62
San Gabriel/ San Bernardino Mountains (SGSB)	5	10-20
Eastern Peninsular Range (EPR)	31.6	63-126
Total		255-510

[1]Calculations are based on the estimated ratio of effective to total adult population size (N_e/N) of Florida panthers being 0.25 to 0.5 (Ballou et al. 1989). This ratio was used in the USFWS Florida Panther Recovery Plan (USFWS 2008). Petitioners recognize that these derived population estimates, while informative, are not definitive and will likely be superseded by new population estimates being developed by CDFW.
[2]Benson et al. (2019) calculated an N_e of 4 for the Santa Monica Mountains population within the CC-S. Applying the Ballou et al. (1989) factors would lead to an estimate of 8-16 mountain lions in this area, which is roughly consistent with current estimates of this well-monitored population.
[3]Several studies provide N_e calculation for the SAM population. Ernest et al. (2014) calculated an N_e of 5.1 and Benson et al. (2019) calculated an N_e of 6. Applying the Ballou et al. (1989) factors to the most recent calculation would lead to an estimate of 12-24 mountain lions in the SAM, which is roughly consistent with current estimates.

Although low effective population sizes standing alone are cause for conservation concern for Southern California and Central Coast mountain lion populations, there are other human-caused factors that further limit their long-term persistence. Habitat loss and fragmentation due to roads and development have led to extreme levels of isolation and high mortality rates. With low genetic diversity and high risk of inbreeding depression due to genetic isolation, vehicle strikes on roads, increased conflicts with humans that lead to depredation kills, high levels of intraspecific strife likely due to limited space and lack of connectivity, rodenticide and other environmental toxicant poisoning, and impacts of more frequent human-caused wildfires and climate change, the small isolated mountain lion populations of Southern California and the Central Coast will likely not persist without the restoration and enhancement of functional connectivity between populations and large blocks of heterogeneous habitats.

Loss of mountain lions in Southern California and the Central Coast would be devastating not just for the mountain lions themselves but also the many species that directly and indirectly rely on them. These top predators are important ecosystem engineers that facilitate healthy ecosystems and allow biodiversity to thrive (Ripple and Beschta 2006; Ripple and Beschta 2008;

Ripple et al. 2014; Ruth and Elbroch 2014; Barry et al. 2019; Elbroch and Quigley 2019). As keystone species mountain lions help support plant recruitment in riparian areas, stabilize stream banks, and sustain healthy habitats for a myriad of aquatic and terrestrial species, including plants, invertebrates, fish, amphibians, reptiles, birds, and mammals (Ripple and Beschta 2006; Ripple and Beschta 2008; Ripple et al. 2014). Their kills are also an important source of food for multiple terrestrial and avian scavengers (Ruth and Elbroch 2014; Barry et al. 2019; Elbroch and Quigley 2019).

Existing laws and regulations have proven to be inadequate to protect Southern California and Central Coast mountain lions. Although the California Wildlife Protection Act of 1990 (Proposition 117) prohibits hunting of mountain lions and has funded the acquisition of important habitat for preservation, the Act alone does not ensure that core habitats and connectivity are protected from development, highways, or other threats. Moreover, numerous mountain lions are killed each year pursuant to depredation authorizations issued under this regime, and there is no limit to the number of depredation permits a property owner can request or any limit to the number of depredation permits which can be issued for any population. And while CDFW has proactively issued a bulletin detailing a new depredation policy for mountain lions in the CC-S and SAM that requires property owners to first implement non-lethal measures prior to being issued a kill permit, this policy does not apply to other vulnerable populations.

Other environmental laws also are insufficient. State and local agencies continue to interpret the California Environmental Quality Act (CEQA) as allowing for the construction of highways and other development in mountain lion habitat and essential corridor areas without adequate mitigation despite severe impacts of such projects on mountain lions. Agencies likewise have generally interpreted CEQA and the federal National Environmental Policy Act as not requiring implementation of connectivity measures when projects fragment or destroy mountain lion habitat. And perhaps most importantly, Caltrans lacks a clear affirmative mandate to design, build, or improve crossings for mountain lions on existing highways, despite the undisputed role of transportation infrastructure in preventing connectivity and gene flow.

Future human population growth and associated development will further diminish and fragment remaining mountain lion habitat, driving Southern California and Central Coast mountain lions closer to extinction and undermining any chance of recovery. Should state and local agencies continue to build and expand roads and highways and permit construction in wildlife habitat and corridors without ensuring adequate habitat connectivity, the genetic health of mountain lion populations will continue to decline while the number of mountain lions killed by vehicle strikes and other human activity will increase.

Ultimately, without a reversal of these trends, mountain lions will disappear from Southern and Central Coastal California in the coming decades, representing a loss of the species from a significant portion of its range in the state. Nevertheless, most of the threats facing mountain lions can be halted or sufficiently reduced if CDFW is provided with adequate resources and all relevant state and local agencies sufficiently prioritize mountain lion conservation in their decision-making. Legal protection of mountain lions under CESA, along with the attention and resources that such listing will generate, can help ensure the long-term survival of this iconic and ecologically significant species in Southern and Central Coastal California.

The Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions Warrants Listing as Threatened under the California Endangered Species Act (CESA)

1 Introduction

This petition summarizes available scientific information regarding the natural history of mountain lions, their distribution and abundance in California, population trends and threats, describes the proposed ESU, and discusses the limitations of existing management measures in protecting the species. As demonstrated below, mountain lions in Southern California and along the Central Coast meet the criteria for protection as a threatened species under the California Endangered Species Act (CESA), and would benefit greatly from such protection.

2 Life History

2.1 Species Description



Adult female mountain lion (left) and kittens (right). Photos: NPS.

The mountain lion (*Puma concolor*) is also commonly called a puma (from the Inca language Quechua) or cougar (corrupted from cuguacuarana from the indigenous Guarani people in Paraguay, Argentina, Bolivia, and Brazil). Adults are large, slender cats with short, muscular limbs and a long tail that is about one third of the animal's total length. Their hind limbs are longer than their fore limbs, which makes them highly adapted for jumping through rugged terrain or pouncing on their prey. They have tawny pelage that can be lighter/whitish on their belly and the undersides of their legs and they have areas of white around the muzzle, throat and chest. They have black fur on the backs of their rounded ears, the tip of their tail, and outlining their muzzle. Their eyes are a grayish brown to golden color, and the nose is pink with a black outline.

Adult body size and weight can vary depending on the geographic range (Iriarte et al. 1990). Mountain lions are smaller and weigh less near the equator and are larger and heavier towards the poles, which likely reflects the size of available prey and the presence of sympatric carnivores (Iriarte et al. 1990). Males are typically larger than females. Males generally weigh 55-65kg with a length of 2.2-2.3m from the nose to the tip of the tail, and females generally weigh 35-45kg with a length of 2.0-2.1m (Currier 1983).

Mountain lion kittens are born weighing approximately 400g, and their eyes and ear canals remain closed for one to two weeks after birth (Currier 1983). They have light coats with dark spots and a white muzzle, chest, and belly. Like the adults, they have black fur on the backs of their rounded ears, the tip of their tail, and outlining their muzzle. Their eyes are initially blue, change to mostly brown within four months, and then change to a golden color at around nine months (Currier 1983). The dark spots on their coat start to fade at 12-14 weeks of age, presumably when a kitten starts to accompany its mother on hunts, but the spots are still distinguishable until the animal is about one year old (Currier 1983). Adult weight is typically reached between the second and fourth year.

2.2 Taxonomy and Population Genetics

The mountain lion is in the order Carnivora and is a member of the cat family Felidae. Unlike the large, roaring cats of the subfamily Pantherinae (*e.g.*, lions, tigers, and leopards), mountain lions are categorized with small, purring cats in the subfamily Felinae (*e.g.*, bobcats, lynxes, ocelots, cheetahs, and jaguarundi). Their scientific name is *Puma concolor*, formerly called *Felis concolor*. Based on molecular and morphological features, it is thought that mountain lions share a common ancestor with cheetahs (*Acinonyx jubatus*) and jaguarundi (*Puma yaguaroundi*).

Mountain lion fossil records in North America date back 300,000 years (Pierce and Bleich 2003); however, they were likely extirpated during a massive extinction event at the end of the Pleistocene, which eliminated about 80% of large vertebrates in North America (Culver et al. 2000; Caragiulo et al. 2013). Genetic studies suggest that after this extinction event, a small number of Central and South American mountain lions migrated north and repopulated North America (Culver et al. 2000; Caragiulo et al. 2013). As a result, existing North American mountain lions exhibit founder effects and have less genetic diversity compared to mountain lions in Central and South America (Culver et al. 2000; Caragiulo et al. 2013).

There is some debate regarding the number of subspecies of mountain lions. Two subspecies are "tentatively" recognized by the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC) Cat Specialist Group: *Puma concolor concolor* (Linnaeus, 1771) in South America and *Puma concolor couguar* (Kerr, 1792) in North and Central America and possibly northern South America west of the Andes Mountains (Kitchener et al. 2017). However, there are various studies that suggest the divergence of multiple subspecies of mountain lions. About 30 subspecies of mountain lions throughout the Americas have been referenced in the literature, with about 15 subspecies in North America (Young and Goldman 1946; Currier 1983; Pierce and Bleich 2003).

Based on more recent genetic analyses of mitochondrial DNA (mtDNA) from mountain lions throughout the Americas, Caragiulo et al. (2013) found that the mountain lions they sampled could be separated into three broad groupings: North America, Central America, and South America, with North American mountain lions having the least variation in mtDNA compared to populations in Central and South America. Although that study genotyped 601 specimens, the distribution of sampling within the broad geographic range was limited compared

to a study conducted by Culver et al. (2000), which analyzed mtDNA from 315 mountain lions sampled from more locations throughout the species' geographic distribution. Culver et al. (2000) found six phylogeographic groupings or subspecies throughout the Americas.

Despite this ongoing debate, the United States Fish and Wildlife Services (USFWS) has long recognized mountain lion subspecies under the federal Endangered Species Act (ESA). Two of these subspecies have been protected under the ESA due to low population sizes: the eastern cougar (*Puma concolor couguar*), which was listed as endangered and is now thought to be extinct, with the last recorded occurrence in 1938 (USFWS 2018), and the endangered Florida panther (*Puma concolor coryi*), which is an isolated population that is now restricted primarily to the cypress swamps of southern Florida. In addition, the California mountain lion (*Puma concolor californica*) was recognized by USFWS in response to a 1994 petition by the Mountain Lion Foundation to list the population of California mountain lions in the Santa Ana Mountains as endangered, as those populations that occur within most of California, southern Oregon, western Nevada, and northern Baja California, Mexico (USFWS 1994). Additionally, the California Department of Fish and Wildlife (CDFW) recognizes the Yuma Puma (*Puma concolor browni*) as a (sub)species of special concern that occurs in the desert plains and low mountains along the Colorado River in southeastern California, southwestern Arizona, northeastern Baja California, Mexico, and northwestern Sonora, Mexico (CDFW 1990).

In California, researchers have recently identified 10 genetically distinct mountain lion populations in California and Nevada, nine of which have core areas in California (Figure 1) (Gustafson et al. 2018). In the study, 992 mountain lions from throughout California and Nevada were genotyped using 42 microsatellite loci to identify regional populations and evaluate functional connectedness between the populations (Gustafson et al. 2018). The divergence of these populations is likely the result of habitat fragmentation caused by roads and development (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2017; Gustafson et al. 2018; Benson et al. 2019). According to Gustafson et al. (2018), mountain lions in the North Coast and inland populations (Nevada, Eastern Sierra Nevada, Western Sierra Nevada) appear to be better-connected than those in the south and along the central coast, with relatively larger effective population sizes and higher levels of genetic diversity. The authors suggest that these populations may comprise an evolutionarily significant unit (ESU). Considering the genetic source-sink dynamics among the remaining populations (Gustafson et al. 2018), petitioners demonstrate that the populations in Southern California and along the Central Coast collectively comprise an ESU (referred to as the "Southern California/Central Coast ESU"). See *Section 3.0 Southern California and Central Coast Mountain Lions Comprise and Evolutionarily Significant Unit* for more discussion.

The Southern California/Central Coast ESU is comprised of six genetically distinct mountain lion populations: Central Coast North (CC-N, which includes mountain lions in the Santa Cruz Mountains), Central Coast Central (CC-C), Central Coast South (CC-S, which includes mountain lions in the Santa Monica Mountains), San Gabriel/San Bernardino Mountains (SGSB), Santa Ana Mountains (SAM), and Eastern Peninsular Range (EPR) (Figure 1) (Gustafson et al. 2018). Most of these populations appear to be struggling with low genetic diversity and effective population sizes, which puts them at increased risk of extinction (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2018;

Benson et al. 2019). The populations struggling the most include the SAM, CC-S, SGSB, and CC-N populations. Although the CC-C and EPR have slightly higher levels of genetic diversity and effective population sizes, high rates of development in both areas could lead to a similar fate of isolation, genetic drift, low effective population size, and increased risk of extinction in the foreseeable future.

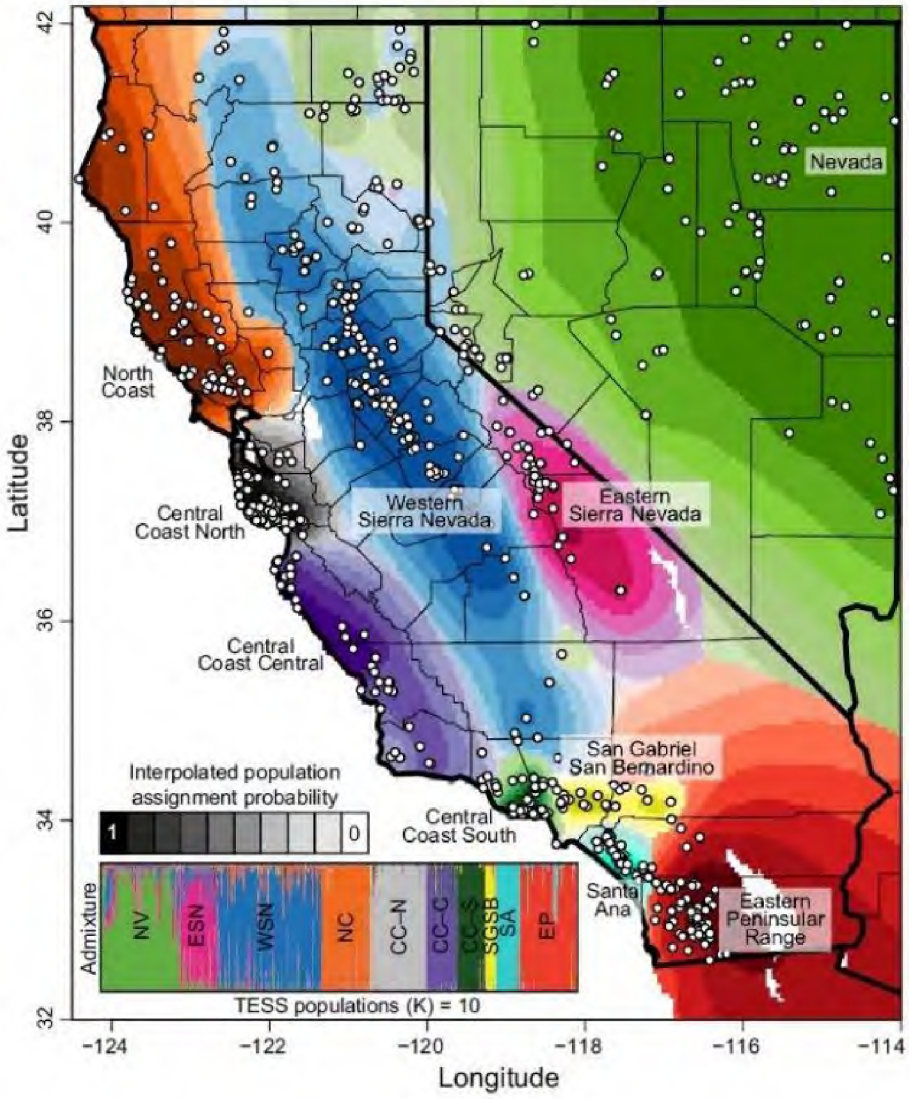

Figure 1. Map of genetically distinct mountain lion populations in California. The Central Coast North (CC-N), Central Coast Central (CC-C), Central Coast South (CC-S), San Gabriel/San Bernardino (SGSB), Santa Ana Mountains (SAM), and Eastern Peninsular Range (EPR) mountain lion populations should be considered an evolutionarily significant unit (ESU). Each color represents a genetically distinct mountain lion population. White dots are individual animals sampled. Source: Gustafson et al. (2018).

Although discrete populations have been identified in Southern California mountain ranges, other mountain lions have been regularly observed outside of the CC-S, SAM, SGSB, and EPR core areas, including transient and resident mountain lions in the Mojave and Colorado deserts and along the Lower Colorado River (*i.e.*, Yuma mountain lion [*Puma concolor browni*], a recognized subspecies of special concern). These populations presumably occur in low

densities due to limited resources, such as lower prey abundance/vulnerability or less suitable habitat. In fact, Kucera (1998) states that habitat within the Yuma mountain lion range is generally considered to be of low or no suitability for mountain lions. Relatively low density populations are inferred by the larger ranges of mountain lions in desert environments; four individual Yuma mountain lions had home ranges of 389km^2 to 1621km^2, which is much larger than other California mountain lion home ranges (Grigione et al. 2002; Riley et al. 2014; Zeller et al. 2017; see *Section 2.5 Habitat Requirements* for more details) but similar to those estimated for other desert mountain lions (Kucera 1998). This petition considers these low-density transients and resident lions as included within the Southern California/Central Coast ESU.

2.2.1 Effective Population Size and Extinction Risk

It has been established that genetic factors play a critical role in extinction risk. Inbreeding depression, loss of genetic diversity, and accumulation of deleterious mutations can lead to elevated extinction risk due to reduced reproductive fitness and evolutionary potential (*i.e.*, the ability to adapt to change) (Spielman et al. 2004; Frankham 2005; Traill et al. 2010). Effective population size (N_e) is a key metric used to assess a population's genetic viability and its chances of long-term persistence. Effective population size is an estimate of the size of an idealized population that would lose heterozygosity (*i.e.*, genetic diversity) at the same rate as the observed population; it indicates a population's rates of inbreeding and genetic drift (changes in allele frequencies over generations based purely on chance). A lower effective population size indicates a higher risk of inbreeding depression. Factors that affect effective population size include census population size (*i.e.*, the total number of individuals within a population), breeding sex ratio, variance in reproductive success, and population density. Several characteristics of these mountain lion populations, including small census population size, low density, female-biased sex ratios, and skewed male reproductive success, reduce effective population size, which suggests that these populations have an increased risk of inbreeding depression and extinction (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019).

The minimum effective population size for a population to persist has been debated (*e.g.*, Jamieson and Allendorf 2012; Frankham et al. 2014). Although minimum viable effective population size has been found to vary depending on the species (Frankham 1995), general conservation management practice over the past few decades has followed a 50/500 rule, which purports that an effective population size of 50 is sufficient to prevent inbreeding depression in the short term (over the duration of five generations) and an effective population size of 500 is sufficient to retain evolutionary potential in perpetuity (Frankham et al. 2014). In a 2012 review, Jamieson and Allendorf (2012) concluded that the 50/500 rule is a useful guiding principle in conservation management when genetic concerns are likely to affect the short- and long-term viability of populations. However, Frankham et al. (2014) later revised the 50/500 rule and recommended an effective population size of 100 to limit the loss of total fitness to <10% in the short-term and an effective population size of 1,000 to retain evolutionary potential for fitness in perpetuity, while recognizing that fragmented populations should be evaluated on a case-by-case basis.

Whether the 50/500 or 100/1,000 rule is considered, it is clear that Central Coast and Southern California mountain lion populations are genetically imperiled and face extinction in both the short- and long-term. Five of the six populations have effective population sizes well below 50 (from lowest to highest, according to Gustafson et al. 2018: CC-S, SGSB, SAM, CC-N, EPR), and the remaining population (CC-C) is just barely above that threshold at $N_e = 56.6$ (Table 1) (Ernest et al. 2014; Riley et al. 2014; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019). Although the ratio of effective to total adult population size (N_e/N) varies by species, the effective population size is often much lower than the total adult population size (Frankham 1995). Several studies indicate that the N_e/N in wild vertebrate populations ranges from 0.2 to 0.5 (Ballou et al. 1989; Mace and Lande 1991; Spong et al. 2000; Laundré and Clark 2003). Ballou et al. (1989) estimated the N_e/N to be 0.25-0.5 in their population viability assessment of the Florida Panther, which aligns with other studies on big cats (Frankham 1995; Spong et al. 2000). This range was used in the USFWS's Florida Panther Recovery Plan (USFWS 2008), and, if applied to the Central Coast and Southern California mountain lion populations, the total number of mountain lions in the areas combined would be 255 to 510 individuals (Table 1). This is well below the recommended minimum viable population size of at least 5,000 adult individuals for the long-term persistence of a population (Frankham 1995; Reed et al. 2003; Traill et al. 2010).

Table 1. Effective population size and estimated total adult population of Central Coast and Southern California Mountain Lion Populations from Gustafson et al. (2018).

Population	Effective Population Size (N_e)	Estimated Total (Adult) Population (N)[1]
Central Coast North (CC-N)	16.6	33-66
Central Coast Central (CC-C)	56.6	113-226
Central Coast South (CC-S)	2.7[2]	5-10
Santa Ana Mountains (SAM)	15.6[3]	31-62
San Gabriel/ San Bernardino Mountains (SGSB)	5	10-20
Eastern Peninsular Range (EPR)	31.6	63-126
Total		255-510

[1]Calculations are based on the estimated ratio of effective to total adult population size (N_e/N) of Florida panthers being 0.25 to 0.5 (Ballou et al. 1989). This ratio was used in the USFWS Florida Panther Recovery Plan (USFWS 2008). Petitioners recognize that these derived population estimates, while informative, are not definitive and will likely be superseded by new population estimates being developed by CDFW.

[2]Benson et al. (2019) calculate an N_e of 4 for the Santa Monica Mountains population within the CC-S. Applying the Ballou et al. (1989) factors would lead to an estimate of 8-16 mountain lions in this area, which is roughly consistent with current estimates of this well-monitored population.

[3]Several studies provide N_e calculation for the SAM population. Ernest et al. (2014) calculated an N_e of 5.1 and Benson et al. (2019) calculated an N_e of 6. Applying the Ballou et al. (1989) factors to the most recent calculation would lead to an estimate of 12-24 mountain lions in the SAM, which is roughly consistent with current estimates

Habitat loss and fragmentation due to roads and development have led to extreme levels of isolation in these populations, which have lowered their effective population sizes and, ultimately, their ability to survive and reproduce with a diverse gene pool (Ernest et al. 2014; Riley et al. 2014; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019). However, re-establishing gene flow among isolated subpopulations of a species can increase effective population size and reduce extinction risk (Frankham et al. 2014). Thus, the implementation of wildlife crossing infrastructure at existing barriers along with the preservation of intact, heterogeneous habitats would facilitate connectivity among Central Coast and Southern California mountain lion populations and significantly improve their chances of long-term survival.

2.2.2 Central Coast North (CC-N) Mountain Lion Population

In a statewide study, Gustafson et al. (2018) found that the CC-N population clustered genetically with the CC-C and CC-S populations. The population exhibited evidence of a previous genetic bottleneck and was found to have low genetic diversity and a low effective population size (N_e = 16.6). There is some evidence, though weak, that suggests the CC-N population is a source population, with limited gene flow with the other Central Coast populations and the Western and Eastern Sierra Nevada populations (Gustafson et al. 2018). CDFW has identified that the Santa Cruz Mountains population, which occurs within the CC-N area, is struggling due to fragmentation from roads and development as well as lack of protected habitat (Dellinger 2019). The low genetic diversity and effective population size threaten both the short- and long-term survival of the CC-N population.

2.2.3 Central Coast Central (CC-C) Mountain Lion Population

The CC-C mountain lion population has been found to exhibit a previous genetic bottleneck (Gustafson et al. 2018). It has intermediate levels of genetic diversity and the highest effective population size (N_e = 56.6) among the Central Coast and Southern California populations (Gustafson et al. 2018). Although this effective population size exceeds the older standard of 50 to prevent in-breeding depression in the short-term, it falls well below the recommended newer standard of 100 and is insufficient for the long-term persistence of the population. This population was found to be clustered genetically with the CC-N and CC-S populations and identified as a source population with limited gene flow with other Central Coast populations, the Western and Eastern Sierra Nevada populations, and the SGSB population (Gustafson et al. 2018). Although the CC-C population appears to be the healthiest population in the Central Coast and Southern California, the lack of sufficient protected lands and high rates of development and habitat fragmentation in the area threaten the persistence of this population (Dellinger 2019).

2.2.4 Central Coast South (CC-S) Mountain Lion Population

The CC-S mountain lion population has been found to exhibit a prior genetic bottleneck, with low genetic diversity and an extremely low effective population size (N_e = 2.7 to 4) (Riley et al. 2014; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019). This population was

found to be clustered genetically with the CC-N and CC-C populations and identified as a genetic sink population, with limited gene flow from mountain lions along the Central Coast and in the Sierra Nevada (Gustafson et al. 2018).

A recent population viability analysis focused on the Santa Monica Mountains population, a subpopulation within the CC-S that has been severely isolated due to roads and development, found that if the population remains isolated with little or no immigration (similar to what is currently being observed in the area), the population could experience high levels of genetic erosion, with 40-57% loss of predicted heterozygosity within 50 years (Benson et al. 2016a). When considering just demographic processes with little or no immigration and no inbreeding depression, the population was predicted to have a 15-22% chance of extinction within 50 years (Benson et al. 2016a; Benson et al. 2019). However, if inbreeding depression occurs, which is a strong possibility given the predicted substantial loss of genetic diversity and the documentation of father-daughter, grandfather-granddaughter, and grandmother-grandson inbreeding within the population (*e.g.*, Riley et al. 2014)[3], population growth will likely decline and chances of extinction within 50 years is predicted to be 99.7%, with a median time to extinction of 15.1 years (Benson et al. 2016a; Benson et al. 2019).

2.2.5 Santa Ana Mountains (SAM) Mountain Lion Population

The SAM mountain lion population has been found to have the lowest genetic diversity of all populations in California, with levels nearly as low as the endangered Florida panther (Ernest et al. 2014; Gustafson et al. 2017; Gustafson et al. 2018; Benson et al. 2019). This population is also estimated to have a low effective population size (N_e = 5.1 to 15.6) and high levels of relatedness and inbreeding (Ernest et al. 2014; Gustafson et al. 2018; Benson et al. 2019). The SAM population was found to be a genetic sink population, with limited gene flow with the EPR population (Gustafson et al. 2018). In a 16-year study (2001-2016) seven migrants (out of 146 sampled animals), were detected via genetics and GPS collar tracking to have crossed the I-15 between the EPR and SAM (three males from the EPR to SAM, four males from the SAM to the EPR); only one migrant is known to have reproduced (Gustafson et al. 2017). Low genetic diversity and effective population size in the SAM are indicative of a genetic bottleneck that is estimated to have occurred 40-80 years ago, around the time when urban development and multi-lane highway construction boomed in Southern California (Ernest et al. 2014; Gustafson et al. 2018). This population was also found to be largely disconnected from all the other California populations, along with the EPR population.

A recent population viability analysis found that if the population remains isolated with little or no immigration (similar to what is currently being observed in the area), the population could experience further genetic erosion, with 28-49% loss of predicted heterozygosity within 50 years (Benson et al. 2019). When considering just demographic processes with little or no immigration and no inbreeding depression, the population was predicted to have a 16-21% chance of extinction within 50 years. However, to avoid inbreeding depression in wild populations, loss in heterozygosity should be less than 5-10% over 100-200 years (Soule et al. 1986; Benson et al. 2016a), which suggests that inbreeding depression in the SAM population is

[3] Inbreeding has been documented in the SMM population in Riley et al. 2014 and in ongoing studies by the NPS. More information from the NPS is available here: https://www.nps.gov/samo/learn/nature/puma-profiles.htm

a strong possibility. In addition, evidence of potential inbreeding depression has been observed in the population (*e.g.*, kinked tails coupled with low genetic diversity, Figure 2, Ernest et al. 2014). When inbreeding depression was considered in the population viability analysis, population growth will likely decline and chances of extinction within 50 years is predicted to be 100%, with a median time to extinction of 11.7 years (Benson et al. 2019).

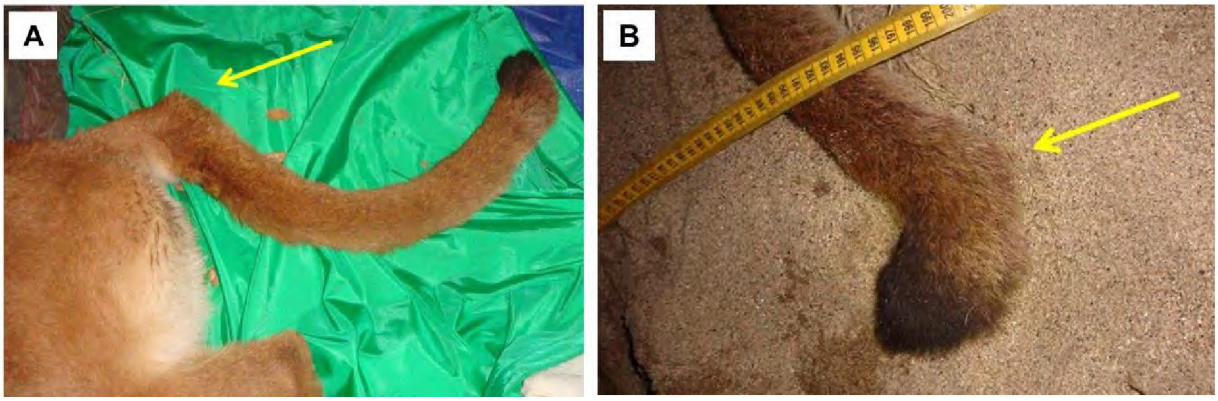

Figure 2. Two SAM mountain lions with a kink at the base of the tail (A) and near the tip of the tail (B). These individuals had among the lowest genetic diversity measured in the study. Source: Ernest et al. 2014.

2.2.6 San Gabriel/San Bernardino Mountains (SGSB) Mountain Lion Population

According to Gustafson et al. (2018), the SGSB mountain lion population exhibits extremely low genetic diversity and effective population size ($N_e = 5$), though the sample size from SGSB was low. They were also found to be a sink population, with limited gene flow with populations in the Western Sierra Nevada, CC-C, and the EPR (Gustafson et al. 2018). Although genetic studies on this population are limited, patterns of isolation, loss of genetic diversity, and low effective population size are similar to those of the SAM and CC-S populations and likely indicate a high risk of extinction. Not only is the population's long-term survival at stake, but the geographic location of the SGSB population is paramount. Despite only limited gene flow between the SGSB population and the Western Sierra Nevada, CC-C, and EPR, this population represents a critical linkage between mountain lion populations in the northern, central coast, and southern mountain ranges of California (Gustafson et al. 2018). Restoration and enhancement of connectivity is key for the continued survival of the SGSB population as well as the Central Coast and Southern California mountain lion populations.

2.2.7 Eastern Peninsular Range (EPR) Mountain Lion Population

Gustafson et al. (2018) found that the EPR population exhibits a prior genetic bottleneck. Although the population was found to have a higher effective population size than the other Southern California mountain lion populations ($N_e = 31.6$), this is still well below the older standard of 50 to prevent in-breeding depression in the short-term and is insufficient for the long-term persistence of the population. In addition, the EPR population was found to be largely disconnected from all the other California populations, with limited gene flow and low connectivity with the SAM and SGSB populations (Gustafson et al. 2018). With continued development in San Diego, Riverside, and Imperial Counties, the EPR population could have a

similar fate of isolation, genetic drift and inbreeding, and risk of extinction as the other Central Coast and Southern California populations.

As mentioned previously, there are records for mountain lions outside of the core mountain ranges in Southern California, which are likely transients or residents of smaller populations. For example, the Yuma mountain lion has been recognized by CDFW as a subspecies of special concern, and likely occurs in low density in the desert plains and low mountains of the Colorado River Valley. Genetic studies on the Yuma mountain lion are limited, and no samples were obtained from that area for the study conducted by Gustafson et al. (2018). However, the low densities of transients and smaller populations in areas where roads and development threaten connectivity make them part of the EPR and larger Southern California population, and as such, they are considered a conservation concern and are included in this petition.

2.3 Reproduction and Growth



Dens are often in rocky outcrops (left) or in dense vegetation (right). Photos: NPS.

Mountain lions are polygamous breeders, and mates likely locate each other with auditory and olfactory signals (Currier 1983). They may reproduce at any time of year, though seasonal pulses have been documented and the timing of reproduction may be affected by prey abundance or climate (Pierce and Bleich 2003). In North America, kitten births are most common between April and September (Currier 1983; Beier 1995; Pierce and Bleich 2003).

Pairs generally mate for about 2-5 days (Beier et al. 1995), though there are instances in which pairs have been recorded traveling together for up to 16 days (Seidensticker et al. 1973). During this time they vocalize frequently, travel little, will sometimes share a kill, and copulate up to 70 times per day (Seidensticker et al. 1973; Beier et al. 1995; Pierce and Bleich 2003). Female estrous cycles last an estimated 4-12 days, and it is hypothesized that numerous acts of copulation stimulate ovulation and improve chances of successful fertilization (Pierce and Bleich 2003, Kitchener 1991). If the litter is born dead or removed within 24 hours of birth, females will go into estrous within a few weeks (Currier 1983). In addition, competing males have been

known to commit infanticide[4], presumably to trigger estrous in females, though scientists are still investigating what drives this behavior.

Gestation lasts 82-96 days (Young and Goldman 1946; Currier 1983). Litter size ranges from 1-6, though 2-4 kittens per litter are typical (Pierce and Bleich 2003; Beier et al 2010; Riley et al. 2014). Females average larger litters during their first year of reproduction and tend towards smaller litters when they are older (Pierce and Bleich 2003). The sex ratio of litters has generally been found to be equal (Pierce and Bleich 2003). Females keep their kittens in dens located in rocky terrain or in dense vegetation that provide cover (Young and Goldman 1946), and they may move their young to several different dens until the young are weaned at about 2-3 months old (Pierce and Bleich 2003). Denning mountain lions have been found to avoid roads and stay at a distance from human disturbance four times greater (~600m) than non-reproductive mountain lions (~150m) (Wilmers et al. 2013).

Females care for their young for 1-2 years, at which point the mother comes into estrous and either abandons the cubs or acts aggressively towards them to prevent them from following her, as older males will kill cubs (Young and Goldman 1946; Seidensticker et al. 1973; Currier 1983; Beier 1995; Pierce and Bleich 2003). Newly independent young have been found to stay in the area where the mother leaves them for 2-3 weeks, and then disperse away from the direction their mother left (Beier 1995). Typically 50% of females stay in their natal range and 50% disperse while all males disperse, and siblings sometimes travel for a short time together (Pierce and Bleich 2003; Logan and Sweanor 2010). Subadult mountain lions may disperse up to 500km from their natal home ranges as they explore and establish their own territories (Pierce and Bleich 2003).

Mountain lions reach sexual maturity at 2-4 years of age. Although they are rarely known to mate until they have an established home range, transient males may occasionally breed with resident females (Hornocker 1970; Seidensticker et al. 1973; Currier 1983).

2.4 Diet and Foraging Ecology



Mountain lion cub feasting on a deer kill in the Santa Monica Mountains. Photo: NPS.

[4] Infanticide has been documented in the Santa Monica Mountains mountain lion population. More information from the NPS is available here: https://www.nps.gov/samo/learn/nature/puma-profiles.htm

Large ungulates, especially deer, are the preferred prey of mountain lions, making up about 70% of their diet (Currier 1983; Iriarte et al. 1990). Hornocker (1970) estimated that the average adult mountain lion consumes 860-1,300kg of large prey annually. However, mountain lions are opportunistic predators, and they have been documented eating a wide variety of other large and smaller prey, including moose, elk, wild horses, burros, pronghorn, bighorn sheep, mountain goats, wild hogs, coyotes, bobcats, porcupines, badgers, rabbits, raccoons, rodents, turkeys, and livestock (Currier 1983; Iriarte et al. 1990; Garcelon unpublished data).

Their diet can vary by prey availability, prey vulnerability, the presence of sympatric carnivores, the season, and the age and sex of the mountain lion (Currier 1983; Iriarte et al. 1990; Knopff et al. 2010; Allen et al. 2014a). For example, deer have been found to make up >90% of the diet in mountain lions in the Santa Monica Mountains and in Northern California (Allen et al. 2014a; Riley et al. 2014), while in Florida wild hogs were found to be the most common prey (Maehr et al. 1990), and in northwestern Sonora, Mexico bighorn sheep were found to be the primary prey (Rosas-Rosas et al. 2003). These observed patterns were likely due to the availability of different prey in different geographic regions. A study conducted in Alberta, Canada, Knopff et al. (2010) found that while adult females were more likely to kill small ungulates (*e.g.*, deer), adult males were more likely to kill larger ungulates (*e.g.*, elk), and subadults relied on both small ungulates and nonungulate prey (*e.g.*, beavers, snow hares). A similar pattern was found in a mountain lion population in the Greater Yellowstone Ecosystem, in which older, larger individuals hunted larger prey and younger, smaller individuals hunted smaller prey (Elbroch and Quigley 2019). In addition, mountain lions were found to prey upon female ungulates in the spring before and during the birthing period, and they would more often prey upon male ungulates in the fall during the rut, highlighting that prey vulnerability may play a role in mountain lion predation (Knopff et al. 2010).



Mountain lion preying on a coyote in Joshua Tree, California. Photo: Brendan Cummings

Mountain lions roam through expansive home ranges in search of prey, often hunting between dusk and dawn. Although they are generally most active at dusk and dawn, their peak activities have been observed to shift to more nocturnal patterns when they are closer to human

disturbance (Van Dyke et al. 1986). Mountain lions are primarily solitary animals and will repeatedly move and wait as they stalk and ambush their prey (Beier et al. 1995). Once within close proximity, mountain lions will lunge at their prey and kill the animal by crushing the trachea and suffocating it or by breaking its neck at the base of the skull with a bite (Currier 1983; Pierce and Bleich 2003). Instead of eating their kill right away, mountain lions drag their kill to a secluded spot to feed. They cover it with brush and other debris and return to feed at night for up to five days (Currier 1983; Beier et al. 1995). However, the presence or perceived presence of humans has been found to reduce overall feeding time (Smith et al. 2015; Smith et al. 2017).

Deer kill rates vary depending on the sex of the mountain lion, whether or not the female has cubs, and surrounding human land use. Male kill rates have been found to range from 35 to 47 ungulates per year, regardless of housing density (Anderson , Jr . and Lindzey 2003; Cooley et al. 2008; Knopff et al. 2010; Smith et al. 2015). However, kill rates for females differ depending on human disturbance. In lower density housing areas, kill rates of solitary females and females with kittens have been found to be 52-60 and 57-68 ungulates per year, respectively, while females in high density housing areas were found to have a kill rate of 81 ungulates per year (Anderson , Jr . and Lindzey 2003; Cooley et al. 2008; Knopff et al. 2010; Smith et al. 2015). This pattern could be driven by reduced time spent at kill sites in more developed areas, indicating that females are not consuming as much of each carcass and therefore need to kill more prey (Smith et al. 2015). This may reflect a trade-off made by females to choose feeding sites closer to human-disturbed areas and expend more energy killing prey in order to reduce potential encounters with males that pose a threat to themselves or their kittens (Benson et al. 2016b). Another factor that may be contributing to higher kill rates in developed areas is that mountain lions expend more energy traveling faster and farther in human-dominated landscapes and therefore require increased caloric intake compared to mountain lions away from developed areas (Wang et al. 2017).

2.5 Habitat Requirements

Mountain lions are primarily solitary (except in certain situations, such as when breeding, when females are rearing cubs, or when dispersing with siblings), territorial cats that occur in low density. They require large areas of relatively undisturbed habitats with adequate connectivity to allow for dispersal and gene flow. They have large home ranges that include heterogenous habitats. In the United States these often consist of pine forests, riparian and oak woodlands, streams, chaparral, and grasslands, though they are also known to occur in desert habitats (*e.g.*, Figure 3).

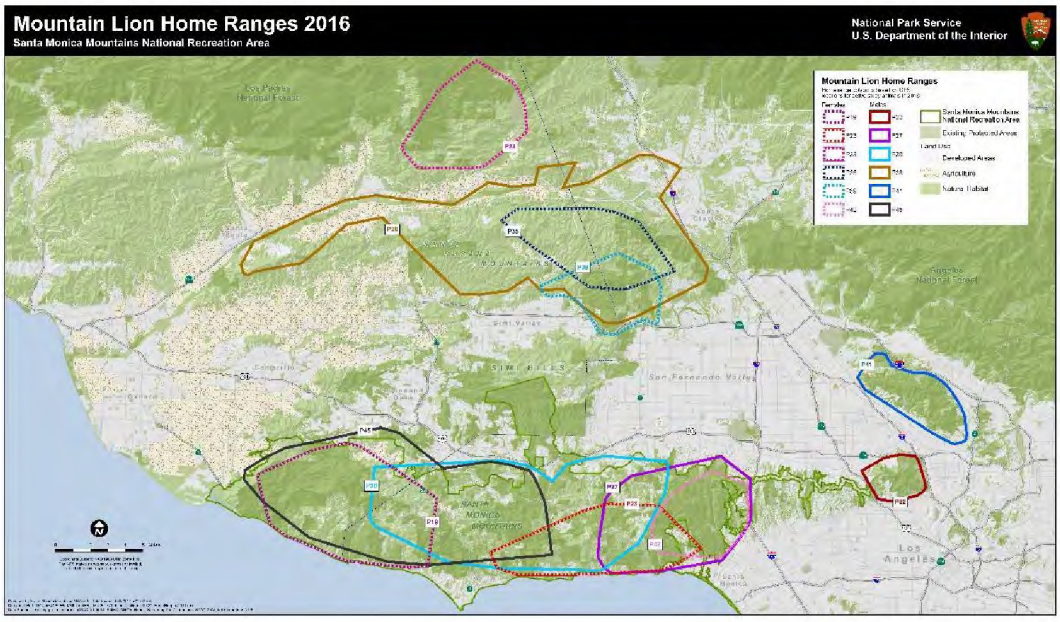

Figure 3. Home ranges of mountain lions being actively studied in 2016 by NPS in and near the Santa Monica Mountains. Source: NPS.

Mountain lions have been found to utilize different habitats within a 24-hour period (Dickson and Beier 2002; Dickson et al. 2005; Dickson and Beier 2006; Kertson et al. 2011; Zeller et al. 2017). Riparian habitats were found to be preferred over grasslands and human-disturbed areas during the day, which likely represents the animals resting in areas with understory vegetation for cover (Dickson and Beier 2002; Dickson et al. 2005). However, nocturnal movement patterns showed that mountain lions utilize a broad range of habitats as they travel through their home ranges and hunt (Dickson et al. 2005). Although riparian vegetation was the highest ranked habitat for nocturnal use, usage of riparian areas was not statistically different from the use of scrub, chaparral, grasslands, or woodlands (Dickson et al. 2005).

Nocturnal patterns of movement and stasis suggest that mountain lions generally avoid areas with human disturbance (*i.e.*, residential developments and two-lane paved roads) and use a variety of habitats to stalk and pursue their prey (Dickson and Beier 2002; Dickson et al. 2005). In addition, Dickson and Beier (2006) found that when mountain lions were traveling or hunting, they preferred canyon bottoms and gentle slopes and used steeper slopes and ridgelines to a lesser extent. And Benson et al. (2016b) found that mountain lions tend to choose feeding sites on steeper slopes in habitats with dense understory vegetation, such as chaparral, scrub, and upland forest. Although mountain lions will use moderately disturbed areas as they travel and hunt (Wilmers et al. 2013; Gray et al. 2016), occupancy is lower in developed areas and they are more likely to use developed areas if they border open spaces (Wang et al. 2015). Thus, mountain lions require a habitat mosaic that provides sufficient room to roam away from human-disturbed areas and connected to expansive, intact, heterogeneous habitats (Beier 1995; Dickson and Beier 2002; Dickson et al. 2005; Kertson et al. 2011; Zeller et al. 2017).

Home range size can vary depending on geographic area, season, sex, reproductive status, and prey density (Currier 1983; Grigione et al. 2002; Riley et al. 2014). Males generally have

much larger home ranges than females, and females with cubs tend to have even smaller home ranges (Beier et al. 1995; Grigione et al. 2002). Male home ranges tend to include partially or entirely overlapping female home ranges, and to a limited extent, they may partially overlap with other male home ranges (Figure 3) (Seidensticker et al. 1973; Currier 1983; Pierce and Bleich 2003). Mountain lions mark their home ranges with scrapings in the ground, often containing urine or feces (Seidensticker et al. 1973). Males make scrapings more often than females (Allen et al. 2014b), and females may only make scrapings when they are in estrous (Seidensticker et al. 1973; Currier 1983; Pierce and Bleich 2003).

Seasonal variation in home range size can differ depending on geographic area. Grigione et al. (2002), found strong influences of seasonality in average mountain lion home ranges in the Sierra Nevada mountains, with much larger home ranges in the summer (541km^2 for females, 723km^2 for males) compared to those in the winter (349km^2 for females, 569km^2 for males). These patterns likely reflect the abundance and distribution of deer – during the winter deer would be concentrated at lower elevations, which allowed mountain lions to reduce their home ranges, while in the summer deer could disperse to higher elevations and the mountain lions would expand their ranges accordingly (Grigione et al. 2002). However, seasonal variation was not as pronounced and had the reverse trend in Coastal California mountain ranges, including in the SAM, where the average area of winter home ranges was slightly larger (100km^2 for females, 350km^2 for males) than summer home ranges (90km^2 for females, 300km^2 for males) (Grigione et al. 2002). These differences were not statistically significant, and this pattern is likely due to the moderate year-round climate in the coastal ranges, where prey abundance and distribution does not exhibit as extreme shifts as those in the Sierra Nevada (Grigione et al. 2002). This generally aligns with Zeller et al. (2017), who found that mountain lion home ranges in the SAM and EPR ranged from 41-497 km^2, with mean home range sizes of 188km^2 for females and 316 km^2 for males. And Riley et al. (2014) found that CC-S mountain lions had home ranges similar in size to the SAM and EPR mountain lions, with female home ranges being 100-200km^2 and male home ranges being 300-500 km^2. According to the Santa Cruz Puma Project, in the Santa Cruz Mountains female home ranges are on average about 100 km^2 and male home ranges are about 230 km^2 (Santa Cruz Puma Project 2015). Although studies are limited regarding the home range size of the CC-C and SGSB mountain lions, given their close proximity and similar seasonality to other Central Coast and Southern California populations, they are likely similar.

2.6 Survivorship and Mortality

According to the National Park Service (NPS), mountain lions can live up to 13 years in the wild. As a top carnivore with no natural predators, conspecifics and humans are the main drivers of mountain lion survivorship and mortality. Although studies regarding kitten (<18 months), subadult (18-30 months), and adult (>30 months) survivorship are limited, some long-term studies of radio-collared mountain lions on the CC-S, SAM, and EPR provide valuable insights for these Central Coast and Southern California populations (Beier and Barrett 1993; Riley et al. 2014; Vickers et al. 2015).

In a study conducted in the CC-S area (which encompasses the Santa Monica Mountains, Simi Hills, and Santa Susana Mountains) that included 42 mountain lions from 2002 to 2012, Riley et al. (2014) found an annual adult survival of ≥ 75%, though Benson et al. (2016a) found

lower subadult survival rates. Although adult survival in the CC-S is similar to previous studies conducted in California and the southwestern US (Beier 1993; Logan and Sweanor 2001), it is higher than what was found in the SAM and EPR populations during the same time period. From following 74 radio-collared mountain lions from 2001 to 2013, Vickers et al. (2015) found an annual survival rate across all age groups of 56.5% and 55.4% in the SAM and EPR, respectively.



In the Santa Monica Mountains: Female mountain lion P-23 hunted down a deer on Mulholland Drive (left). In 2018 she was killed by a vehicle strike on Malibu Canyon Road. An uncollared mountain lion killed by a vehicle strike on Malibu Canyon Road in 2004 (right). Photos: NPS

Vehicle strikes, depredation kills, and intraspecific strife (including male aggression towards conspecifics and infanticide) are the primary causes of mortality in the Central Coast and Southern California populations (Beier 1993; Riley et al. 2014; Vickers et al. 2015). Other known causes of death in California mountain lion populations include rodenticide poisoning, disease, poaching/illegally killing, starvation/abandonment, public safety removal, and human-caused wildfires (Beier 1993; Riley et al. 2014; Vickers et al. 2015). Causes of mortality will be discussed more in depth in *Section 5.0 Abundance and Population Trends* and *Section 6.0 Factors Affecting Ability to Survive and Reproduce*.

3 Southern California and Central Coast Mountain Lions Comprise an Evolutionarily Significant Unit

3.1 CESA Provides for Listing of ESUs

CESA defines an "endangered species" as a species or subspecies of animal or plant that is in serious danger of becoming extinct through either all or "a significant portion" of its range. (Cal. Fish & Game Code § 2062.) A "threatened species" is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. (Cal. Fish & Game Code § 2067.) CDFW has concluded—and appellate courts have upheld—that the term "range" is construed to refer to the range of a species or subspecies *within* California, not the worldwide range of the species or subspecies. (*California Forestry Assn. v. California Fish & Game Com.* (2007) 156 Cal.App.4th 1535, 1550-551.) This means that a species or subspecies which may not be endangered in other states or countries may still be endangered within California. Courts also have confirmed that the phrase "significant portion" of

a range authorizes CDFW to designate certain populations of a species or subspecies as "evolutionarily significant units" or "ESUs" and list such populations as endangered under CESA. (*Id.* at 1549; *Central Coast Forest Assn. v. Fish & Game Com.* (2018) 18 Cal.App.5th 1191, 1236-37 [*"CCFA II"*].) In other words, ESUs are a population of a species or subspecies "that is considered distinct for purposes of conservation." (*Central Coast Forest Assn. v. Fish & Game Com*. (2012) 211 Cal.App.4th 1433, 1439 fn 5 [depublished] ["*CCFA I*"].)

CDFW has confirmed that the use of ESUs to evaluate the status of species pursuant to CESA is appropriate.[5] In the *Status Review of Fisher*, CDFW designated fishers in northern California and the southern Sierra Nevada as two separate ESUs based upon the reproductive isolation of these fisher populations and the degree of genetic differentiation between them. In designating these ESUs, CDFW highlighted the need to maintain "geographically widespread and genetically diverse" populations of the species.

3.2 Southern California and Central Coast Mountain Lions are Significantly Reproductively Isolated from Other Populations and Form an ESU

Southern California and Central Coast mountain lion populations could be grouped into one or several potential ESUs. However, petitioners believe that for purposes of listing under CESA, treating the CC-N, CC-C, CC-S, SAM, SGSB, and EPR populations as a single Southern California/Central Coast ESU is both supported by the best available science and makes sense from a management perspective. Gustafson et al. (2018) suggest that the North Coast and inland populations (Nevada, Eastern Sierra Nevada, and Western Sierra Nevada) may form an ESU (hereinafter "North Coast/Inland ESU") given that they were found to be genetically diverse and well-connected. Due to extreme isolation and high levels of human-caused mortalities, functional connectivity between Southern California and Central Coast mountain lion populations and the healthier North Coast/Inland ESU has become severely impaired (Gustafson et al. 2018, see further discussion in *Section 2.2 Taxonomy and Population Genetics* and *Section 6.0 Factors Affecting Ability to Survive and Reproduce*). There is a tenuous link made up of small mountain ranges (*i.e*., Tehachapi and Sierra Pelona Mountains) that connect the North Coast/Inland ESU with the proposed Southern California/Central Coast ESU. Thus, although there is some (limited) connectivity between the North Coast/Inland ESU and the proposed ESU, as a practical matter under current management the two ESUs are functionally isolated.

Southern California and Central Coast populations have lower levels of genetic diversity and are relatively disconnected from each other compared to North Coast and inland populations. The Central Coast populations form a genetic cluster while the SAM and EPR populations form a second, less connected genetic cluster (Figure 4) (Gustafson et al. 2018). The SGSB population, though isolated, is most genetically similar to the Western Sierra Nevada, CC-C, and EPR populations, which indicates that it is an important intersection for statewide genetic connectivity (Figure 4) (Gustafson et al. 2018).

Genetic source-sink dynamics are informative in determining gene flow among the populations and how they are connected. Five genetic source populations were identified: the

[5] California Department of Fish and Wildlife, *Status Review of Fisher* (June 10, 2015), available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=101470.

Eastern and Western Sierra Nevada populations, CC-N, CC-C, and EPR (Gustafson et al. 2018). The Sierra Nevada populations were the greatest genetic source populations and the CC-N population had only weak evidence of being a source population (Gustafson et al. 2018). The CC-S, SGSB, and SAM were identified as genetic sink populations with limited connectivity to source populations (Figure 4) (Gustafson et al. 2018). Maintaining and reestablishing genetic connectivity with source populations like the CC-C, EPR, and Western Sierra Nevada populations are important for the long-term viability of Southern California and Central Coast populations (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gray et al. 2016; Gustafson et al. 2017). This underscores the importance of the Tehachapi and Sierra Pelona Mountains as the key remaining linkage, though tenuous, for statewide genetic connectivity.

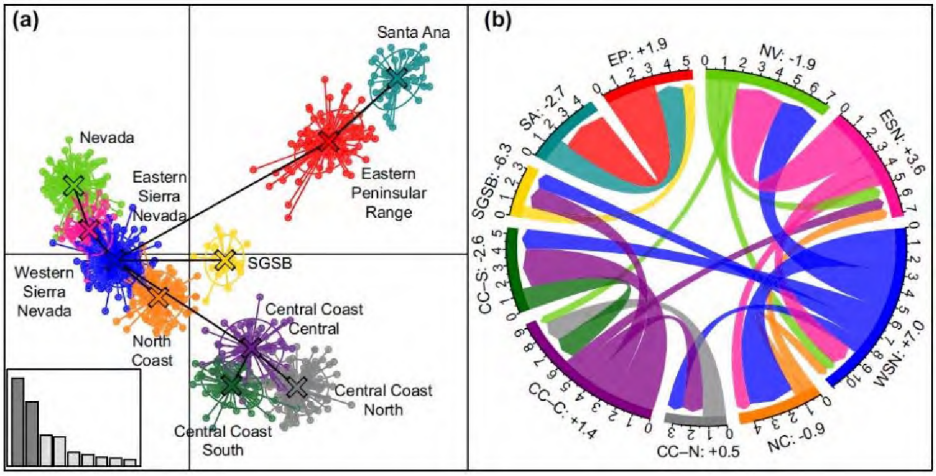

Figure 4. Functional connectedness of California mountain lion populations. Each color represents a genetically distinct population. In (a), the results of the discriminant analysis of principal components shows connectivity among California mountain lions. The x-axis represents latitude with north to the left and south to the right. The y-axis represents longitude, separating the Central Coast populations from Southern California populations. In (b), estimated migration rates between populations are shown. Source-sink dynamics are indicated by positive (source) or negative (sink) net migration rates. Source: Gustafson et al. (2018).

While genetics as currently understood could support several different ESU formulations, petitioners believe a single Southern California/Central Coast ESU is the most pragmatic from a management perspective, as recovery of the individual subpopulations ultimately depends upon maintaining and/or reestablishing connectivity between them. *See CCFA II,* 18 Cal.App.5th 1191, 1237 ("[T]he nature of the ESU designation is such that genetics alone are not determinative: One must look beyond genetics to questions of policy to determine which populations to include in an ESU.") (quotations omitted). Designating Southern California and Central Coast mountain lions as an ESU would help ensure "geographically widespread and genetically diverse" populations of mountain lions in California.

While petitioners believe that listing of a single Southern California/Central Coast ESU as threatened is both a permissible and prudent course of action for the Commission, petitioners also request that as additional data become available over the course of CDFW conducting its status review that the agency also assess other possible ESU formulations for Southern California and Central Coast mountain lions. One such formulation would be to group all three Central Coast populations (CC-N, CC-C and CC-S) into one ESU, with the remaining three

populations placed into a second ESU (SAM, EPR and SGSB). Alternatively, the Central Coast populations could be treated as one ESU, SAM and EPR as a second ESU, and SGSB separately listed as a third ESU. Petitioners believe the genetic data in Gustafson et al. (2018) could support each of these alternative formulations. Lastly, given each of the six populations at issue are themselves already genetically distinguishable and occupy significant portions of the range of mountain lions in California, each could be separately treated as an ESU. Under this formulation, the SAM and CC-S populations would clearly warrant endangered listing, the CC-C and EPR populations would warrant threatened listing, and the CC-N and SGSB populations would warrant at least threatened and likely endangered listing.

3.3 Proposed Boundary of the Southern California/Central Coast ESU

We propose the Southern California/Central Coast ESU to include mountain lions that occur in areas east of the Pacific Ocean, south of the San Francisco Bay Area waters and I-80, west of I-5 to the intersection of I-5 and SR-58 at Bowerbank/Buttonwillow, south of SR-58 to I-15, south of the I-15 from the SR-58 intersection to the California-Nevada border, and, for the purposes of CESA, north of the California-Mexico border (Figure 5). These boundaries are recommended as they include virtually all mountain lions associated with the six populations comprising the ESU and are also unambiguous and readily discernable for purposes of management.[6]

[6] In the event the Commission determines that the proposed ESU should instead be treated as separate Southern California (SAM, EPR, SGSB) and Central Coast (CS-N, CS-C, CS-S) ESUs, we propose the boundary between them to be delimited by I-5 and I-710.

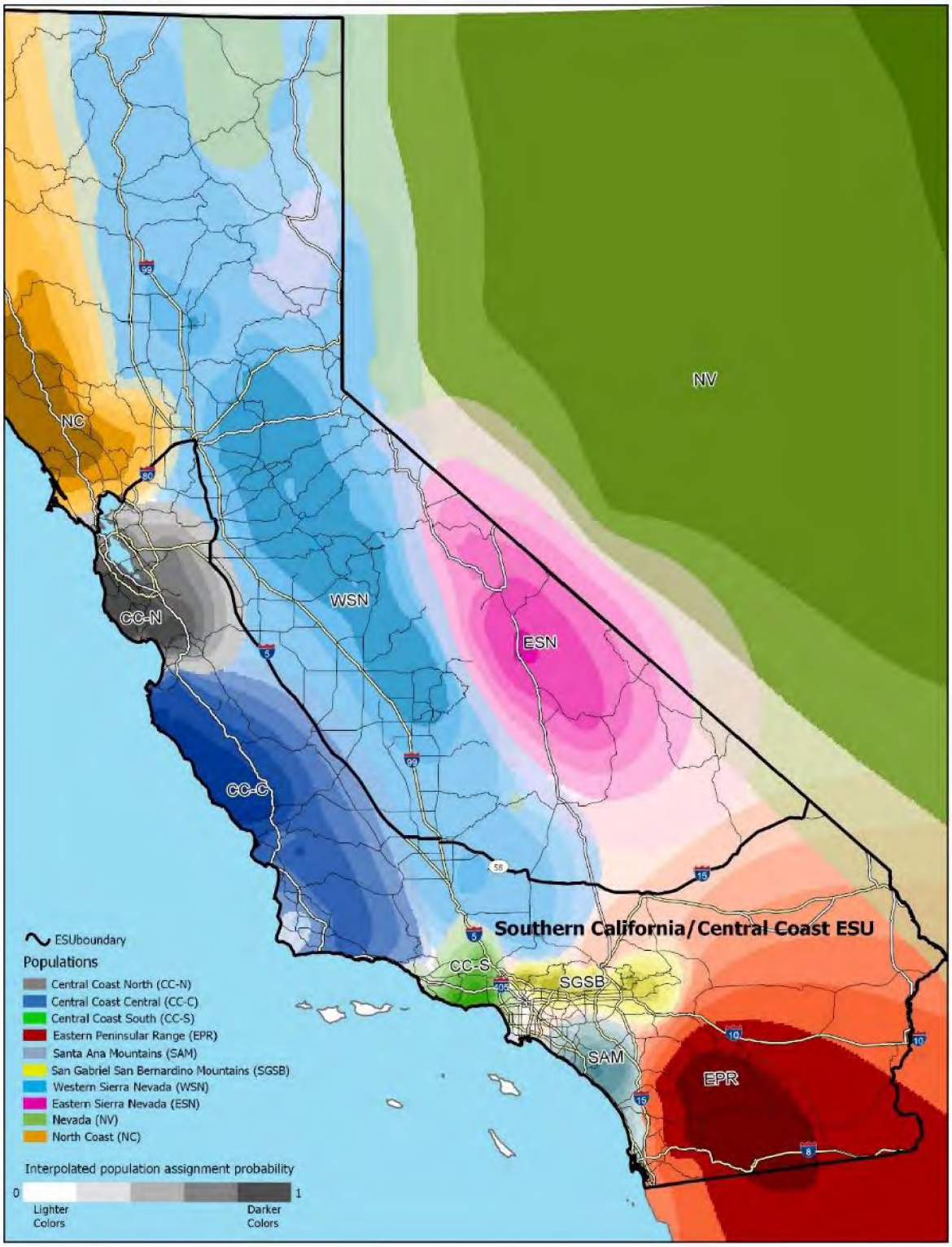

Figure 5. Map of the Southern California/Central Coast ESU boundary. Derived from Gustafson et al. (2018). Genetics data source: Kyle Gustafson, PhD, Department of Biology and Environmental Health, Missouri Southern State University, and Holly Ernest, DVM, PhD, Department of Veterinary Sciences, Program in Ecology, University of Wyoming, Laramie. Roads data source: ESRI.

We recommend including mountain lions in the Tehachapi and Sierra Pelona Mountains south of SR-58 in the Southern California/Central Coast ESU. While most mountain lions sampled from this region share some genetic affinities with Western Sierra Nevada (WSN) animals, individuals sampled in the Tehachapi Mountains and surrounding areas, including the Sierra Pelona Mountains in the Angeles National Forest and the Los Padres National Forest, had genetic structures made up of multiple genetic populations from the northern, central coastal, and southern populations (Figure 6). This area serves not just as a connecting link between mountain lion populations comprising the Southern California/Central Coast ESU, but also between this ESU and all other California mountain lions. The Tehachapi and Sierra Pelona Mountains are the last remaining linkages for statewide genetic connectivity and are critical for the overall genetic health of Southern California and Central Coast mountain lions. Consequently, mountain lions in these areas should be considered part of the listed entity.

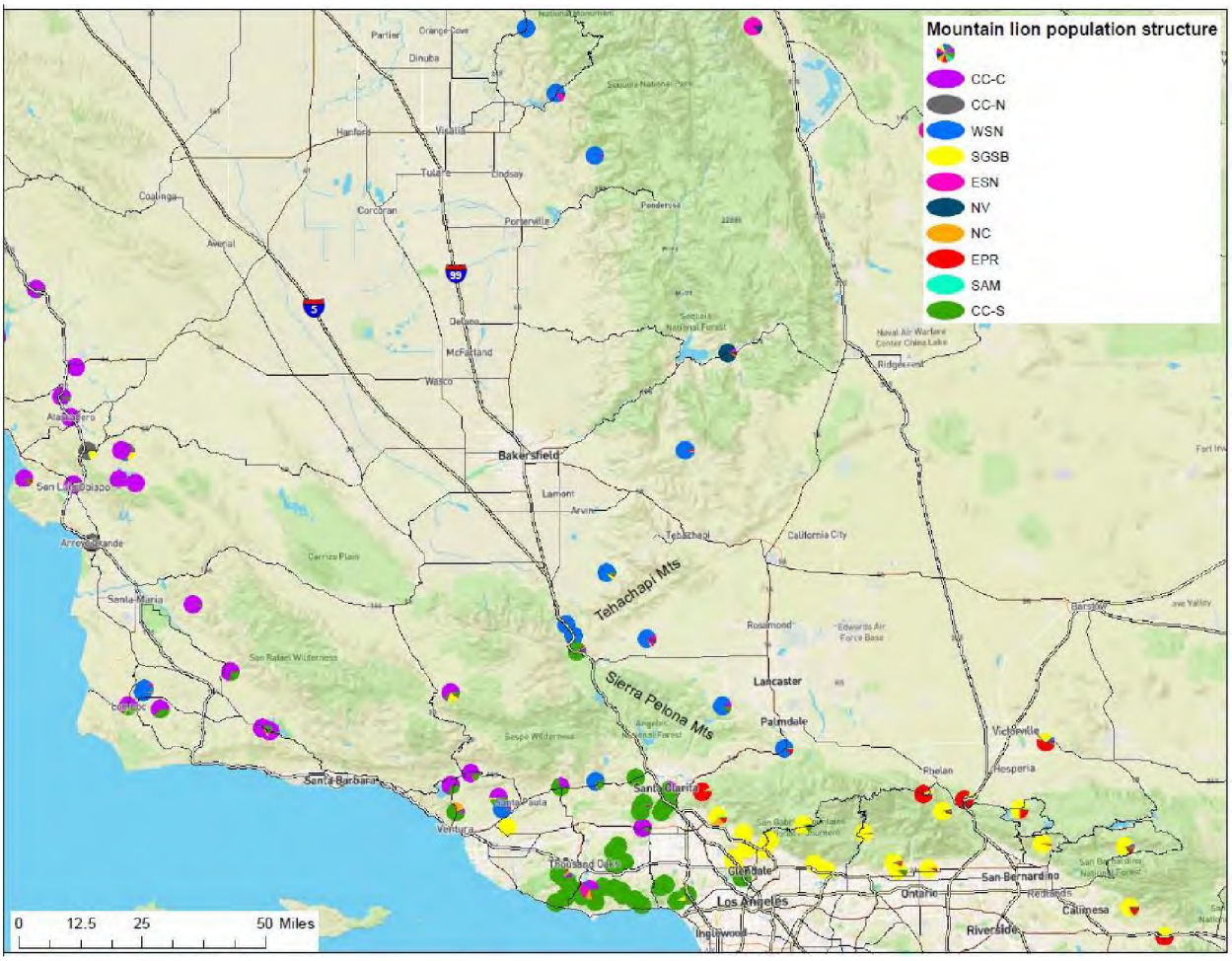

Figure 6. Map of mountain lion genetic structure in and surrounding the Tehachapi and Sierra Pelona Mountains, the last remaining linkage between the coastal, southern, and northern populations. Data source: Kyle Gustafson, PhD, Department of Biology and Environmental Health, Missouri Southern State University, and Holly Ernest, DVM, PhD, Department of Veterinary Sciences, Program in Ecology, University of Wyoming, Laramie.

3.4 Southern California and Central Coast Mountains Lions are Essential to the Region's Biodiversity

Additional support for designation of a Southern California/Central Coast ESU is provided by the fact that mountain lions are a keystone species critical to maintaining biodiversity in coastal California's ecosystems. The loss of these mountain lions—which are the only remaining large predator in the region—would lead to a trophic cascade wherein deer populations would increase and overgraze vegetation due to the lack of predation and lack of risk of predation, causing other repercussions to other species and habitats (Ripple and Beschta 2006; Ripple and Beschta 2008; Ripple et al. 2014). In addition, their kills are an important source of food for multiple terrestrial and avian scavengers (Ruth and Elbroch 2014; Elbroch et al. 2017; Barry et al. 2019).

Ripple and Beschta (2006) highlighted the critical role of mountain lions in western ecosystems by comparing habitat quality and the levels of biodiversity in two separate areas of Zion National Park – Zion Canyon, which mountain lions generally avoid due to high human presence, and North Creek, which mountain lions inhabit due to less human presence. The sustained lack of mountain lions in Zion Canyon has led to an unnaturally high density of deer, which has had profound impacts on Zion Canyon ecosystems. Ripple and Beschta (2006) observed Zion Canyon had low numbers of hydrophytic plants, wildflowers, amphibians, lizards, and butterflies while North Creek had significantly higher numbers in each of these categories.

North Creek riparian areas had well vegetated and stable banks while Zion Canyon lacked bank vegetation and its banks were continuing to erode (Ripple and Beschta 2006). The study noted that such geomorphic transformation of stream channels where mountain lions were absent were caused by plant loss on stream banks, which led to high levels of erosion and sedimentation, less shading and higher water temperatures, a larger width:depth ratio in streams, loss of hydrologic connectivity with historical floodplains, and loss of a wide variety of species, including native plants, benthic invertebrates, butterflies, fish, amphibians, and reptiles (Ripple and Beschta 2006).

The study concluded that removing a large carnivore from an ecosystem "appears to have [] profound effects on lower trophic levels, as well as multiple indicators of ecosystem status and native species abundance." (Ripple and Beschta 2006.) A similar study found that in Yosemite Valley—where mountain lions are largely absent due to high human presence—deer populations have expanded leading to a lack of oak recruitment and a decrease in biodiversity (Ripple and Beschta 2008). And their kills support disproportionately high levels of mammal, bird, and invertebrate diversity (Ruth and Elbroch 2014; Elbroch et al. 2017; Barry et al. 2019) and may even play a role in tree and other vegetation growth (Ruth and Elbroch 2014). In sum, extinction of Southern California and Central Coast mountain lions would result in degraded habitats and reduced abundance and diversity of other species, likely undermining the biological diversity, ecosystem function, and resilience of California's coastal regions.

3.5 Californians Derive Aesthetic, Recreational, and Economic Value from Southern California and Central Coast Mountain Lions

The people of California derive aesthetic, recreational, economic, spiritual, scientific, educational, and emotional value from Southern California and Central Coast mountain lions. For instance, the City of Los Angeles has designated October 22 as "P-22 day" to honor a young (and mate-less) male mountain lion that lives in Griffith Park and to acknowledge the importance of Southern California mountain lions to the region. Many people view mountain lions as a symbol of wildness and cherish landscapes that still are home to these predators. People from within and beyond the region choose to recreate, hike, bike, camp, fish, and hunt in California's wildlands in part because they enjoy exploring and sharing landscapes with mountain lions. And these activities are a significant economic driver for the state: A report commissioned for California State Parks found that direct outdoor recreation expenditures for Los Angeles, Southern California, the Central Coast and the San Francisco Bay Area totaled nearly $15 billion per year.[7] The Outdoor Industry Association concluded that outdoor recreation in California generates $92 billion of consumer spending annually and directly employs 691,000 Californians—more jobs than the wine and television industry combined.[8]

Mountain lions also provide an economic and social benefit because, by controlling deer populations, they reduce collisions between deer and automobiles. There are 1.2 million deer-vehicle collisions in the United States per year, incurring an estimated $1.66 billion in damages, 29,000 injuries, and 200 deaths (Gilbert et al. 2016). Impacts of deer-vehicle collisions are particularly severe in the eastern United States where white-tailed deer are overabundant. Gilbert et al. (2016) determined that if mountain lions recolonized the eastern United States, their presence would result in a 22 percent decline in deer-vehicle collisions over thirty years.

It is estimated that 7,000 to 23,000 wildlife vehicle collisions have occurred annually on California roads (Shilling et al. 2017; Shilling et al. 2018; State Farm Insurance Company 2016, 2018). These crashes result in human loss of life, injuries, emotional trauma, and property damages that can add up to $300-600 million per year (Shilling et al. 2018). If Southern California and Central Coast mountain lions became extinct, there would likely be a significant increase in deer-vehicle collisions in the region, along with associated human fatalities, injuries, and property damage.

An overabundance of deer in the eastern United States is also linked to an increase in ticks, which has led to increased incidences of Lyme disease among humans (Telford 2017; Côté et al. 2004). Lyme disease is now the most common vector-borne illness in the United States, with over 30,000 cases per year, primarily in the eastern United States.[9] Increases in deer abundance and attendant increases in ticks and tick-borne disease among humans would be

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[7] BBC Research & Consulting, *California Outdoor Recreation Economic Study: Statewide Contribution and Benefits* (2010), available at https://www.parks.ca.gov/pages/795/files/ca%20outdoor%20rec%20econ%20study-statewide%2011-10-11%20for%20posting.pdf.

[8] Outdoor Industry Association, *California Recreation Report*, available at https://outdoorindustry.org/wp-content/uploads/2017/07/OIA_RecEcoState_CA.pdf.

[9] Centers for Disease Control and Prevention, *Lyme Disease Data and Surveillance*, available at https://www.cdc.gov/lyme/datasurveillance/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Flyme%2Fstats%2Findex.html.

expected if Southern California and Central Coast mountain lions became extinct. Loss of Southern California and Central Coast mountain lions would have far-reaching effects not only on California's ecology, but also on public health and the region's economy.

Protection of Southern California and Central Coast mountain lions under CESA would confirm that this species is a vital member of our ecosystems which is worthy of protection. Conservation of these mountain lions would provide compelling evidence that large carnivores and abundant human populations can co-exist, even in densely populated landscapes (Benson et al. 2019).

4 Historical and Current Distribution

Mountain lions once had the most expansive range of any New World terrestrial mammal (Seidensticker 1991). They roamed most of the Americas (excluding most of Alaska and the northern areas of Canada) from approximately 50° N to 50°S latitude and could be found from sea level to about 4,000m elevation (Young and Goldman 1946, Pierce and Bleich 2003) in habitats varying from dense forests, to dry deserts, savannahs, and swamp lands.

Due to habitat loss and hunting after the arrival of European colonists, the mountain lion's current range has been reduced to one third of its historical range in North America (Figure 7) (Culver et al. 2000; Pierce and Bleich 2003). In the United States, the species' range has been reduced to 15 western states and a small remnant population in Florida (endangered Florida panthers [*Puma concolor coryi*]), with isolated animals occasionally appearing in additional states. Continued hunting pressure and changes in land management practices have pushed most populations into mountainous, relatively unpopulated areas, though isolated populations are known to occur in more urban areas (Currier 1983; Gustafson et al. 2018).

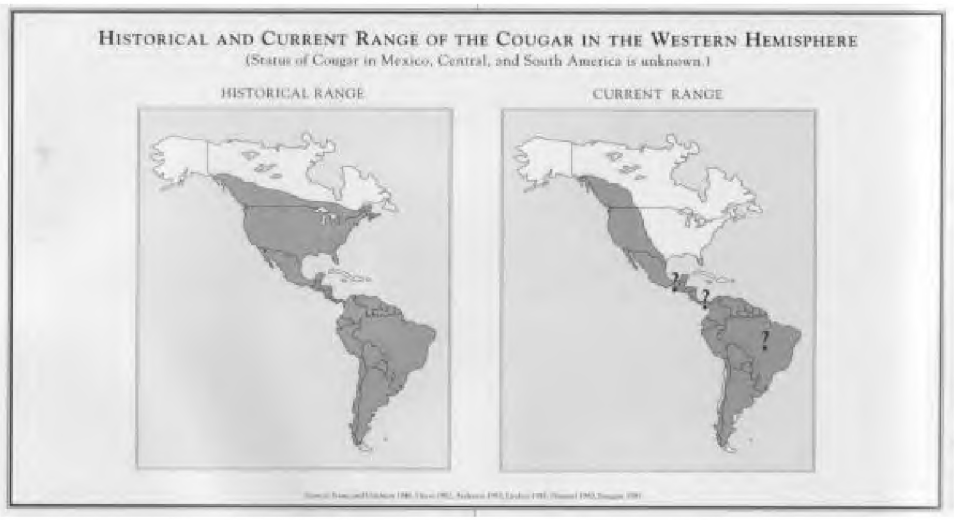

Figure 7. Historical and current range of mountain lions. Source: Hansen 1992.

In California, habitat fragmentation from roads and development has led to highly fragmented, divergent populations (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Gustafson et al. 2018). As mentioned in *Section 2.2 Taxonomy and Population Genetics*, nine genetically distinct populations have been identified within California

(Gustafson et al. 2018), with Southern California and Central Coast populations being the most constrained populations (and a tenth population centered in Nevada but extending slightly into California). Those located in highly urbanized areas of Southern California coastal mountain ranges, including the CC-S, SAM, and SGSB populations are especially restricted (Figure 8) (Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019).

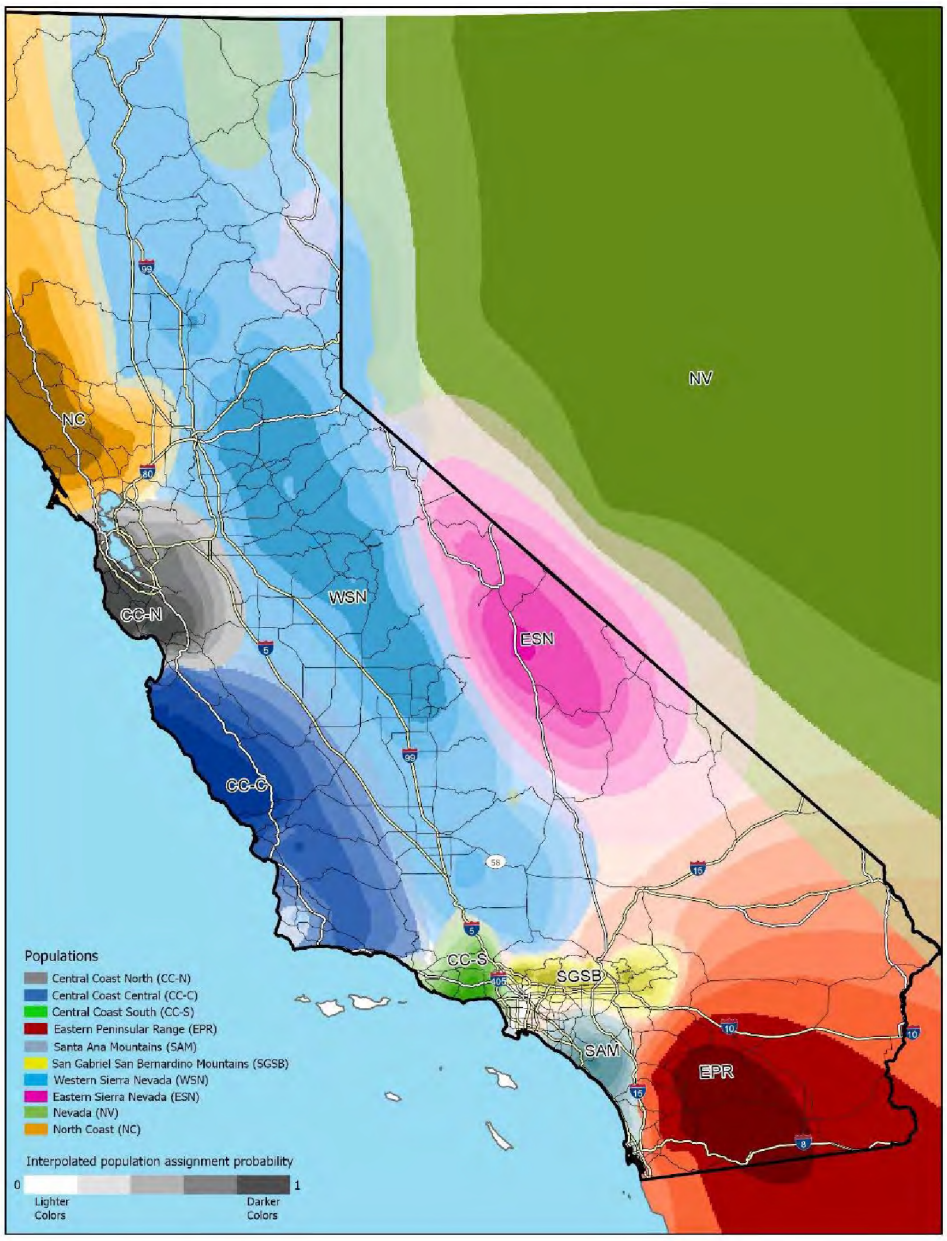

Figure 8. Map of genetically distinct mountain lion populations and major roads in California. The CC-S (which includes the Santa Monica Mountains), SGSB, and SAM populations are exceptionally constrained. The map is based on data collected from 1992-2016 (the division and status of these populations could change over time and with further research. Derived from Gustafson et al. (2018). Genetics data source: Kyle Gustafson, PhD, Department of Biology and Environmental Health, Missouri Southern State University, and Holly Ernest, DVM, PhD, Department of Veterinary Sciences, Program in Ecology, University of Wyoming, Laramie. Roads data source: ESRI.

4.1 Central Coast North (CC-N) Mountain Lion Population

The CC-N mountain lion population occurs mostly within the counties of Alameda, Contra Costa, San Mateo, Santa Clara, and Santa Cruz (Figure 8). The area is almost divided into two portions: an eastern half and a western half. The Santa Cruz Mountains make up the core area of the CC-N, bound by the Pacific Coast to the west, development lining the San Francisco Bay to the north and north west, and Highway 101 to the south. The eastern portion of the CC-N consists of various open space and nature preserves in the Berkeley Hills and Diablo Range bound by development lining the San Francisco Bay and Highway 101 and associated developments to the west, San Pablo Bay and Suisun Bay and associated developments to the north, I-5 to the east, and State Route 130 (SR-130) to the south. Interestingly, the CC-N seems almost bisected by the San Francisco Bay and Highway 101 and associated developments.

4.2 Central Coast Central (CC-C) Mountain Lion Population

The CC-C mountain lion population occurs mostly within the counties of Monterey, San Benito, San Luis Obispo, and Santa Barbara. The area encompasses the central and southern portions of the Southern Coast Ranges, including the Santa Lucia Range, Sierra de Salinas, the Temblor Range, and the Sierra Madre Mountains. It is bound by the Pacific Ocean to the west, Highway 101 and SR-156 and associated development to the north, the I-5 and San Joaquin Valley to the east, and SR-126 and associated developments to the south (Figure 8).

4.3 Central Coast South (CC-S) Mountain Lion Population

The CC-S mountain lion population is limited to the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in Ventura and Los Angeles Counties (Figure 8). The Santa Monica Mountains population has the isolated area with about 660 km^2 within the Santa Monica Mountains National Recreation Area (Riley et al. 2014). The Pacific Ocean lies to the south while the cities of Oxnard, Thousand Oaks, San Fernando Valley, Los Angeles, and Santa Monica and major freeways including Highway 101, Interstate 5 (I-5) and Interstate 405 surround the area and create major movement barriers.

The Simi Hills is a smaller area of open space located north of the Santa Monica Mountains; the areas are bisected by Highway 101. This open space is mostly surrounded by development, including Simi Valley to the northwest, Thousand Oaks to the west, Agoura Hills to the southwest, Calabasas to the southeast, and Woodland Hills, Canoga Park, and Chatsworth to the east.

The Santa Susana Mountains are located north of the Santa Monica Mountains and Simi Hills. The area is generally bordered by freeways and the edges of development and agriculture. SR-118 borders the south and southwest, SR-126 borders the north and northwest, and I-5 borders the east.

4.4 San Gabriel/San Bernardino Mountains (SGSB) Mountain Lion Population

The SGSB mountain lion population occurs within the Transverse Ranges located northwest of the City of Los Angeles within Los Angeles, Kern, and San Bernardino Counties (Figure 8). The western and southern boundaries of the San Gabriel and San Bernardino Mountains are lined with urban developments and major freeways, including the San Fernando Valley, cities of San Bernardino, Rancho Cucamonga, and West Covina, and the I-5, I-210, and I-10 freeways. The northern and eastern boundaries of the area are abutted by agriculture, suburban development, high desert, and roads.

4.5 Santa Ana Mountains (SAM) Mountain Lion Population

The SAM mountain lion population inhabits about 1,533km^2 of undeveloped areas of the SAM within Orange, Riverside, and San Diego Counties (Beier and Barrett 1993; Benson et al. 2019). The area is mostly bound by major freeways and development (Figure 8). SR-241 creates the western boundary, SR-91 borders the northwest boundary, I-5 creates the eastern boundary, and agriculture and development border the southern extent. The closest intact habitat known to be used by other mountain lions is to the east/southeast, in the Peninsular Ranges.

4.6 Eastern Peninsular Range (EPR) Mountain Lion Population

The EPR mountain lion population occurs in mountain ranges east of the SAM and south of the San Bernardino Mountains. The EPR is a predominantly north to south range that runs through San Diego, Riverside, and Imperial Counties and the California-Mexico border. They include the San Jacinto, Laguna, and San Ysidro Mountains in California and continue south into the mountain ranges of Baja California, Mexico. The western boundary of the EPR population is lined with roads and urban development, including areas around the cities of Escondido, San Diego, and Chula Vista. Studies regarding the northern, southern, and eastern extent of the population are limited; however, movement patterns documented by Vickers et al. (2015) and Vickers et al. (2017) between 2001 and 2016 suggest that EPR mountain lions generally stay north of the U.S. – Mexico border, along the edges of the desert that borders the east side of the EPR, and south of I-10. Although the EPR population has been found to be largely disconnected from all other California populations, some mountain lion movement was documented traversing between the EPR and SGSB (Vickers et al. 2015), which would have occurred at the northern boundary of the EPR, and there is evidence of limited genetic exchange between the two populations (Gustafson et al. 2018). In addition, one young male mountain lion was documented to the south using the Parque-to-Park Linkage to cross the US-Mexico border several times (where the terrain is too rugged to install a border wall), but he was eventually killed in Mexico in a collision with a vehicle (Vickers et al. 2015; W. Vickers *unpublished data*). Little is known about the mountain lions south of the border, but the movement patterns of EPR mountain lions suggest that they may form a discrete population within the EPR north of the US-Mexico border (Vickers et al. 2015; Vickers et al. 2017).

5 Abundance and Population Trends

According to the International Union for Conservation of Nature (IUCN), mountain lion populations are decreasing throughout their remaining range (Nielsen et al. 2015). Mountain lion population densities are generally low, which may be driven by prey density, competition between males for access to females, and mutual avoidance (Pierce and Bleich 2003). In the United States, population densities for mountain lions have been found to range from 0.4 to 4.3 resident adults per 100km^2 and 0.4 to 7.1 total mountain lions per 100km^2, though it varies by population and the presence of human-induced pressures (*e.g.*, hunting) (Pierce and Bleich 2003). In California, where hunting has been outlawed but other anthropogenic pressures such as roads and development are present, resident adult and total population densities have been found to be 1.1 and 3.6 per 100 km^2, respectively (Pierce and Bleich 2003). Adult sex ratio has been reported to be about 2-3:1 in favor of females (Hornocker 1970; Seidensticker et al. 1973; Beier 1993; Santa Cruz Puma Project 2015). These low population densities and female-biased sex ratios further highlight the species' need for expansive, connected, heterogeneous habitats to support viable populations.

It has been estimated that 4,000 to 6,000 adult mountain lions roam California (Mansfield and Weaver 1989). However, CDFW acknowledges that this estimate from 1984 is outdated and relied on density estimates from regional studies to derive a statewide abundance. The agency has since declared that the number of mountain lions throughout the state is unknown, and they have embarked on an intensive statewide research project to better understand mountain lion numbers regionally and throughout the state.[10] Working with other agencies, academic institutions, and non-profits, CDFW plans to have statewide and region-specific mountain lion population estimates by 2022 (Vaughan 2018).

As mentioned in *Section 2.2 Taxonomy and Population Genetics*, one way in which the abundance of mountain lions can be estimated is with the ratio of effective to total adult population size (N_e/N) of 0.25 to 0.5, as was used by USFWS to generate an abundance estimate for the endangered Florida panther (Ballou et al. 1989; USFWS 2008). Using this method with the estimated effective population sizes of the nine genetically distinct mountain lion populations centered in California from Gustafson et al. (2018) and Benson et al. (2019), the statewide total population would be 818 to 1,634 individuals (255 to 510 in the Central Coast and Southern California populations [Table 1], and 563 to 1,124 in the remaining Eastern Sierra Nevada, Western Sierra Nevada, and North Coast populations), which is much lower than the 4,000 to 6,000 estimate. This is also well below the recommended minimum viable population size of at least 5,000 adult individuals for the long-term persistence of a population (Frankham 1995; Reed et al. 2003; Traill et al. 2010). Petitioners recognize that the N_e/N methodology has limitations and is but one method of generating an overall abundance estimate. More studies are needed to determine regional and statewide mountain lion abundance, including CDFW's ongoing efforts which should produce a more scientifically robust statewide abundance estimate.

[10] CDFW 2018 - Commonly Asked Questions About Mountain Lions. Accessed on 11 April 2019 at: https://www.wildlife.ca.gov/Conservation/Mammals/Mountain-Lion/FAQ#359951241-how-many-mountain-lions-are-in-california

Despite unknown statewide population estimates, researchers have been closely tracking several of the Central Coast and Southern California populations. Through their published studies and reports they provide some insights regarding abundance and population trends for these populations.

5.1 Central Coast North (CC-N) Mountain Lion Population

Studies on the CC-N mountain lion population are limited, and abundance and population trends are unknown. However, with an effective population size of 16.6 (Gustafson et al. 2018), and an N_e/N of 0.25 to 0.5 (Ballou et al. 1989; USFWS 2008), the estimated total adult population would be 33 to 66 individuals (see Table 1). As mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, these numbers are grossly insufficient to prevent inbreeding depression in the short term or maintain evolutionary potential in the long term (Jamieson and Allendorf 2012; Frankham et al. 2014).

Gustafson et al. (2018) found that this population has low genetic diversity and a low effective population size, which suggests that it is at increased risk of inbreeding depression within five generations and eventual extinction. Ongoing studies in the Santa Cruz Mountains highlight high levels of human-caused mortalities. Depredation kills are the leading cause of death in collared mountain lions in the Santa Cruz Mountains (Wang et al. 2017), and CDFW reported 34 depredation kills between 2010 and 2016 in the CC-N counties of Alameda, Contra Costa, San Mateo, Santa Clara, and Santa Cruz (see Appendix A[11]). In addition, at least six mountain lions have been killed by vehicle strikes on Highway 17 in the Santa Cruz Mountains between 2008 and 2018 (Midpensinsula Regional Open Space 2017; Slade 2018) and news outlets reported at least three mountain lions killed by vehicle strikes on the I-280 in San Mateo County between 2014 and 2016 (Wilmers 2014, CBS SF 2015, Kamala 2016). The poor genetic health of the CC-N population is likely due to habitat fragmentation and isolation caused by roads and development combined with high levels of human-caused mortalities. CDFW has identified the Santa Cruz Mountains population as at risk due to current habitat and genetic concerns, at-risk internal habitat and connectivity, limited external connectivity, and lack of protected habitat (Dellinger 2019). Poor connectivity and continued development in the CC-N will likely lead to further isolation, increased human-caused mortalities, decreased genetic diversity, and increased risk of extinction in the foreseeable future.

5.2 Central Coast Central (CC-C) Mountain Lion Population

Studies on the CC-C mountain lion population are limited, and abundance and population trends are unknown. However, with an effective population size of 56.6 (Gustafson et al. 2018), and an N_e/N of 0.25 to 0.5 (Ballou et al. 1989; USFWS 2008), the estimated total adult population would be 113 to 226 individuals (see Table 1).

Although Gustafson et al. (2018) found that this population has intermediate levels of genetic diversity and the highest effective population size among the Central Coast and Southern

[11] These data were downloaded from the CDFW website; however, they no longer appear to be available online. These numbers have been shown to be low by a factor of two in some areas, likely due to incomplete reporting, and therefore should be considered absolute minimums (W. Vickers, *pers comm*).

California mountain lion populations, with an effective population size of 56.6, it just barely exceeds the older standard of 50 to prevent inbreeding depression in the short-term (Frankham et al. 2014; Gustafson et al. 2018). In addition, it falls well below the recommended newer standard of 100 and is insufficient for the long-term viability of the population (Frankham et al. 2014). And the lack of sufficient protected lands and high rates of development in the area threaten the persistence of this population (Dellinger 2019). Thus, although the CC-C population appears to be the healthiest population in the Central Coast and Southern California, it is still at increased risk of inbreeding depression and extinction, and connectivity to smaller adjacent areas should be improved (Dellinger 2019).

5.3 Central Coast South (CC-S) Mountain Lion Population

The NPS has been studying the CC-S population since 2002, though most studies regarding population dynamics focus on the Santa Monica Mountains mountain lions (Riley et al. 2014; Benson et al. 2019). Since 2002, NPS has collected data from 55 mountain lions within the Santa Monica Mountains and 19 mountain lions from the Simi Hills and Santa Susana Mountains.[12] There are currently 20-25 live mountain lions being tracked in the Santa Monica Mountains, 7-12 of which are adults (born in 2014 or earlier, the status of 5 adults are unknown) and 13 of which are juveniles or subadults (born in 2015 or later).[13] Given that the Santa Monica Mountains area is relatively small, adult survival rate is high (≥ 75%), and juvenile/subadult survival is low due to intraspecific strife and the inability to disperse, the Santa Monica Mountains population is likely space-limited and these numbers may represent the Santa Monica Mountains' carrying capacity (Riley et al. 2014; Benson et al. 2019). As mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, the extremely low effective population size and total adult population size are grossly insufficient to prevent inbreeding depression in the short term or maintain evolutionary potential in the long term (Jamieson and Allendorf 2012; Frankham et al. 2014). And CDFW has identified the CC-S population as at risk due to current habitat and genetic concerns, at-risk internal habitat and connectivity, limited external connectivity, and lack of protected habitat (Dellinger 2019).

The long-term survival of the Santa Monica Mountains population is severely threatened due to extreme habitat fragmentation and isolation caused by surrounding roads and development that impede movement in or out of the area (Riley et al. 2014). Limited space and lack of connectivity with suitable mountain lion habitat inhibit dispersal for subadults and likely drive unusually high levels of intraspecific strife, which is the most common cause of mortalities in the

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[12] The NPS provides puma profiles (last updated August-November 2018) of the marked animals (*i.e.*, tagged or radio-collared) they have been studying in the CC-S, which includes those studied in Riley et al. (2014). Some data presented in this section take these data into account. Accessed on 3 April 2019 at: https://www.nps.gov/samo/learn/nature/puma-profiles.htm.

[13] The adult population in the Santa Monica Mountains is generally consistent with the estimated 0.25 to 0.5 N_e/N; the Santa Monica Mountains was estimated to have an effective population size of four (Benson et al. 2019), which would suggest a total adult population size of 8 to 16. Interestingly, Gustafson et al. (2018) estimated an effective population size of 2.7 for the greater CC-S population, which would indicate a total adult population of 5 to 10 individuals throughout the Santa Monica Mountains, Simi Hills, and Santa Susana Mountains (see Table 1). There are currently 10 to 17 adult mountain lions being tracked throughout the CC-S area, which would put their N_e/N ratio at 0.16 to 0.27, which is still within the range of other species' N_e/N ratios (Frankham et al. 1995; Ballou et al. 1989; Mace and Lande 1991; Spong et al. 2000; Laundré and Clark 2003).

area (Riley et al. 2014). Although intraspecific strife is known to occur among mountain lions, there have been multiple cases of aggressive adult males killing their siblings, female offspring, and previous mates documented in the Santa Monica Mountains population, and researchers noted that "clearly this is rarely a sound evolutionary strategy as the survivorship of offspring or siblings is traded against the probability of future reproduction" (Riley et al. 2014). For 23 radio-collared individuals within the Santa Monica Mountains for which the cause of death is known, nine deaths were the result of instraspecific strife. Eight of the nine deaths (89%) were of animals less than four years old. In addition, three uncollared mountain lions in the Santa Monica Mountains less than four years old were found dead by intraspecific strife, which brings the total to 12 deaths by intraspecific strife documented in the Santa Monica Mountains between 2002 and 2018.

Although all subadult males and half of subadult females typically disperse from their natal areas (Logan and Sweanor 2010), only one subadult successfully dispersed from the Santa Monica Mountains between 2002 to 2012 – P-22, the famous male mountain lion who successfully crossed Highway 101 and I-405 freeways and established his home range in Griffith Park (Riley et al. 2014). Unfortunately, P-22 is extremely isolated with the smallest home range ever reported for an adult male ($26km^2$), and he has not had any opportunities to mate (Riley et al. 2014). In addition, vehicle strikes account for 17% (4/23) of known radio-collared mountain lion deaths in the Santa Monica Mountains. According to the NPS, most males in the Santa Monica Mountains do not live past the age of two. Thus, many healthy, young animals are not able to disperse from the Santa Monica Mountains, establish their own home ranges, and successfully reproduce.

Conversely, lack of connectivity also inhibits migrants coming from outside the Santa Monica Mountains and contributing to the population's gene pool. Only two outside mountain lions have been known to immigrate into the Santa Monica Mountains since 2002: P12 (from Simi Hills, alive as of August 2018, age 12) and P45 (from north of Highway 101, status unknown, age would be 6-7 if alive). While there has been no sign of P-45 since February, 2019 and no offspring from him have been detected, P-12 has been fairly prolific in the Santa Monica Mountains, fathering at least eight litters. Although P-12's appearance initially improved genetic diversity in the Santa Monica Mountains population, consistent immigration in small populations is needed so that the genetic diversity gains of immigrant mountain lions are not lost (Riley et al. 2014; Benson et al. 2016a; Benson et al. 2019). Subsequent inbreeding by P-12 with his daughters and granddaughters and inbreeding already occurring with other breeding adults in the Santa Monica Mountains have led to dangerously low genetic diversity (Riley et al. 2014; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019). With continued isolation, inbreeding, and loss of genetic diversity, there is increasing risk of inbreeding depression and extinction. With inbreeding depression, the probability of extinction within 50 years is predicted to be 99.7 %, with a median time to extinction of 15.1 years (Benson et al. 2016a; Benson et al. 2019).

5.4 Santa Ana Mountains (SAM) Population

Restricted habitat availability and high mortality rates in the SAM likely limits population size, and Benson et al. (2019) estimated that the SAM population is likely comprised of 16 adults and 13 juveniles (kittens and subadults). These numbers are slightly lower than the 31 to 62 adult mountain lions estimated from the SAM population's effective population size of 15.6 (Gustafson et al. 2018) (see Table 1). According to (Benson et al. 2019), high levels of human-caused adult mortalities may limit growth potential in the SAM, and it is uncertain if the population could be larger without as many anthropogenic pressures. In fact, although hunting is illegal in California, mountain lions in Southern California have a lower annual survival than many hunted populations (Vickers 2014). Interestingly, other studies calculated a much lower effective population size of 5.1 (Ernest et al. 2014) and four (Benson et al. 2019), which would align with the suggested carrying capacity. Regardless of which effective population size is used, they are all well below the frequently-used threshold of 50 and insufficient to prevent inbreeding depression in the short-term.

Although population trends are unclear, two long-term studies on radio-collared mountain lions in the SAM provide some insight (Beier 1993; Vickers et al. 2015). In a study that consisted of 32 radio-collared animals in the SAM from 1988 to 1993, researchers found a 75% adult survival rate (Beier and Barrett 1993), which is similar to adult survival rates in other populations, like the CC-S population (Riley et al. 2014). However, in a second, more recent study conducted in the area consisting of 31 marked mountain lions from 2001 to 2013, researchers found a 56.5% survival rate across all sexes and age groups (Vickers et al. 2015). The marked decrease in adult survival rate between the two studies coincides with an increase in the proportion of mortalities caused by vehicle strikes, with the 1988-1993 and the 2001-2013 studies resulting in 32% (10/31) and 46% (6/13) of deaths caused by vehicle strikes, respectively (Beier 1993; Vickers et al. 2015). It also parallels an upward trend of mountain lion mortalities caused by vehicle strikes throughout Southern California over time (Vickers et al. 2015). Other causes of death in the SAM population included depredation kills, illegal killing, disease, intraspecific strife, and human-caused wildfires (Beier and Barrett 1993; Vickers et al. 2015). Depredation kills were found to be 3.4 times more likely with males compared to females (Vickers et al. 2015).

The SAM mountain lion population's high adult mortality rates combined with isolation, small size, low genetic diversity, low effective population size, and limited immigration of new individuals cause demographic instability and put the population at high risk of extinction (Beier 1993; Beier and Barrett 1993; Ernest et al. 2014; Vickers et al. 2015; Gustafson et al. 2017; Gustafson et al. 2018; Benson et al. 2019). As mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, the extremely low effective population size and total adult population size are insufficient to prevent inbreeding depression in the short term or maintain evolutionary potential in the long term (Jamieson and Allendorf 2012; Frankham et al. 2014). Roads and development prevent dispersal and sustained immigration in the SAM, and lack of consistent gene flow has led to high levels of inter-relatedness and inbreeding (Ernest et al. 2014; Gustafson et al. 2017; Gustafson et al. 2018; Benson et al. 2019). Further genetic erosion is likely without improved connectivity to facilitate immigration (Benson et al. 2019). CDFW has identified the SAM population as at risk due to current habitat and genetic concerns, at-risk internal habitat and

connectivity, limited external connectivity, and lack of protected habitat (Dellinger 2019). If inbreeding depression occurs within this population, population growth will likely decline and the probability of extinction within 50 years is predicted to be 100%, with a median time to extinction of 11.7 years (Benson et al. 2019).

In 13 years, only one radio-collared individual crossed I-15, the major barrier between the SAM and the EPR, and that animal was killed 25 days after his crossing for depredating domestic sheep (Vickers et al. 2015). And although Gustafson et al. (2017) documented three males immigrating into the SAM from the EPR and four males emigrating from the SAM to the EPR over a 15-year period, only one of the males (M86, an immigrant to the SAM) is known to have successfully bred. While M86 improved the SAM population's genetic diversity (Gustafson et al. 2017), high levels of mortalities due to vehicle strikes and depredation/illegal killings likely reduce the number of immigrants that can successfully establish as breeding adults (Vickers et al. 2015). With high levels of adult mortalities due to vehicle strikes, depredation kills affecting 3.4 times more males than females, and a small population with a female-biased adult sex ratio, there is potential for occasional male extinction in the SAM, which could severely limit the short- and long-term viability of the population (Beier and Barrett 1993; Benson et al. 2019).

5.5 San Gabriel/San Bernardino Mountains (SGSB) Population

Studies on the SGSB mountain lion population are limited, and the abundance and population trends are unknown. However, with an effective population size of 5 (Gustafson et al. 2018), and an N_e/N of 0.25 to 0.5 (Ballou et al. 1989; USFWS 2008), the estimated total adult population would be 10 to 20 individuals (see Table 1). As mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, these numbers are grossly insufficient to prevent inbreeding depression in the short term or maintain evolutionary potential in the long term (Jamieson and Allendorf 2012; Frankham et al. 2014). And CDFW has identified the SGSB population as at risk due to current habitat and genetic concerns, at-risk internal habitat and connectivity, limited external connectivity, and lack of protected habitat (Dellinger 2019).

Although a population viability study has not been conducted for the SGSB population, given its low genetic diversity, low effective population size, and patterns of isolation due to roads and development creating movement barriers (Gustafson et al. 2018), the SGSB mountain lion population likely has high risk of inbreeding depression and extinction. The loss of this population could undermine genetic connectivity for mountain lions statewide because the SGSB population, along with the Tehachapi and Sierra Pelona Mountains, represents a critical linkage between mountain lion populations in the northern and southern mountain ranges of California (Gustafson et al. 2018). Restoration and enhancement of connectivity in the SGSB and surrounding mountain ranges are key for the continued survival of the SGSB population as well as all of the Central Coast and Southern California mountain lion populations.

5.6 Eastern Peninsular Range (EPR) Population

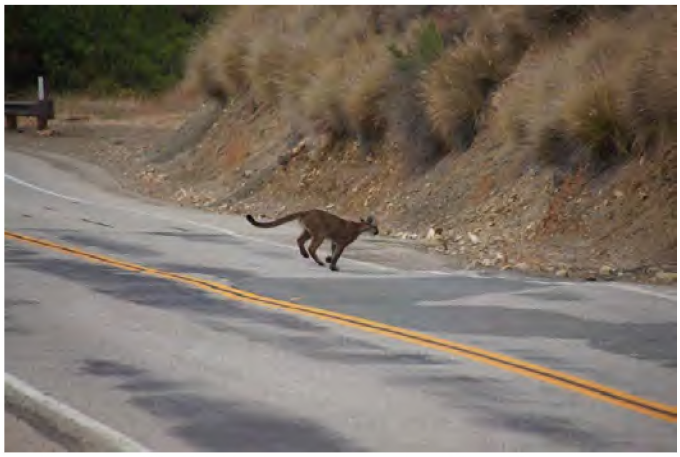
Studies on the EPR mountain lion population are limited and the abundance and population trends are unknown. However, with an effective population size of 31.6 (Benson et al. 2019), and an N_e/N of 0.25 to 0.5 (Ballou et al. 1989; USFWS 2008), the estimated total adult

population would be 63 to 126 individuals (see Table 1). As mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, these numbers are insufficient to prevent inbreeding depression in the short term or maintain evolutionary potential in the long term (Jamieson and Allendorf 2012; Frankham et al. 2014).

Vickers et al. (2015) followed 43 marked mountain lions in the EPR from 2001 to 2013, and their study provides some insight regarding survival rate and causes of mortality. Annual survival rate was found to be 55.4% in the EPR, which is similar to the SAM population (Vickers et al. 2015). The primary causes of death of marked mountain lions were depredation kills (26% [6/23]) and vehicle strikes (17% [4/23]). When assessing mountain lion death data from CDFW from 1981 to 2013, depredation and vehicle strikes accounted for about 70% of mountain lion deaths in the EPR: 40% (62/154) by depredation kills and 30% (46/154) by vehicle strikes (Vickers et al. 2015).

Although the EPR population was found to have the highest genetic diversity and effective population size among the Southern California mountain lion populations (Gustafson et al. 2018), movement and genetic studies have shown that the EPR population is largely disconnected from all other California populations (Ernest et al. 2014; Vickers et al. 2015; Vickers et al. 2017; Gustafson et al. 2018). And CDFW has identified the EPR population as at risk due to current habitat and genetic concerns, at-risk internal habitat and connectivity, limited external connectivity, and lack of protected habitat (Dellinger 2019). Thus, high human-caused mortality rates combined with continued development in San Diego, Riverside, and Imperial Counties could lead to further isolation, decreased genetic diversity, increased inbreeding depression, and increased risk of extinction.

6 Factors Affecting Ability to Survive and Reproduce



Female mountain lion, P-23, crossing a road in the Santa Monica Mountains. She was struck by a vehicle and found dead near Malibu Canyon Road in January 2018. Photo: NPS

Most, if not all, factors affecting the ability of the Southern California and Central Coast mountain lion populations to survive and reproduce are caused by humans. Lack of wildlife connectivity is the primary driver of their potential demise. Habitat loss and fragmentation due to roads and development have led to extreme levels of isolation and high mortality rates, which are driving these populations towards extinction. Continued development in current suitable

mountain lion habitat further threatens these populations. With low genetic diversity and high risk of inbreeding depression due to genetic isolation, vehicle strikes on roads, increased conflicts with humans that lead to depredation kills, high levels of intraspecific strife likely due to limited space and lack of connectivity, rodenticide and other environmental toxicant poisoning, and impacts of more frequent wildfires and climate change, Southern California and Central Coast mountain lions will likely not persist unless there is a concerted effort to restore and enhance functional connectivity between populations and large blocks of heterogeneous habitats.

The populations in Southern California are especially vulnerable to extinction, which is reflected in a 2005 review conducted by the US Forest Service regarding Land Management Plans in the National Forests of Southern California that states the "greatest concern for the long-term health of mountain lion populations on the national forests of southern California is loss of landscape connectivity between mountain ranges and large blocks of open space on private land."[14] The review emphasizes that continued development along with new and wider roads degrade habitat linkages and create movement barriers, and "[w]ithout the national forests and linkages between the mountain ranges and other large habitat preserves, there is not much long term potential for mountain lions in southern California."

Ultimately, the persistence of mountain lions in the Central Coast and Southern California requires maintenance and restoration of connectivity between subpopulations and adequate habitat. The extreme isolation, dangerously low genetic diversity, high levels of inbreeding, and high rates of human-caused mortalities (*e.g.*, vehicle strikes, depredation kills, intra-specific strife due to limited space, rodenticide poisoning, etc.) underscore the urgent need for proactive measures to enhance connectivity (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2017; Benson et al. 2019).



Male mountain lion M110 in San Diego County was euthanized by a CDFW warden because he was severely injured and for stated public safety concerns (he was found in a neighborhood close to homes). This occurred days after he was illegally shot by a livestock owner (open wound on right flank). Necropsy results indicated he had two broken legs consistent with a vehicle strike and four different compounds of anticoagulant rodenticides in his blood. Had he not been euthanized, he likely would have died from starvation due to his injuries. Source: Vickers (2014).

[14] Forest Service, U.S. Department of Agriculture, *Final Environmental Impact Statement, Land Management Plans, Angeles National Forest Cleveland National Forest Los Padres National Forest San Bernardino National Forest* (Sept. 2005), available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166889.pdf.

Measures to conserve core habitat areas and functional wildlife corridors, like the recently adopted Habitat Connectivity and Wildlife Movement Ordinances in Ventura County,[15] are vital to the preservation of Central Coast and Southern California mountain lion populations, but just protecting land is not enough to ensure their survival. Conserving natural habitats on both sides of freeways and constructing effective crossing infrastructure (*e.g.*, culverts, underpasses, vegetated overpasses, and exclusionary fencing) at existing roads and barriers would facilitate movement and gene flow while reducing mortalities due to vehicle strikes (Riley et al. 2014; Vickers et al. 2015; Benson et al. 2019). Promoting wider implementation of predator-proof enclosures for domestic animals would further reduce human-caused mortalities by limiting opportunities for potential conflict and reducing the use of depredation permits (Vickers et al. 2015). In addition, changes in depredation permit policy could further reduce mortalities. For example, CDFW adopted a new depredation permit policy based on a 2017 bulletin for mountain lions in the CC-S and SAM areas, which requires affirmative non-lethal alternatives and improved husbandry before kill permits are issued when mountain lion depredations occur in those areas (CDFW 2017; see *Section 8.1.1 CDFW Departmental Bulletins*). Expanding these policies in conjunction with enforceable implementation and reporting requirements across the state, or at least into the SGSB, EPR, CC-N, and CC-C, population areas, would reduce mortalities from this source. Prohibiting the use of second-generation anticoagulants, rodenticides, and other environmental toxicants in California (*i.e.*, with AB 1788, sponsored by Assembly Member Richard Bloom in 2019) would even further reduce human-caused mortalities of mountain lions, as toxicants bioaccumulate up the food chain and can kill mountain lions or weaken their immune systems and make them more susceptible to disease or more vulnerable to conspecifics (Riley et al. 2003; Riley et al. 2007; Serieys et al. 2015). A combination of habitat conservation, implementation of effective road/barrier crossing infrastructure, and outreach and education to property owners and owners of domestic animals combined with depredation permit policy change could save these populations from extinction (Vickers et al. 2015).

6.1 Low Genetic Diversity and Inbreeding Depression

As detailed in *Section 2.2 Taxonomy and Population Genetics* and *Section 5.0 Abundance and Population Trends*, inbreeding is a serious threat to the persistence of the Central Coast and Southern California mountain lion populations. Inbreeding depression, loss of genetic diversity, and accumulation of deleterious mutations can lead to elevated extinction risk due to reduced reproductive fitness and evolutionary potential (*i.e.*, the ability to adapt to change) (Spielman et al. 2004; Frankham 2005; Traill et al. 2010). Decades of isolation due to roads and development fragmenting habitat and limiting connectivity has led to low genetic diversity and effective population sizes, high levels of inter-relatedness, and dangerous levels of inbreeding, especially in the CC-S, SAM, SGSB, and CC-N populations (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Gustafson et al. 2017; Gustafson et al. 2018; Benson et al. 2019). Although demographic and environmental stochasticity (*e.g.*, a disease outbreak, wildfire, drought or flooding) can increase risk of extinction, especially in small populations, inbreeding has also been shown to be an indicator of extinction risk and may impact how populations are able to respond to stochastic events (Frankham and Ralls 1998). In addition, endangered species

[15] More information regarding the Habitat Connectivity and Wildlife Movement Ordinances available at: https://vcrma.org/habitat-connectivity-and-wildlife-movement-corridors

tend to have lower genetic diversity than non-endangered species, which suggests that inbreeding and low genetic variation may have an important role in a species' risk of extinction (Frankham and Ralls 1998). Thus, genetic factors should be considered when assessing the status of these populations.

The CC-S, SAM, SGSB, and CC-N populations have been found to have low genetic diversity, with the SAM population's genetic variation nearly as low as the endangered Florida panther's (*Puma concolor coryi*) (Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2017). And, as mentioned previously in *Section 2.2 Taxonomy and Population Genetics*, the CC-S, SGSB, SAM, CC-N, and EPR populations have effective population sizes well below the older and less conservative threshold of 50, while the CC-C population's effective population size is just barely above that threshold at $N_e = 56.6$ (Ernest et al. 2014; Riley et al. 2014; Benson et al. 2016a; Gustafson et al. 2018; Benson et al. 2019). These numbers suggest that inbreeding depression could occur within the short-term (over the duration of five generations) and these populations are at increased risk of extinction.

Without improved connectivity, the SAM and Santa Monica Mountains (within the CC-S) populations are predicted to experience continued genetic erosion and losses in heterozygosity of 28-49% and 40-57%, respectively, within 50 years (Benson et al. 2016a; Benson et al. 2019). This could lead to inbreeding depression, which could cause reduced fitness in a variety of ways. In Florida panthers, inbreeding depression led to reproductive issues (*e.g.*, poor sperm quality, low testosterone levels, poor fecundity and recruitment, failure of testes to descend), increased susceptibility to parasites and disease, and physical issues (*e.g.*, atrial septal defect, a deadly congenital heart defect; kinked tails) (Roelke et al. 1993; Johnson et al. 2010). Suffering from shrinking, fragmented habitats, high mortality rates from hunting, and inbreeding depression, the Florida panther population declined to less than 30 individuals, and genetic restoration via the translocation of eight female mountain lions from Texas (*Puma concolor stanleyana*) was needed to prevent their extinction (Johnson et al. 2010).

The SAM and CC-S populations are severely constrained in fragmented habitats with similar numbers as the Florida panther population prior to genetic rescue (Beier and Barrett 1993; Johnson et al. 2010; Riley et al. 2014; Vickers et al. 2015). Although the fragmented populations appear to be stable, high levels of inbreeding have been documented in the Santa Monica Mountains (Riley et al. 2014) and evidence of inbreeding depression (*i.e.*, low genetic diversity and kinked tails) has been observed in the SAM (Ernest et al. 2014). If these populations remain isolated, they will inevitably have the same fate as the Florida panthers. Researchers predict that with inbreeding depression, the SAM and Santa Monica Mountains populations have a 100% and 99.7% chance of becoming extinct within 50 years, with median time to extinction of 11.7 and 15.1 years, respectively (Benson et al. 2019).

The SGSB population was also found to have low genetic diversity and effective population size (Gustafson et al. 2018), which suggests that the population experienced a prior genetic bottleneck and inbreeding is likely. Although genetic studies on this population are limited, it is clear that continued development in and around the SGSB will further isolate the population and lead to more inbreeding and even lower genetic diversity, which will drive the population faster towards extinction. It is important to note that despite only limited gene flow

between the SGSB population and the Western Sierra Nevada, CC-C, and the EPR (Gustafson et al. 2018), this population represents a critical linkage between mountain lion populations in the northern and southern mountain ranges of California. Restoration and enhancement of connectivity is key for the continued survival of the SGSB population as well as all of the other the Central Coast and Southern California mountain lion populations.

Gustafson et al. (2018) found that the EPR population also exhibits a prior genetic bottleneck. The EPR population was found to be largely disconnected from all the other California populations, with limited gene flow and low connectivity with the SAM and SGSB populations (Gustafson et al. 2018). Movement patterns and genetics indicate potential isolation from other populations (Vickers et al. 2015; Gustafson et al. 2017; Gustafson et al. 2018), and continued development in these areas will likely lead to further isolation, genetic drift, and risk of extinction similar to what is being observed in the CC-S, SAM, and SGSB populations.

Although genetic studies are limited for the CC-N population, it was found to have low genetic diversity and low effective population size (Gustafson et al. 2018), which forewarns of inbreeding depression and increased risk of extinction. CDFW has identified the Santa Cruz Mountains mountain lion population, which occurs within the CC-N area, as vulnerable to decline and extinction due to fragmentation from roads and development as well as lack of protected habitat (Dellinger 2019).

Studies suggest that one immigrant every 1-2 years would reduce extinction risk in the SAM and Santa Monica Mountains populations (Beier and Barrett 1993; Gustafson et al. 2017; Benson et al. 2019). This may apply to the other populations with low genetic diversity and effective population size (Gustafson et al. 2018). Increasing connectivity throughout the Central Coast and Southern California would address issues of inbreeding by facilitating movement between populations, increasing effective population size, and reducing high mortality rates driven by vehicle strikes and depredation. Thus, proactive measures to effectively restore and enhance connectivity are needed to minimize risk of inbreeding depression and extinction in Central Coast and Southern California populations.

6.2 Vehicle Strikes

In California, an estimated 100 mountain lions are killed every year by vehicle strikes (Pollard 2016). In the Central Coast and Southern California, vehicle strikes represent a significant threat to the persistence of mountain lion populations, though Southern California has more documentation regarding this issue. The number of mortalities caused by vehicle strikes has been increasing in Southern California since the 1980s, and vehicle strikes account for a high proportion of deaths in mountain lions in the SAM, CC-S, and EPR (Beier and Barrett 1993; Riley et al. 2014; Vickers et al. 2015:Vickers et al. 2017). From 1981 to 2013 vehicle strikes accounted for 53% (50/94) of mountain lion deaths in the SAM and 30% of mountain lion deaths in the EPR (46/154) (Vickers et al. 2015). Riley reported that 14% (2/14) of collared mountain lion deaths from 2002 to 2012 were due to vehicle strikes, and the NPS reported that 18 mortalities from vehicle strikes occurred between July 2002 and January 2018 in the CC-S (Figure 9). Although the CC-N population is less studied, there is evidence that vehicle strikes are a significant cause of mortalities in this population; at least six mountain lions have been

killed by vehicle strikes on Highway 17 in the Santa Cruz Mountains between 2008 and 2018 (Midpeninsula Regional Open Space 2017; Slade 2018) and news outlets reported at least three vehicle strikes killing mountain lions on the I-280 in San Mateo County between 2014 and 2016 (Wilmers 2014; CBS San Francisco 2015; Kamala 2016). Similarly, in 2018 at least two mountain lions were reported to have been killed by vehicle strikes in San Luis Obispo County in the CC-C (Tanner 2018). Clearly, vehicle strikes are an important cause of mortality for the Central Coast and Southern California mountain lion populations.

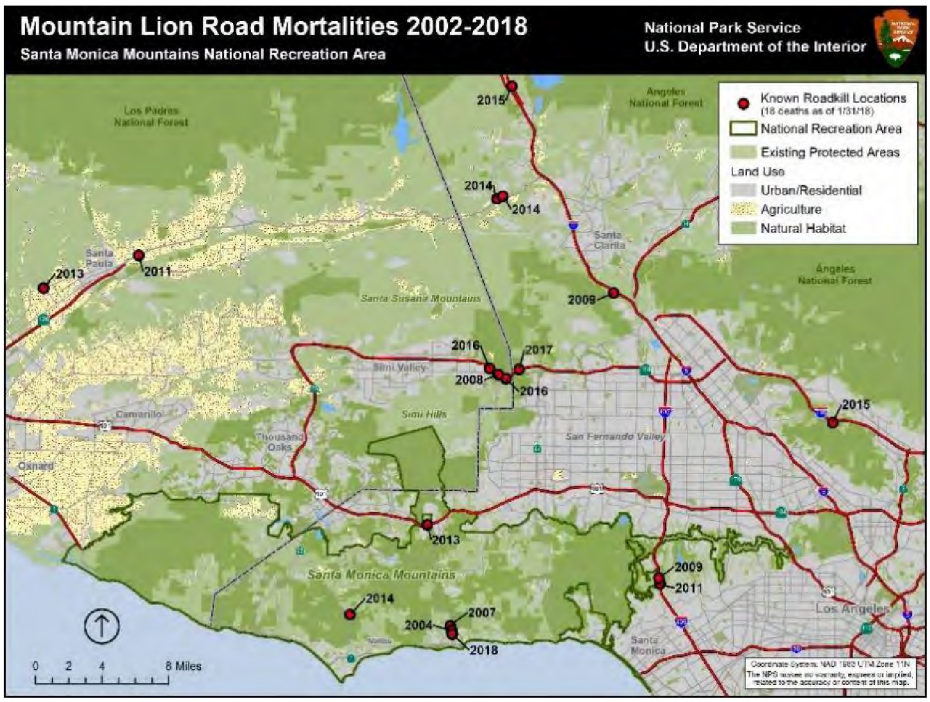


Figure 9. Locations of 18 mountain lion vehicle strikes in the Santa Monica Mountains and surrounding areas from July 2002 to January 2018. Source: NPS

High adult mortality rates can have severe consequences, particularly for small populations with female-biased adult sex ratios and low effective population sizes (Beier and Barrett 1993; Benson et al. 2019). Vehicle strikes have been found to affect males and females equally, regardless of age, which can result in relatively high adult male mortalities (Vickers et al. 2015). Low male adult survival increases the risk of extinction, as it could result in occasional extinctions of breeding males and therefore reduced reproductivity (Benson et al. 2019), which has been previously observed in the SAM (Beier and Barrett 1993). In the Santa Monica Mountains, where adult survival is high, vehicle strikes (along with intraspecific strife) make it more difficult for subadults to successfully disperse, which limits breeding opportunities for mountain lions born in the Santa Monica Mountains (Riley et al. 2014; Benson et al. 2019). Freeways and vehicle strikes also limit the ability for immigrants to enter the Santa Monica Mountains and contribute to the population's gene pool (Riley et al. 2014; Benson et al. 2019). These patterns highlight the dire outlook for Central Coast and Southern California mountain lion populations due to lack of connectivity between populations and suitable habitat. The continued construction of roads and development and inaction to enhance connectivity threatens the survival of these struggling populations.

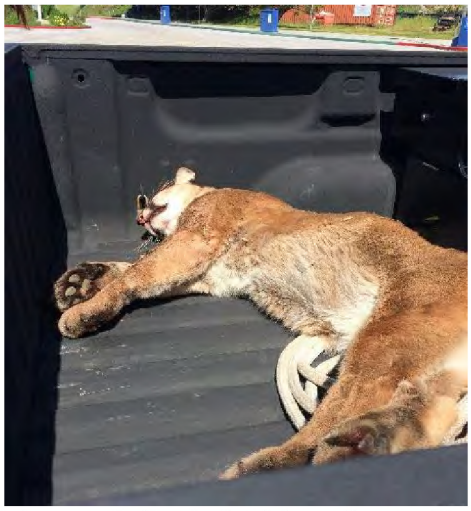
6.3 Depredation and Illegal Kills



Mountain lions killed on depredation permits (and one killed by vehicle strike) in San Diego County in 2015. Source: Vickers et al. (2017).

In 1990 California voters passed The California Wildlife Protection Act (Proposition 117), making the mountain lion a "specially protected species" and outlawing mountain lion sport-hunting in California. However, the law requires CDFW to issue depredation permits that allow people to "take" mountain lions when a mountain lion kills or injures domestic animals such as livestock or pets or damages property. The legal definition of "take" is to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Cal Fish & Game Code, *§86*), and the vast majority of permits to take in the three decades since the passage of Proposition 117 have authorized killing one or more mountain lions. The number of depredation permits issued and the number of reported kills has varied over time, and on average over 40% of permits result in reported kills. Since 1990 there has been an average of 97 reported depredation kills every year; however, these estimates are likely low due to underreporting and incomplete records (W. Vickers, *pers comm*). Depredation kills (along with vehicle strikes) account for the majority of mountain lion mortalities in the SAM and EPR (Vickers et al. 2015; Vickers et al. 2017). Although less is known about depredation kill impacts in the CC-N and CC-C, there is evidence that suggests depredation kills could be a significant source of mortality in these populations. In the Santa Cruz Mountains in the CC-N, depredation kills are the leading cause of death in collared mountain lions (Wang et al. 2017), and CDFW reported 34 depredation kills between 2010 and 2016 in the CC-N counties of Alameda, Contra Costa, San Mateo, Santa Clara, and Santa Cruz (see Appendix A[16]). Although population dynamics are even less studied in the CC-C, between 2010 and 2016 there were 46 reported depredation kills in the counties of Monterey, San Benito, San Luis Obispo, and Santa Barbara (See Appendix A[*Id.*]).

[16] These data were downloaded from the CDFW website; however, they no longer appear to be available online. These numbers have been shown to be low by a factor of two in some areas, likely due to incomplete reporting, and therefore should be considered absolute minimums (W. Vickers, *pers comm*).



An illegally killed mountain lion in San Mateo County. Photo: Tiffany Yap

Depredation kills result in more deaths in male mountain lions compared to female mountain lions. Statewide, of mountain lions killed for depredation in 2017, 68% were males (CDFW 2018), and from 1981 to 2013, there were 3.4 times more male than female mountain lions killed for depredating in the SAM and EPR (Vickers et al. 2015). The majority of lions reported killed for depredating were of subadult (1-2 years old) and adult mountain lions (>2 years old) (CDFW 2018), many of which were likely dispersers that may have not yet established home ranges. Dispersing lions often come up against roads and development as they search to establish home ranges (Beier 1995, Vickers 2015, Riley 2014). This suggests that even if individuals are able to navigate across roads and freeways without being struck by vehicles, they often come into conflict with humans, which threatens their survival. This was reflected in the EPR, when the only GPS collared immigrant to have crossed I-15 from 2001 to 2013 arrived from the SAM only to be killed on a depredation permit 25 days after his arrival for depredating a sheep (Vickers et al. 2015). Not only do lions killed for depredating diminish the total abundance of these populations, but because males are predominantly killed, the number of animals that are the primary gene dispersers are also greatly reduced, which further inhibits adequate genetic connectivity (Vickers et al. 2017).

Reported depredation kills do not include mountain lions that are illegally poached or killed, many of which likely go undocumented (Beier and Barrett 1993; Vickers et al. 2015). Illegal kills have been observed in the CC-S, SAM, and EPR (Beier and Barrett 1993; Riley et al. 2014; Vickers et al. 2015) as well as in the CC-N (Yap 2018 *pers observation*), and although 80 mountain lions were reported as being killed under depredation permits in 2017, 89 deaths were being investigated (CDFW 2018).

As mentioned in *Section 6.2 Vehicle Strikes*, high levels of mortalities among male breeders or potential male breeders (*i.e.*, dispersers) can have severe impacts on small, isolated mountain lion populations with female-biased adult sex ratios and low effective population sizes (Beier and Barrett 1993; Benson et al. 2019). Low survival of breeding males increases extinction risk, as occasional breeding male extinctions can occur and therefore reduce reproductivity throughout the population (Beier and Barrett 1993; Benson et al. 2019). And low survival of subadults and adults may limit both dispersers and immigrants from successfully

breeding and increasing genetic diversity (Vickers et al. 2015; Benson et al. 2019). Thus, depredation and illegal kills in conjunction with lack of connectivity between populations and suitable habitat in the Central Coast and Southern California severely limit the potential for these populations to survive and reproduce. Continued development and lack of connectivity will likely push mountain lions into more conflicts with humans, which could increase depredation and retributory kills and further drive these populations towards extinction.

6.4 Intraspecific Strife



Intraspecific strife: a female mountain lion, P-7, was killed by her father, P-1. Photo: NPS

As detailed in *Section 5 Abundance and Population Trends*, intraspecific strife is the leading cause of mortality in the Santa Monica Mountains (Riley et al. 2014). Although intraspecific strife is a common source of mortality in mountain lion populations, (Beier and Barrett 1993; Logan and Sweanor 2001; Allen 2014), unusually high levels of intraspecific strife have been observed in this population (Riley et al. 2014). About 41% (9/22) of deaths in radio-collared mountain lions being tracked from 2002 to 2018 were from intraspecific strife,[17] with multiple cases of aggressive adult males killing their siblings, offspring (male and female), and previous mates (Riley et al. 2014). While males are likely to have larger home ranges to protect food resources and access to females, killing offspring or potential mates has no apparent evolutionary benefit, as it reduces chances of future reproduction (Riley et al. 2014). In addition, infanticide has been documented in the Santa Monica Mountains (Riley et al. 2014), perhaps to trigger the female to come into estrous. These high levels of intraspecific strife are likely due to limited space in the Santa Monica Mountains caused by dispersal barriers (Riley et al. 2014; Benson et al. 2019). As roads and development further encroach on Central Coast and Southern California mountain lion populations, intraspecific strife could become more common; this was

[17] The NPS provides puma profiles (last updated August-November 2018) of the marked animals (*i.e.*, tagged or radio-collared) they have been studying in the CC-S, which includes those studied in Riley et al. (2014). Some data presented in this section take these data into account. Accessed on 3 April 2019 at: https://www.nps.gov/samo/learn/nature/puma-profiles.htm.

documented in the SAM on two occasions (one GPS-collared, one previously GPS-collared) since the publication of Vickers et al. (2015) (W. Vickers *unpublished data*). Enhanced connectivity between populations and suitable habitat would facilitate dispersal, which would reduce and/or prevent high levels of intraspecific strife (Riley et al. 2014; Benson et al. 2019) and improve the survival and reproduction rates, especially for the most struggling populations.

6.5 Abandonment



Santa Monica Mountains mountain lion kittens P-57 and P-58 were abandoned by their mother, P-42, a first-time mother who left with male P-27 and never returned. Photo: NPS

Abandonment of kittens is fairly common in the Santa Monica Mountains and accounts for about 23% (5/22) of the known causes of death for marked/collared animals.[18] Although this likely occurs in other mountain lion populations, the causes of abandonment are unclear. There are various reasons why females might abandon their cubs. The cubs could be sick, the female may not be able to take care of them, or perhaps the female was initially protecting them from a mature male. Unfortunately, there is a lack of data regarding why and how often cubs get abandoned. Yet this is one of the main causes of death for mountain lions in the Santa Monica Mountains, which likely affects this already-small population.

Mountain lion cubs can also become orphaned if the mother is killed before they have dispersed. If they are too young to fend for themselves, they likely starve to death or are preyed upon by other predators. If the young are more mobile, they may come up against areas where they are more likely to encounter humans as they search for food. This was seen in November 2017, when a mother mountain lion was killed by a vehicle strike in the SAM and two of her cubs were found roaming near human establishments – one in a backyard and the other along a road (Veklerov 2018). Both were too young to survive on their own and were placed in the Oakland Zoo.

[18] Id.

6.6 Poisoning from Rodenticides and Other Environmental Toxicants



The famous mountain lion of Griffith Park, P-22, suffering from notoedric mange, a parasitic skin disease that has been linked with the ingestion of rodenticide poisoning (left) and mountain lion P-34 found dead on a trail due to rodenticide poisoning (right). Photos: NPS

Although mountain lions are not the primary target of environmental toxicants, such as rodenticides and other pesticides and herbicides, secondary poisoning has been documented in many non-target animals, especially predators (e.g., coyotes (Riley et al. 2003), bobcats (Riley et al. 2007; Serieys et al. 2015), San Joaquin kit fox (McMillin et al. 2008), California fishers (Gabriel et al. 2012), raptors (Lima and Salmon 2010), and many more). Data regarding pesticide poisoning in mountain lions are limited; however, there is evidence that these big cats are likely vulnerable to similar negative impacts that other predators experience, including direct death, weakened immune systems, and vulnerability to predators or conspecifics (Riley et al. 2003; Riley et al. 2007; Serieys et al. 2015; Rudd et al. 2019).

While poisoning can sometimes lead to direct death, rodenticide exposure has also been associated with notoedric mange, a parasitic skin disease that has led to high levels of mortalities, population declines, and even local extirpations in Southern California bobcats (Riley et al. 2007; Serieys et al. 2015). Although the link between rodenticide poisoning and mange is not as clear in mountain lions, since 2002 five mountain lions in the CC-S have been found suffering from mange, and researchers suspect that rodenticide poisoning may have played a role (Reyes-Velarde 2019a). In addition, of four dead mountain lions in the Santa Monica Mountains that were found to have rodenticides in their systems, two died from poisoning and two died from intraspecific strife, and it is possible that indirect effects of poisoning may have prevented the mountain lions from escaping conflict or fighting back (Riley et al. 2007). And rodenticide poisoning is suspected to be the cause of death in mountain lion P-47, who was recently found dead in Santa Monica Mountains (Reyes-Velarde 2019b), and CC-N mountain lion 36m, who was found dead in the Santa Cruz Mountains in 2015 (Wilmers 2015).

The Department of Pesticide Regulation (DPR) analyzed data provided by CDFW and found that 92% (59/64) of tested mountain lions from throughout the state had detectable levels of anticoagulant rodenticides, which indicates alarmingly high exposure rates (DPR 2018). This has been found to be true in the CC-S as well, where researchers have found that 94% (17/18) of mountain lions tested had traces of rodenticides in their systems (Reyes-Velarde 2019a).

Rodenticides have been implicated in mountain lion mortalities in the CC-S, and in the SAM anticoagulant rodenticide residues were detected in the livers of 100% of deceased animals tested, with up to five different compounds being detected in some animals (Riley et al. 2007; Riley et al. 2014; W. Vickers, *pers comm*). And a study conducted by CDFW and the Integral Ecology Research Center (IERC) has found that mountain lions are being exposed to dangerously high levels of illegal pesticides, such as carbofuran, being used on illegal marijuana grow sites, which can also bioaccumulate and cause health issues (Rudd et al. 2019). Furthermore, it is possible that herbicide exposure from deer could be detrimental to mountain lions as well. Although poisoning from environmental toxicants may not constitute a large proportion of direct deaths (that we are aware of), it is possible that high exposure levels influence other causes of mortalities. Any additional mortalities in the small, isolated Central Coast and Southern California populations suffering from other anthropogenic pressures could impact the short- and long-term survival of these mountain lions.

6.7 Wildfires



After the Woolsey Fire, the body of mountain lion P-64, known to use culverts to cross the Hwy-101 and SR-118 freeways a total of 41 times, was found dead with severely burned paws. Photos: NPS

Although fire is a natural disturbance in California ecosystems, sprawl development with low/intermediate densities extending into habitats that are prone to fire have led to more frequent wildfires that burn larger areas (Syphard et al. 2007; Syphard et al. 2009). Most wildfires in California are caused by human ignitions, like power lines, arson, improperly disposed cigarette butts, debris burning, fireworks, campfires, or sparks from cars or equipment (Keeley and Fotheringham 2003; Syphard et al. 2007; Syphard et al. 2012; Bistinas et al. 2013; Balch et al. 2017; Radeloff et al. 2018; Syphard et al. 2019). In fact, human-caused fires account for 95-97% of all fires in California's Mediterranean habitats (Syphard et al. 2007, Balch et al. 2017). In addition, climate change is leading to hotter, drier conditions that make fires more likely to burn. At least 29 fires throughout California in the last two years were caused by electric power and distribution lines, and transmission lines are suspected to be the cause of last year's Camp Fire and Woolsey Fire (Atkinson 2018; Chandler 2019).

Increased frequency of wildfires poses a threat to the survival of Central Coast and Southern California mountain lions. Although mountain lions are highly mobile and generally able to move away from wildfires, in severe weather conditions wind-driven fires can spread quickly – they can cover 10,000 hectares in one to two days, as embers are blown ahead of the

fires and towards adjacent fuels (*e.g.*, flammable vegetation, structures) (Syphard et al. 2011). If their movement is constrained by roads and development and they are unable to access escape routes, then their chances of surviving wildfires are greatly reduced. Vickers et al. (2015) documented one death of a collared mountain lion in the SAM and one in the EPR due to human-caused wildfires, and the deaths of two collared mountain lions in the CC-S in 2018 have been attributed to the Woolsey Fire.[19] Environmentally stochastic events (*e.g.*, wildfires, flooding) could destabilize small mountain lion populations and make them vulnerable to extinction (Benson et al. 2016a; Benson et al. 2019). In addition, increased frequency of fire ignitions can cause shifts in natural fire regimes, which can lead to large-scale landscape changes, such as vegetation-type conversion or habitat fragmentation, which can impact wide-ranging species like the mountain lion (Jennings 2018).

Increasing landscape connectivity (*e.g.*, by designing corridors, removing barriers, and preserving habitats that are close to each other) is important for resilience to environmentally stochastic events and climate change adaptation (Heller and Zavaleta 2009). Enhanced connectivity that incorporates corridor redundancy (*i.e.* the availability of alternative pathways for movement) would allow for improved functional connectivity and resilience. Compared to a single pathway, multiple connections between habitat patches increase the probability of movement across landscapes by a wider variety of species, and they provide more habitat for low-mobility species while still allowing for their dispersal (Mcrae et al., 2012; Olson & Burnett, 2008; Pinto & Keitt, 2008). In addition, corridor redundancy provides resilience to uncertainty, impacts of climate change, and extreme events, including wildfires, by providing alternate escape routes or refugia for animals seeking safety (Cushman et al., 2013; Mcrae et al., 2008; Mcrae et al., 2012; Olson & Burnett, 2008; Pinto & Keitt, 2008).

6.8 Climate Change

A strong, international scientific consensus has established that human-caused climate change is causing widespread harms to human society and natural systems, and climate change threats are becoming increasingly dangerous. In a 2018 *Special Report on Global Warming of 1.5°C* from the Intergovernmental Panel on Climate Change (IPCC), the leading international scientific body for the assessment of climate change describes the devastating harms that would occur at 2°C warming, highlighting the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth (IPCC 2018). In addition to warming, many other aspects of global climate are changing. Thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor (USGCRP, 2017).

Climate change is increasing stress on species and ecosystems, causing changes in distribution, phenology, physiology, vital rates, genetics, ecosystem structure and processes, and increasing species extinction risk (Warren et al., 2011). A 2016 analysis found that climate-related local extinctions are already widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed (Wiens 2016). A separate study estimated that nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened

[19] Id.

birds may have already been negatively impacted by climate change in at least part of their distribution (Pacifici et al. 2017). A 2016 meta-analysis reported that climate change is already impacting 82% of key ecological processes that form the foundation of healthy ecosystems and on which humans depend for basic needs (Scheffers et al. 2016). Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress (Cahill et al., 2012; Chen et al., 2011; Maclean & Wilson, 2011; Parmesan, 2006; Parmesan & Yohe, 2003; Root et al., 2003; Warren et al., 2011).

Improving landscape connectivity is a key factor for climate change resilience and adaptation (Heller and Zavaleta 2009). Without functional connectivity that provides multiple pathways for mountain lion movement, isolated Central Coast and Southern California mountain lion populations and the prey they depend on may not be able to shift their ranges as available resources shift. Enhanced connectivity that provides redundant corridors for safe passage between suitable habitats would improve chances of survival and reproduction in the face of climate change by increasing the probability of movement across landscapes by a wider variety of species and providing alternate escape routes or refugia for animals seeking safety (Mcrae et al. 2008; Pinto and Keitt 2008; Mcrae et al. 2012; Cushman et al. 2013; Olson and Burnett 2013).

7 Degree and Immediacy of Threat

As demonstrated in the previous sections, Central Coast and Southern California mountain lions are at risk of extirpation under current conditions. Roads and development have fractured connectivity, which has led to the separation of at least six isolated, genetically distinct populations in the CC-N, CC-C, CC-S, SAM, SGSB, and EPR (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Benson et al. 2019). Due to extreme isolation and high levels of human-caused mortalities, the SAM and CC-S mountain lions have low genetic diversity, low effective population sizes, and high levels of inbreeding (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Benson et al. 2019). Benson et al. (2019) predicted high losses of heterozygosity in the SAM and Santa Monica Mountains populations, which suggests that inbreeding depression is imminent. If inbreeding depression occurs, the SAM and Santa Monica Mountains/CC-S populations will likely go extinct within 50 years, with median times to extinction of 11.7 years and 15.1 years, respectively (Benson et al. 2019). With similarly low genetic diversity and effective population size, the SGSB and CC-N populations likely have a similar fate. And although the CC-C and EPR populations appear to be slightly healthier with more genetic diversity and a higher effective population size, these populations have effective population sizes that are still well below the most recent recommended threshold to prevent inbreeding depression in the short-term (Frankham et al. 2014; Gustafson et al. 2018); continued development in these areas could propel these populations towards extinction more quickly. Clearly, Central Coast and Southern California mountain lion populations are succumbing to anthropogenic pressures, and without immediate action to restore and enhance connectivity between the populations and suitable habitat, they will be lost, potentially within our lifetimes.

Immediate action is critical for the long-term persistence of Central Coast and Southern California mountain lions and the health of Central Coast and Southern California ecosystems. Connectivity between the populations and suitable habitat must be restored and enhanced to facilitate movement and gene flow while reducing human-caused mortalities. Anthropogenic pressures, especially vehicle strikes and depredation kills, should be minimized to help the recovery of these populations. Although translocation of outbred animals has been shown to be effective to increase genetic diversity (Johnson et al. 2010), this would only be a short-term, unsustainable solution given the current level of isolation of these populations (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016a; Benson et al. 2019). Strategically-placed road/barrier crossing infrastructure that allows for dispersal and gene flow and reduces mortalities would be a more comprehensive, long-term solution to save these populations in perpetuity. And the preservation of intact linkages, especially the Tehachapi and Sierra Pelona Mountains, is essential to maintain statewide genetic connectivity. Immediate regulatory action under the CESA is needed to enhance connectivity among Central Coast and Southern California mountain lion populations and suitable habitat to ensure the conservation of these iconic big cats.

8 Inadequacy of Existing Regulatory Mechanisms

8.1 State Regulatory Mechanisms

Proposition 117

The California Wildlife Protection Act of 1990 (Proposition 117) declared that the mountain lion is a "specially protected mammal under the laws of this state." (Cal. Fish & Game Code § 4800(a).) Proposition 117 acknowledged that mountain lion habitat in the Santa Monica Mountains, Santa Ana Mountains, Santa Susana Mountains, and Simi Hills is disappearing rapidly and that "[s]mall and often isolated wildlife populations are forced to depend upon these shrinking habitat areas within the heavily urbanizing areas of this state." (Cal. Fish & Game Code § 2780(d).) Proposition 117 further found that "[c]orridors of natural habitat must be preserved to maintain the genetic integrity of California's wildlife." (*Id.*)

In order to preserve mountain lion populations in California, Proposition 117 mandated that mountain lions are not to be considered a "game mammal," such that hunting is generally prohibited. (Cal. Fish & Game Code § 3950.1(a).) Subject to certain exceptions, Proposition 117 makes it unlawful to take, injure, possess, transport, import, or sell a mountain lion. (Cal. Fish & Game Code § 4800(b).) Nonetheless, a mountain lion may still be removed or killed if it is "perceived to be an imminent threat to public health or safety" or is perceived by CDFW to be "an imminent threat to the survival of any threatened, endangered, candidate, or fully protected sheep species." (Cal. Fish & Game Code § 4801.) Mountain lions that have not been designated an "imminent threat to public health or safety" may still be removed via nonlethal means. (Cal. Fish & Game Code § 4801.5(a).)

A person whose livestock or other property has been damaged or destroyed by a mountain lion may request a permit to "take" the mountain lion. (Cal. Fish & Game Code § 4802.) CDFW is required to immediately take action to confirm that there has been a

depredation. (Cal. Fish & Game Code § 4803.) If CDFW is satisfied that there has been a depredation, CDFW "shall promptly issue a permit to take the depredating mountain lion." (*Id.*) There is no limit to the number of depredation permits a property owner can request from CDFW. In addition, mountain lions that are encountered while pursuing or inflicting injury on livestock or domestic animals may be taken immediately without the need for a permit. (Cal. Fish & Game Code § 4807.)

While Proposition 117 prohibits all hunting of mountain lions as well as the purposeful killing of mountain lions in most circumstances, it does not contain provisions to ensure that connectivity between core habitats for the Southern California or Central Coast mountain lions will be protected. As discussed above in *Section 6.0 Factors Affecting the Ability to Survive and Reproduce*, the primary threat to Southern California and Central Coast mountain lions is not hunting—it is habitat fragmentation and the lack of crossing infrastructure, which has led to major declines in genetic diversity, high levels of inbreeding, and high levels of human-caused mortalities via vehicle strikes, depredation kills, and intraspecific strife due to limited space and the inability for young mountain lions to disperse.

8.1.1 CDFW Departmental Bulletins

CDFW has issued "Departmental Bulletins" relating to mountain lions. The most recent bulletin was issued in December 2017 and applied specifically to the Santa Monica Mountains and SAM mountain lion populations (the "2017 Bulletin") (CDFW 2017).[20] The 2017 Bulletin acknowledged (1) the lack of genetic diversity in the Santa Monica Mountains and SAM mountain lion populations and (2) that human population growth and anthropogenic barriers are restricting connectivity with other mountain lion populations. In order to reduce unnecessary killings of mountain lions in the Santa Monica Mountains and SAM populations, the 2017 Bulletin provides that any person reporting a depredation (a "reporting party") may be issued a first permit to employ non-lethal measures to deter mountain lions from further depredation, and a second permit to "haze" a depredating mountain lion. In the first instance, the reporting party would institute economically feasible measures designed to reduce the potential for attracting mountain lions such as removing the carcasses of depredated animals, installing or repairing and consistently using enclosures to exclude mountain lions, or employing guardian animals in the immediate vicinity of livestock or other domestic animals. The 2017 Bulletin provides that CDFW would not be required to issue a lethal depredation permit until (1) a third depredation event has occurred, and (2) CDFW has confirmed that the reporting party has already implemented all reasonable preventative measures.

In January of 2018, CDFW adopted the 2017 Bulletin's new depredation permit policy. Although this provides some additional protections and will likely reduce lethal take of mountain lions in the Santa Monica Mountains and the SAM, researchers have documented instances wherein domestic animal owners killed mountain lions in these areas without complying with CDFW instructions under the new policy (W. Vickers, *pers comm*). The 2017 Bulletin does not apply to other vulnerable populations, like the SGSB, EPR, CC-N, and CC-C mountain lions. In

[20] California Department of Fish and Wildlife, *Human/Wildlife Interactions in California: Mountain Lion Depredation, Public Safety, and Animal Welfare – Amendment to Department Bulletin 2013-02* (Dec. 15, 2017), available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153021.

addition, the new policy is not designed to ensure protection of habitat or connectivity necessary for the continued survival of the Santa Monica Mountains and SAM mountain lion populations and is insufficient to ameliorate the anthropogenic mortalities related to potential extirpation.

8.1.2 California Environmental Quality Act

The California Environmental Quality Act ("CEQA") is California's landmark environmental law and establishes a state policy to prevent the "elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities...." (Cal. Pub. Res. Code § 21001(c)). Towards this end, state and local agencies are required to analyze and disclose the impacts of any discretionary decision or activity. CEQA contains a substantive mandate that agencies should not approve projects as proposed if there are feasible alternatives or mitigation measures which would substantially lessen the significant environmental effects of such projects. (Cal. Pub. Res. Code § 21002.)

CEQA requires a "mandatory finding of significance" if a project may "substantially reduce the number or restrict the range of an endangered, rare or threatened species." (Cal. Code Regs., tit. 14, § 15065(a)(1).) CDFW has interpreted this provision to apply to species of special concern, which are species that are "experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status."[21] CDFW further provides that species of special concern "should be considered during the environmental review process." (*Id.*; Cal. Code Regs., tit. 14, § 15380.) Thus, a potentially substantial impact on a species of special concern, threatened species, or endangered species could be construed as "per se" significant under CEQA. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449.) And under CEQA, when an effect is "significant," the lead agency approving the project must make a finding that changes or alterations have been incorporated into the project to avoid or mitigate its significant impacts, or that such changes are within the responsibility of another agency, or that mitigation is infeasible. (Cal. Pub. Res. Code § 21081(a).) These provisions therefore provide some protections to species that are listed as species of special concern, threatened, or endangered.

However, Southern California and Central Coast mountain lions are not listed as a species of special concern or as threatened or endangered, such that a project that has the potential to significantly impact one of these populations would not necessarily qualify as a "significant effect" under a lead agency's interpretation of CEQA. In such case, CEQA's substantive mandate to adopt all feasible alternatives or mitigation measures might not be triggered.

CEQA also requires a "mandatory finding of significance" if a project may "substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community." (Cal. Code Regs., tit. 14, § 15065.) Moreover, CEQA's "Environmental Checklist" in Appendix G of the CEQA

[21] California Department of Fish and Wildlife, *Species of Special Concern* , available at https://www.wildlife.ca.gov/Conservation/SSC.

Guidelines characterizes a project's effects as "significant" if the project would "interfere substantially with the movement of any native [] wildlife species or with established native resident or migratory wildlife corridors...."

While these provisions might theoretically offer some protection for Southern California or Central Coast mountain lions, in practice they have not provided sufficient protection. Under CEQA, lead agencies have discretion to develop their own thresholds of significance. (*East Sacramento Partnerships for a Livable City v. City of Sacramento* (2016) 5 Cal.App.5th 281, 300; Cal. Code Regs., tit. 14, § 15064(d)). This allows local agencies—who are often under pressure from developers to approve projects—to make significance determinations that are inconsistent with independent scientific analysis, including CDFW's analysis. For instance, in December 2017, the City of Temecula approved a 200-acre mixed use project called the Altair Specific Plan that would allow development in the last remaining viable linkage for the SAM mountain lion population between the Santa Ana Mountains and Peninsular Ranges. The City determined that impacts to mountain lions were not significant despite strong disagreement by CDFW, USFWS, and independent mountain lion experts.[22] CDFW warned the City of Temecula that the SAM population has "extremely low genetic diversity which is attributed to low gene flow between the small Santa Ana Mountains population and the larger population in the Peninsular Ranges" and that development is contributing to this genetic decay. (*Id.*) CDFW concluded that "increased human activity associated with the proposed Civic Site at this sensitive location would [] be detrimental to facilitating the movement of mountain lions across Interstate Highway 15 (I-15) to the Peninsular Range." (*Id.*)

Even when a lead agency acknowledges that an effect is "significant," CEQA allows a lead agency to adopt a "statement of overriding considerations" and approve a project if the agency finds that other factors outweigh the environmental costs of the project or that further mitigation is infeasible. (Cal. Code Regs., tit. 14, § 15093(b); Cal. Pub. Res. Code § 21081.) This means that even if a project may have a significant effect on a "wildlife population" like the CC-S, SAM, SGSB, or EPR mountain lions, an agency could interpret CEQA as still allowing approval of the project. CEQA in practice is therefore inadequate to protect the Southern California and Central Coast mountain lions.

Finally, as noted above, the lack of adequate wildlife connectivity and wildlife crossings is the primary factor driving Southern California and Central Coast mountain lions closer to extinction. Yet, agencies have not interpreted CEQA (or the National Environmental Policy Act, discussed further below) as including a clear legal mechanism for mitigation for impacts on wildlife connectivity. For example, in the Final Environmental Impact Report/Final Environmental Impact Statement for the Northwest 138 Corridor Improvement Project (the "Northwest 138 EIR"), Caltrans and the Los Angeles County Metropolitan Transportation Authority wrote: "The proposed project has the potential to directly or indirectly impact wildlife movement throughout the project limits. However, with the inclusion of the proposed avoidance and minimization measures, impact levels area expected to be relatively low. Exact acres of impacts to wildlife corridors are unable to be quantified, and currently there is no real

[22] City of Temecula, *Altair Specific Plan Final Environmental Impact Report* (Oct. 2017), available at https://temeculaca.gov/DocumentCenter/View/4513/Altair-Specific-Plan-Final-Environmental-Impact-Report-FEIR.

mechanism for compensatory mitigation for these types of impacts."[23] The Northwest 138 EIR also contained no analysis of the highway's impacts on mountain lions, given that they are not presently listed as threatened or endangered.

Indeed, CDFW has urged lead agencies to consider wildlife connectivity in CEQA planning documents, without success. For instance, the Los Angeles County General Plan Draft EIR concluded that the buildout of the General Plan "will impact regional wildlife linkages" and have a "significant adverse effect on wildlife movement."[24] The Draft EIR concluded that policies proposed in the General Plan "do not provide for mitigation for loss of wildlife movement opportunities. If development impacts regional wildlife linkages and impedes wildlife movement, connectivity will be lost on a regional scale in these vital landscape corridors and linkages. Thus impacts to wildlife movement remain significant at the General Plan level." (*Id.*) In commenting on the Draft EIR, CDFW specifically objected to this conclusion:

> The Department does not concur with the conclusion in the DPEIR that unavoidable loss of wildlife movement opportunities or nursery sites within or outside of an SEA does not warrant mitigation. Without mitigation, the Project and subsequent projects would result in direct and cumulative loss of biological diversity. Mitigation opportunities for wildlife corridors and nursery sites are best established during large scale planning efforts such as this General Plan. Wildlife corridor areas can be delineated and set aside in the General Plan for current and future conservation efforts. An assessment could be placed on development within the Project area to secure the acquisition of these critical linkages and sites, therefore reducing impacts to wildlife corridors and nursery sites and ensuring biological diversity.[25]

In responding to this comment, Los Angeles County refused to implement CDFW's recommendations, claiming "it cannot be assumed that wildlife corridor areas for future conservation that can be set aside because those properties may not become publicly owned." (*Id.*) Los Angeles County's responses to CDFW's recommendations underscore that lead agencies have not interpreted CEQA to include a clear legal mechanism for mitigation for impacts on wildlife connectivity, even though such connectivity is critical to the survival of Southern California and Central Coast mountain lions.

8.1.3 Significant Natural Areas Program

The Significant Natural Areas Program ("SNAP") requires CDFW to develop and maintain a spatial data system that identifies those areas in the state that are most essential for maintaining habitat connectivity, including wildlife corridors and habitat linkages. (Cal. Fish & Game Code § 1932(b).) SNAP also requires CDFW to consult with other government agencies and stakeholders to identify natural areas deemed to be most significant. (Cal. Fish & Game

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[23] State of California Department of Transportation, *Northwest State Route 138 Corridor Improvement Project Final Environmental Impact Report / Environmental Impact State and Section 4(f) Evaluation* (June 2017), available at https://www.metro.net/projects/nw138/nw138-FEIR-FEIS/.

[24] County of Los Angeles, *Los Angeles County General Plan Update Draft Environmental Impact Report* (June 2014), available at http://planning.lacounty.gov/assets/upl/project/gp_2035_deir.pdf.

[25] County of Los Angeles, *Los Angeles County General Plan Update Final Environmental Impact Report* (March 2015), available at http://planning.lacounty.gov/assets/upl/project/gp_2035_lac-gpu-final-eir-final.pdf.

Code § 1932(f).) SNAP further requires CDFW to seek maintenance and perpetuation of the state's most significant natural areas for present and future generations in the most feasible manner. (Cal. Fish & Game Code § 1932(g).)

However, SNAP does not require or authorize any particular land use action or decision. (Cal. Fish & Game Code § 1932.5.) Likewise, SNAP does not change or prevent the change of use of any area identified pursuant to the program. (Cal. Fish & Game Code § 1933.) It therefore does not *require* any particular natural areas to be conserved. Because of this, it is insufficient to protection wildlife connectivity essential to the survival of Southern California and Central Coast mountain lions.

8.1.4 Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act is a voluntary conservation planning mechanism for proposed development projects within a planning area to avoid or minimize impacts to wildlife. (Cal. Fish & Game Code § 2801(f).) The NCCP Act is designed to promote coordination among agencies and landowners to conserve unfragmented habitat areas and multihabitat management. (Cal. Fish & Game Code § 2801(d).)[26]

There are no Natural Community Conservation Plans ("NCCPs") that cover the Santa Monica Mountains or San Gabriel Mountains. There are a few NCCPs that cover portions of the Santa Ana Mountains and Eastern Peninsular Ranges, some of which also act as "habitat conservation plans" or "HCPs" pursuant to the Federal Endangered Species Act (16 U.S.C. § 1539). These include the County of Orange (Central Coastal) NCCP/HCP, the Orange County Transportation Authority NCCP/HCP, Western Riverside County Multiple Species HCP, San Diego Multiple Habitat Conservation Program, San Diego Multiple Species Conservation Program, and the San Diego North County Multiple Species Conservation Plan. There also is an NCCP that covers the Coachella Valley and portions of the San Bernardino Mountains called the Coachella Valley NCCP/HCP.

Of these NCCPs, only four "cover" portions of the Southern California mountain lion populations: (1) Western Riverside County Multiple Species HCP; (2) San Diego Multiple Habitat Conservation Program; (3) San Diego County Multiple Species Conservation Program; and (4) San Diego North County Multiple Species Conservation Plan.[27] Below is a discussion of each as they relate to mountain lions:

(1) The Western Riverside County Multiple Species HCP acknowledges that the SAM mountain lion population is at high risk of extirpation due to demographical instability unless there is a "movement connection between the Santa Ana Mountains

[26] The NCCP Act also is described on CDFW's website at https://www.wildlife.ca.gov/conservation/planning/NCCP.

[27] California Department of Fish and Wildlife, *Conservation Plans By Species*, available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=108719&inline. Both San Diego Gas & Electric and San Diego County Water Authority are permittees of HCPs/NCCPs covering mountain lions, but these only apply to activities undertaken by these entities.

and the Palomar Mountains."[28] However, mountain lions are considered to be "adequately conserved."[29] As such, the Western Riverside County Multiple Species HCP offers little protection for the SAM mountain lion population. While this HCP does identify linkages designed to ensure connectivity for mountain lions, the Western Riverside County Regional Conservation Authority has failed to enforce the HCP to protect such linkages when permittees such as the City of Temecula approve development that would severely constrict or impair such linkages.

(2) The San Diego Multiple Habitat Conservation Program is an NCCP and HCP that purportedly covers mountain lions, but the program readily concedes that mountain lions (as well as deer) "were not a major consideration in linkage design."[30] In addition, the EIR/EIS states that "[d]ue to the limited availability of habitat in the study area, implementation of the MHCP is not expected to substantially increase or decrease the population viability of the mountain lion."[31] The EIR/EIS likewise concludes there are no major populations or critical locations for the mountain lion within the plan area, and concludes it is "adequately conserved" under the plan. (*Id.*)

(3) The San Diego Multiple Species Conservation Program is an NCCP and HCP that covers 900 square miles in the southwestern portion of the San Diego. The Program lists mountain lions as "conserved" and states that mountain lions "will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved."[32] While the Program generally notes that linkage areas were designed to accommodate "large animal movement," the Program does not identify any linkages designed for mountain lions or any specific measures designed to protect them. Likewise, while the Program states that "[s]pecific design criteria for linkages and road crossings/undercrossings are included in subarea plans," not all subarea plans are complete.

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[28] Western Riverside County Regional Conservation Authority, *Western Riverside County MSHCP Species Accounts*, available at http://wrcrca.conserveriverside.com/wrcrca/Permit_Docs/MSHCP_Docs/volume2/vol2-secb_Mammals.pdf.

[29] Western Riverside County Regional Conservation Authority, *Western Riverside County Multiple Species Habitat Conservation Plan*, available at http://wrcrca.conserveriverside.com/wrcrca/Permit_Docs/MSHCP_Docs/volume1/Vol1-sec2.pdf.

[30] San Diego Association of Governments, *San Diego Multiple Habitat Conservation Program Biological Monitoring and Management Plan (Volume III)* (Mar. 2003), available at https://www.sandag.org/programs/environment/habitat_preservation/mhcp_vol3.pdf.

[31] San Diego Association of Governments, *Final Environmental Impact Statement/Environmental Impact Report for Threatened and Endangered Species Due to Urban Growth within the Multiple Habitat Conservation Program Planning Area* (Mar. 2003), available at https://www.sandag.org/programs/environment/habitat_preservation/mhcp_eir_vol1.pdf.

[32] County of San Diego, *Final Multiple Species Conservation Program* (Aug. 1998), available at https://www.sandiegocounty.gov/content/dam/sdc/pds/mscp/docs/SCMSCP/FinalMSCPProgramPlan.pdf.

(4) The San Diego North County Multiple Species Conservation Plan is one of the "subarea" plans anticipated by San Diego Multiple Species Conservation Program. However, it has not been completed and is still "in development."[33]

(5) The Orange County Transportation Authority NCCP/HCP ("OCTA Plan") lists the mountain lion as a covered species for purposes of the federal HCP, but not for purposes of the NCCP permit. The OCTA Plan acknowledges that despite protection from hunting, annual survival for radio-collared lions is "surprisingly low" at 55.8 percent and that vehicle collisions and depredation permits are primary sources of mortality. The OCTA Plan states that targeted investment in habitat protection is "especially urgent to maintain viability of the Santa Ana Mountains populations."[34] The OCTA Plan does contain four "Species Goals" for mountain lions, including (1) acquiring 1,013 acres of suitable habitat; (2) fencing realignment near the Highway 241 toll road; (3) funding of the North Coal Canyon Restoration Project; and (4) a "wildlife crossing policy" requiring pre-construction surveys to ensure existing crossings "maintain or improve functionality" if modified by new freeway projects. However, despite allowing the expansion of two highways in lion habitat (Projects G and J), the OCTA Plan does not require the construction of any specific wildlife crossings. The OCTA Plan nonetheless claims that impacts on the mountain lion will be offset through these "Species Goals."

There are no NCCPs that cover the Central Coast. In addition, there are no NCCPs that cover portions of the Santa Cruz Mountains except the Santa Clara Valley Habitat Plan. However, this Plan does not cover mountain lions.

8.2 Federal Regulatory Mechanisms

8.2.1 National Environmental Policy Act

The National Environmental Policy Act ("NEPA") is the nation's charter for protection of the environment. (40 C.F.R. § 1500.1(a).) NEPA is designed to ensure that environmental information is available to the public *before* decisions are made or actions taken and to help public officials make decisions based on an understanding of the environmental consequences. (40 C.F.R. § 1500.1(b)-(c).) Federal agencies must prepare an environmental impact statement ("EIS") if it is known that an action will significantly affect the environment, or an environmental assessment ("EA") if the extent of effects are unknown. (42 U.S.C§ 4332; 40 C.F.R. §§ 1502.3 & 1508.9.) NEPA further requires federal agencies to analyze reasonable alternatives to the proposed project. (40 C.F.R. § 1502.14(a)-(c).) NEPA requires the federal agency to consider the degree of adverse effect on a species or its critical habitat designated pursuant to the Federal Endangered Species Act. (*Conservation Cong. v. United States Forest Serv*. (E.D.Cal. 2017) 235 F.Supp.3d 1189, 1207.)

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[33] County of San Diego, *Multiple Species Conservation Program*, available at https://www.sandiegocounty.gov/pds/mscp/.

[34] Orange County Transportation Authority, *Natural Community Conservation Plan/Habitat Conservation Plan* (Nov. 2016), available at https://www.octa.net/pdf/NCCP%20HCP%20FINAL.pdf.

However, agencies have not interpreted NEPA as requiring analysis of impacts to populations that are not currently listed as threatened or endangered, such as the Southern California or Central Coast mountain lions. For instance, Caltrans prepared an Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment for the State Route 118 Widening Project (the "State Route 118 EA") in October 2017 pursuant to NEPA and CEQA. The State Route 118 EA contains no analysis of whether adding more traffic lanes to State Route 118 will impact mountain lions or degrade wildlife connectivity even though multiple mountain lions have died recently attempting to cross State Route 118.[35]

NEPA also is insufficient to protect Southern California and Central Coast mountain lions because courts have interpreted NEPA as primarily a "procedural" statute. While NEPA does require federal agencies to consider detailed information regarding a project's environmental effects, "NEPA itself does not mandate particular results." (*Winter v. NRDC, Inc.* (2008) 555 U.S. 7, 23.)

8.3 Regional and Local Plans and Policies

8.3.1 Santa Monica Mountains National Recreation Area General Management Plan

The Santa Monica Mountains National Recreation Area General Management Plan ("GMP") was prepared pursuant to NEPA and provides a framework for the management of the Santa Monica Mountains National Recreation Area ("SMMNRA"), which is administered by the National Park Service, California State Parks, and the Santa Monica Mountains Conservancy. The GMP recognizes that the Santa Monica Mountains mountain lion population's ability to survive in the face of large-scale habitat fragmentation and destruction is uncertain.[36] (GMP at 154.) The GMP states that "it is likely that their persistence [] would depend upon their capability of dispersing to and from other habitat areas beyond the Santa Monica Mountains." (GMP at 154; see also GMP at 157.) The GMP identifies the "greatest threat" to natural resource preservation in the SMMNRA as "loss of habitat connectivity from increased development and urban encroachment." (*Id*. at 157.) The GMP concedes that "the situation is especially serious for mountain lions" and lists mountain lions as a "park species of concern." (*Id*. at 157 & 161.) The GMP agrees that improvements to facilitate wildlife movement across freeways or through developments may be necessary, but does not propose or require any specific actions to improve wildlife movement across freeways or through development.

The preferred alternative in the GMP provides for enhancing connectivity of undisturbed habitats in the SMMNRA by creating large expanses of open space. (*Id*. at 292.) In addition, the Las Virgenes Canyon and Liberty Canyon areas are included within the SMMNRA boundary to help provide wildlife connectivity for mountain lions and other large species. (*Id*. at 293.) Even though the GMP recognizes the threats facing the Santa Monica Mountains mountain lion

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[35] National Parks Traveler, *Another Mountain Lion Killed Near Santa Monica Mountains National Recreation Area* (Jan. 27, 2017), available at https://www.nationalparkstraveler.org/2017/01/another-mountain-lion-killed-near-santa-monica-mountains-national-recreation-area.

[36] National Park Service, U.S. Department of Interior, *Santa Monica Mountains National Recreation Area General Management Plan Environmental Impact Statement* (July 2002), available at https://www.nps.gov/samo/learn/management/loader.cfm?csModule=security/getfile&PageID=383979.

population and takes steps to protect this population, the GMP does not apply to lands outside of the SMMNRA and thus is insufficient to address the regional connectivity issues facing the population. Nor does the GMP apply to roads and highways under Caltrans' jurisdiction.

8.3.2 Ventura County Wildlife Connectivity Ordinance

The Ventura County Board of Supervisors adopted an ordinance on March 12, 2019 (the "Connectivity Ordinance") to help facilitate wildlife connectivity and minimize habitat fragmentation for mountain lions, mule deer, California gnatcatchers, bobcats, least bell's vireos, California red-legged frogs, and other species. The Connectivity Ordinance establishes overlay zones called "habitat connectivity and wildlife corridors" ("HCWCs") and "critical wildlife passage areas" ("CWPAs") in which development standards and permitting requirements apply. Development standards include 200-foot setbacks from surface water features such as streams and wetlands, limits on certain wildlife impermeable fencing, encouraging compact siting of development, and prohibiting non-commercial planting of invasive plants. Two of the linkages targeted in the Connectivity Ordinance are the Santa Monica Mountains – Sierra Madre Mountains connection and the Sierra Madre Mountains – Castaic Connection, which connect wildlife habitat in the Santa Monica Mountains, Santa Susana Mountains, Simi Hills, and Los Padres National Forest.

While the Connectivity Ordinance should help allow wildlife to move more easily through private lands between core habitat areas, it would do little to ensure connectivity across major roads and highways because Ventura County does not have jurisdiction over these areas. The ordinance would, however, establish 200-foot setbacks from the exit and entry points of 25 existing road crossings in order to facilitate wildlife movement through the crossings. Caltrans and its road maintenance and improvement activities are not regulated by the Connectivity Ordinance. The Connectivity Ordinance is therefore a step in the right direction but insufficient on its own to address the threats facing the CC-S mountain lion population.

8.3.3 Los Angeles County Significant Ecological Areas Program

Los Angeles County is currently in the process of updating the Significant Ecological Areas ("SEAs") Ordinance. The draft ordinance is intended to protect biodiversity in SEAs from incompatible development and ensure that projects reduce habitat fragmentation and edge effects by providing technical review of impacts and requiring mitigation.[37] Like the Ventura County ordinance, the SEAs designations can lead to compact development and allow wildlife to more easily move across private lands between core habitat areas. However, the SEA ordinance is not specifically designed to protect mountain lions and would not regulate Caltrans and its road maintenance and expansion activities.

[37] Los Angeles County Department of Regional Planning, *Significant Ecological Areas Ordinance Update, Public Hearing Draft* (Feb. 14, 2019), available at http://planning.lacounty.gov/site/sea/wp-content/uploads/2019/02/EX-C-SEA-Ordinance-Public-hearing-Draft-2-14-2019.pdf

8.4 Future Development Will Further Threaten the Survival of Southern California Mountain Lions

Continued development in Southern California is expected to further impair connectivity between core habitat areas, leading to further decreases in genetic diversity for Southern California mountain lions. In the environmental review for Southern California national forest land management plans, the U.S. Forest Service found that impaired connectivity poses a serious threat to Southern California mountain lions: the "greatest concern for the long-term health of mountain lion populations on the national forests of southern California is loss of landscape connectivity between mountain ranges and large blocks of open space on private land."[38] The review warned that private land development in Southern California is "steadily reducing the habitat linkages that wildlife species need to connect large blocks of national forest land with other public and private natural spaces and habitat reserves." The review observed that the "widening of the existing highway system and new highways" are a threat to mountain lions because they create barriers to movement. The review concluded that "[w]ithout the national forests and linkages between the mountain ranges and other large habitat preserves, *there is not much long term potential for mountain lions in southern California.*" The review noted that maintenance and restoration of corridors between large wildlands is essential to conserving mountain lions in Southern California

As anticipated by the U.S. Forest Service's environmental review, private land development is currently being approved on linkage areas without sufficient mitigation for Southern California mountain lions or wildlife connectivity. For instance, the 1,000-acre Northlake Specific Plan ("Northlake") was approved by the Los Angeles County Board of Supervisors on April 2, 2019. The Santa Monica Mountains Conservancy ("SMMC") formally objected to the Board's approval of Northlake, noting that the development would degrade a known wildlife linkage between the Angeles National Forest and Los Padres National Forest.[39] CDFW raised similar concerns about the development because it would impair a linkage that is "highly suitable for regional wildlife movement and connectivity" for mountain lions and other species.[40] The Board of Supervisors approved Northlake notwithstanding the objections and concerns of SMMC and CDFW.

Likewise, the Los Angeles County Board of Supervisors approved the 12,000-acre Centennial Specific Plan ("Centennial") on April 30, 2019, despite SMMC warning the Board that Centennial "would sever the most optimal five-mile-wide habitat linkage across Highway 138 between I-5 and State Route 14."[41]

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[38] Forest Service, U.S. Department of Agriculture, *Final Environmental Impact Statement, Land Management Plans, Angeles National Forest Cleveland National Forest Los Padres National Forest San Bernardino National Forest* (Sept. 2005), available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166889.pdf.

[39] Santa Monica Mountains Conservancy, *Draft Supplemental Environmental Impact Report Comments on Northlake Specific Plan Project,* May 22, 2017.

[40] California Department of Fish and Wildlife, *Draft Supplemental Environmental Impact Report Comments on Northlake Specific Plan*, June 12, 2017.

[41] Santa Monica Mountains Conservancy, *Centennial Project Draft Environmental Impact Report Comments County Project No. 02-232*, July 17, 2017.

In the SAM, key linkage and habitat areas remain unprotected and subject to potential or actual development. The Altair Specific Plan discussed in *Section 8 Inadequacy of Existing Regulatory Mechanisms* exemplifies this trend. Other lands in the Santa Ana-Palomar Mountain linkage have been subject to development proposals such as the Temecula Creek Inn (Vickers 2015). The Orange County Board of Supervisors also approved a 6,000-acre development in the Santa Ana Mountains in the "center of puma habitat" (Vickers 2015).[42]

Development in wildlands and linkages will intensify as Southern California's population increases. The Southern California Association of Governments ("SCAG") Program EIR estimates that between 2016 and 2040 the Southern California region will grow by 3.8 million residents and 1.5 million households.[43] The SCAG Program EIR concludes that transportation projects within the SCAG region such as "mixed flow lane projects" and "grade separation projects" may result in significant impacts on wildlife movement, including direct habitat removal and fragmentation that would disrupt corridor functionality. The SCAG Program EIR also acknowledges that "an increase in wildlife-roadway interactions as a result of the development of new transportation projects may increase wildlife injury and fatalities."

The SCAG Program EIR recognizes that "[b]arriers to wildlife movement exist throughout the SCAG region, including large areas of urban development and multilane freeways that cut off regional movement corridors for large migratory species such as mountain lions (*Puma concolor*)." SCAG Program EIR further notes that "wildlife crossings serve to alleviate these barriers and facilitate wildlife movement through the region" and references the planned Liberty Canyon Crossing. However, the Program EIR does not identify any other planned crossings or identify funding for the Liberty Canyon Crossing.

The SCAG Program EIR also confirms that only portions of the lands in the Santa Monica Mountains, SAM, SGSB, and EPR are designated as "open space and recreation" or "undevelopable and protected." Indeed, much of these lands are designated for single family residential or mixed residential. At this time, there are also "vast areas" in Southern California that are undeveloped but are not designated as open space or are otherwise protected, according to SCAG. In addition, agricultural lands are rapidly being converted to urban development throughout Southern California with an estimated 230,000 acres converted between 1996 and 2004 and up to 700,000 acres may be converted by 2030. In short, SCAG recognizes that wildlife connectivity will become even more impaired in the Southern California region due to anticipated growth, but SCAG does not offer any solutions to address the effects of this impaired connectivity on Southern California mountain lions.

Other studies confirm that much of the remaining mountain lion habitat in Southern California is on unprotected lands and at risk of development. According to Burdett et al. (2010), almost half of suitable mountain lion habitat in Southern California (since 1970) is on private lands, of which 35% will be developed by 2030, and other currently contiguous habitat will

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[42] See also Chris Boucly, "New community coming to South County," *The Orange County Register* (Mar. 24, 2012), available at https://www.ocregister.com/2012/03/24/new-community-coming-to-south-county/

[43] Southern California Association of Governments, *Draft Program Environmental Impact Report* (Dec. 2015), available at http://scagrtpscs.net/Documents/2016/peir/draft/2016dPEIR_Complete.pdf.

become fragmented. Hunter et al. (2003) similarly found that 30% of high suitability mountain lion habitat and 76% of medium suitability mountain lion habitat in Southern California is not protected from development. In addition, Zeller et al. (2017) found that only 35% of resource-use patches and 47% of corridors identified in their study area, which encompassed much of the SAM and EPR, were fully protected. Given the extreme isolation, low genetic diversity, and high adult mortality rates from vehicle strikes and depredation kills, increased efforts to protect the species and their habitat are warranted.

Within Riverside County, which covers a significant portion of the Santa Ana Mountains, population growth is expected to be especially high; the Riverside County General Plan predicts that the County's population and housing stock will increase to 3.6 million people and 1.3 million dwelling units by 2035, which constitutes a 65 percent increase.[44] Within San Bernardino County, which encompasses portions of the San Bernardino and San Gabriel Mountains, more than 630,000 people will be added to the County along with 230,000 homes.[45] As urban development overtakes mountain lion habitat and linkage areas throughout the region, conflict with mountain lions, and consequent killing of lions under depredation permits will likely increase. Similarly, use of anticoagulant rodenticides and other environmental toxicants in these areas will likely increase, leading to increased illness and fatalities to "non-target organisms" such as Southern California mountain lions.

Caltrans and local transportation agencies are expected to continue building and expanding roads and highways in Southern California to accommodate actual and anticipated vehicles and development. Caltrans' 2018 State Transportation Improvement Program ("STIP") lists many large-scale road and highway projects planned for Southern California.[46] These include converting SR-71 to a four- and six-lane freeway as well as adding more lanes to the I-15 Freeway adjacent to the SAM,[47] which already acts as a nearly impenetrable barrier to the SAM and EPR mountain lion populations. As noted in *Section 8 Inadequacy of Existing Regulatory Mechanisms*, Caltrans has certified an EIR/EIS to convert the existing two-lane SR-138 into a four or six-lane highway, which will create major barrier between the Tehachapi Mountains and Angeles National Forest. Caltrans also intends to widen SR-118, which will further impair connectivity between the Santa Monica Mountains and Santa Susana Mountains to the detriment of the Santa Monica Mountains mountain lions. There are numerous other road and highway projects planned for Southern California in the next few years.[48] These projects will be funded in part by SB 1, which will raise approximately $52 billion over 10 years.

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[44] County of Riverside, *Riverside County General Plan Environmental Impact Report No. 521* (March 2014), available at https://planning.rctlma.org/Portals/14/genplan/general_plan_2014/EnvironmentalImpactReport/03-0_ProjectDescription_2014-04-07.pdf.

[45] San Bernardino County, *Countywide Plan Growth Forecast*, available at http://countywideplan.com/wp-content/uploads/2018/08/CWP_OH_GrowthForecast_FINAL_20180809.pdf.

[46] California Department of Transportation, *2018 Report on STIP Balances County and Interregional Shares* (Aug. 1, 2018), available at http://www.catc.ca.gov/programs/stip/2018-stip/2018_ORANGE_BOOK.pdf.

[47] Riverside County Transportation Commission, *I-15 Express Lanes Project Southern Extension*, https://www.rctc.org/i15-express-southern-extension/

[48] Kurt Snibbe, "Here are the major highway improvement projects happening in Southern California through 2023," *Orange County Register* (Jan. 23, 2018), https://www.ocregister.com/2018/01/23/here-are-maps-and-a-list-of-the-major-highway-improvement-projects-in-southern-california/; Jeong Park, "2019 will be a busy year for big road construction projects in Orange County," *Orange County Register* (Dec. 31, 2018),

Along with this expansion in roads and highways will come an increase in automobile use: SCAG predicts that the number of vehicle miles travelled ("VMT") in the region is expected to increase 13.3 percent by 2040 (from 448 million VMT per day to 504 million VMT per day). This significant increase in automobile use will further impair connectivity and lead to more collisions between automobiles and lions.

8.5 Future Development Will Further Threaten the Survival of Central Coast Mountain Lions

Future development and highway expansion in the San Francisco Bay Area and Central Coast is anticipated to further fragment habitat for Central Coast mountain lion populations and will increase threats to their survival.

The Association of Bay Area Governments' Plan Bay Area projects that the population of the San Francisco Bay Area is expected to increase from 7.2 million to 9.3 million by 2040—a 30 percent increase.[49] This includes a 26 percent increase in San Mateo County and a 36 percent increase in Santa Clara County, both of which encompass significant portions of the Santa Cruz Mountains. The Plan Bay Area also envisions a 25 percent increase in housing units in San Mateo County, and a 31 percent increase in Santa Clara County.

The Greenbelt Alliance's "At Risk" Report ("Greenbelt Report") estimates that 22,700 acres in San Mateo County are at medium or high risk for development, significant portions of which are in the Santa Cruz Mountains.[50] The Greenbelt Report shows that only 113,000 acres of the Santa Cruz Mountains are permanently protected and warns that San Mateo County has planned to develop housing in remote areas on the eastern slope of the Santa Cruz Mountains. The Greenbelt Report estimates that Santa Clara County has 54,100 acres at high or medium risk of development, significant portions of which are in the Santa Cruz Mountains and eastern foothills. The Greenbelt Report further shows that while large swaths of the eastern Santa Cruz Mountains are currently at "low risk" for development, only fragmented portions enjoy permanent protection.

Similarly, the EIR for the Plan Bay Area 2040 notes that land use growth footprints overlap with approximately 1,040 acres of "Essential Connectivity Areas" or "ECAs."[51] The EIR claims these growth footprints are in already urbanized corridors that are degraded so that their function as linkages is limited. The EIR acknowledges that development projects may directly encroach on wildlife corridors, but does not provide any plan to address the effects of

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https://www.ocregister.com/2018/12/31/2019-will-be-a-busy-year-for-big-road-construction-projects-in-orange-county/.

[49] Metropolitan Transportation Commission and Association of Bay Area Governments, *Bay Area Plan*: *A Strategy for A Sustainable Region* (July 18, 2013), available at http://files.mtc.ca.gov/pdf/Plan_Bay_Area_FINAL/Plan_Bay_Area.pdf.

[50] Greenbelt Alliance, *At Risk 2017* (May 2017), available at https://www.greenbelt.org/at-risk-2017/.

[51] Metropolitan Transportation Commission and Association of Bay Area Governments, *Draft Environmental Impact Report for Plan Bay Area 2040* (April 2017), available at http://2040.planbayarea.org/cdn/farfuture/JHbwWZgw24OSpVBL0b8cJ5_2KHOdckVexpxYp5McOkI/1499352691/sites/default/files/2017-07/PBA%202040%20DEIR_0_1.pdf.

such encroachment. In addition, Caltrans has a number of highway improvement projects planned in Santa Clara and San Mateo counties.[52]

There also is development pressure on the Pajaro Hills linkage, which is important to the Central Coast North mountain lion population and connects the Santa Cruz Mountains and Gabilan Range.[53] The Land Trust of Santa Cruz County notes that while a few large ranches cover most of the Pajaro Hills, many of the properties are parcelized, creating the potential for development which would fragment the landscape. Only 8 percent of the Pajaro Hills is permanently protected.

Growth is expected to increase in the Monterey Bay Area, leading to further fragmentation of natural habitats by urban or exurban development. The Association of Monterey Bay Area Governments predicts that the population in the Monterey Bay Area will rise from 755,403 in 2015 to 883,300 in 2040.[54] The Land Trust of Santa Cruz County notes that while high rates of conversion of forests, rangeland and farmland has largely been prevented in Santa Cruz County, exurban development, roads and mining are fragmenting wildlife habitat. Vineyard conversion adjacent to Zayante, Beer Creek, and Summit roads is causing habitat fragmentation in one of the largest intact habitat patches connecting Santa Cruz and Santa Clara counties. The Land Trust of Santa Cruz County estimates that only 44 percent of the large patches of intact habitat are protected. The Conservation Lands Network likewise confirms that much of the Santa Cruz Mountains do not currently qualify as protected areas.[55]

In San Luis Obispo County, the population is expected to increase by 41,650 between 2015 and 2045.[56] The sparsely populated North Coast region of San Luis Obispo County is currently characterized by ranchlands, rural development, and open space. However, the San Luis Obispo Council of Governments ("SLOCOG") predicts more population growth in this region as compared to other regions. SLOCOG also predicts significant increases in traffic volumes on Highway 101 throughout San Luis Obispo County. The US 101 Corridor Mobility Master Plan also contains various proposals to expand the Interstate 101 freeway in San Luis Obispo County, including adding more lanes to the freeway.[57] There are also proposals to widen portions of State Route 46, the western portions of which bisect mountain lion habitat. The Caltrans State Route 46 Corridor System Management Plan concedes that widening segments 2 and 3 of State Route 46 "could present additional barriers to animal movements by further

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[52] Caltrans District 4, *Projects By County*, available at http://www.dot.ca.gov/d4/projects_list.htm.
[53] Land Trust of Santa Cruz County, *A Conservation Blueprint* (May 2011), available at https://landtrustsantacruz.org/blueprint/conservation-blueprint_low-res_110522.pdf.
[54] Association of Monterey Bay Area Governments, *2040 Metropolitan Transportation Plan/Sustainable Communities Strategy* (June 2018), available at http://ambag.org/programs/met_transp_plann/documents/Final_2040_MTP_SCS/AMBAG_MTP-SCS_Final_EntireDocument.pdf.
[55] Conservation Lands Network, *1.0 Progress Report* (2014), available at https://www.bayarealands.org/wp-content/uploads/2017/07/CLN-1.0-Progress-Report.pdf.
[56] San Luis Obispo Council of Governments, *2019 Regional Transportation Plan Public Review Draft* (Feb. 2019), available at https://www.dropbox.com/s/6pysudp1g36n4a5/__Public%20Rev%20draft.pdf?dl=0 .
[57] San Luis Obispo County of Governments, *US 101Corridor Mobility Master Plan* (Sept. 2014), available at http://www.dot.ca.gov/hq/tpp/offices/ocp/5_SLOCOG%20101_executive_summary_draft_9%2019%2014.pdf.

dividing large, contiguous wildlife habitat areas."[58] There are numerous other road and highway expansion projects planned for Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties.[59] The expansion of existing roads and highways along with increased numbers of automobiles will further impair connectivity in the Central Coast region.

9 CESA Listing for Southern California and Central Coast Mountain Lions Would Supplement Proposition 117's Protections.

9.1 CESA Listing is Consistent with Proposition 117.

CESA protections for Southern California and Central Coast mountain lions are consistent with and supplemental to those established by Proposition 117. Both CESA and Proposition 117 include "take prohibitions"—CESA makes it unlawful for any person or agency to import, export, take, possess, or purchase a listed species. (Cal. Fish & Game Code § 2080.) By the same token, Proposition 117 makes it unlawful to take, injure, possess, transport, import, or sell a mountain lion. (Cal. Fish & Game Code § 4800(b).)

Both CESA and Proposition 117's take prohibitions are subject to certain exceptions. Under CESA, CDFW may authorize that a person, agency, or institution take a listed species "for scientific, educational, or management purposes." (Cal. Fish & Game Code § 2081(a).) CESA defines scientific resources management activities to include "research, census, law enforcement, habitat acquisition, restoration and maintenance, propagation, live trapping, and, transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, [] regulated taking." (*San Bernardino Valley Audubon Society v. City of Moreno Valley* (1996) 44 Cal.App.4th 593, 604, quoting Cal. Fish & Game Code § 2061.) The regulations implementing CESA also allow for the take of a listed species for management or law enforcement purposes: "Department wildlife management activities. The possession or take of endangered, threatened, or candidate species by employees and agents of the Department for scientific, educational and management purposes, and for law enforcement purposes, is not prohibited." (Cal. Code Regs., tit. 14, § 783.1(c).) As discussed above in *Section 8 Inadequacy of Existing Regulatory Mechanisms*, Proposition 117 also contains exceptions which allow for the take of mountain lions in certain circumstances. These exceptions are sufficiently similar that in most cases take of mountain lions properly authorized by Proposition 117 could be consistent with CESA's exceptions for wildlife management activities or law enforcement purposes. (Cal. Code Regs., tit. 14, § 783.1(c).)

9.2 CESA Listing Would Further the Goals of Proposition 117.

CESA listing would further Proposition 117's goals of protecting and restoring wildlife habitat as human populations increase. (Cal. Fish & Game Code § 2780(a).) CESA listing would also help preserve "corridors of natural habitat [] to maintain the genetic integrity" of mountain lions in the Santa Monica Mountains, Santa Ana Mountains, Santa Susana Mountains, Simi Hills, and Coast Range. (Cal. Fish & Game Code § 2780(a).)

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[58] Caltrans, *State Route 46 Corridor System Management Plan* (June 2009), available at http://www.dot.ca.gov/hq/tpp/corridor-mobility/CSMPs/d5_CSMPs/SR%2046/SR-46%20CSMPo100.pdf.
[59] Caltrans District 5, *Projects By County*, available at http://www.dot.ca.gov/d5/.

Likewise, CESA requires that "reasonable and prudent alternatives" that will not jeopardize the existence of a listed species be developed in coordination with the project proponent and state lead agency consistent with conserving the listed species and maintaining the project purpose to the greatest extent feasible. (Cal. Fish & Game Code § 2053(b).) In the event that such alternatives are infeasible, individual projects may still be approved if appropriate mitigation measures are implemented. (Cal. Fish & Game Code § 2054.) CESA envisions these mandates will be incorporated into the CEQA process. (Cal. Fish & Game Code §§ 2064-2065; Cal. Code Regs., tit. 14, §§ 783.3 & 783.5.)

Consistent with Proposition 117, CESA further provides that it is the policy of the state to conserve and protect listed species and their habitat, including through acquiring lands for habitat. (Cal. Fish & Game Code § 2052.) Towards this end, CESA directs state agencies to utilize their authority to conserve listed species. (Cal. Fish & Game Code § 2055.) If the Southern California and Central Coast mountain lions were listed under CESA, this mandate would apply to, for example, Caltrans, which currently lacks a clear mandate to conserve these lions or habitat connectivity necessary for their continued survival.

CESA authorizes CDFW to develop and implement "nonregulatory recovery plans" for listed species with priority given to species that are or may be "significantly affected by anticipated land use changes, climate change, or changes in aquatic conditions." (Cal. Fish & Game Code §§ 2079.1(a) & (b).) Given the strong evidence that land use changes will significantly affect (and have already significantly affected) Southern California and Central Coast mountain lions, CDFW could develop and implement a recovery plan for these lions pursuant to this provision.

In sum, CESA listing would build upon the protections in Proposition 117 by establishing an affirmative duty to ensure the survival and recovery of the Southern California and Central Coast mountain lions by, *inter alia*, (1) prohibiting the approval of projects that could jeopardize their continued existence or result in destruction of essential habitat (Cal. Fish & Game Code § 2053(a)); (2) requiring state agencies such as Caltrans to utilize their authority to conserve listed species (Cal. Fish & Game Code § 2055); and (3) requiring appropriate mitigation measures be implemented for projects that could destroy mountain lion habitat or impair connectivity (Cal. Fish & Game Code § 2054).

To the extent there is any tension between the provisions in Proposition 117 and CESA, Proposition 117 is to be "liberally construed to further its purposes." (Prop. 117 § 9.) Because Proposition 117 and CESA both have similar purposes, Proposition 117 should be construed to be consistent with CESA.

10 Recommended Management and Recovery Actions

Recommendations for the management and recovery of Southern California and Central Coast mountain lion populations are as follows:

1. Design and build crossing infrastructure in strategic locations to improve wildlife connectivity and permeability at existing roads and highways. Crossing infrastructure should include but is not limited to overcrossings, underpasses, culverts, and exclusionary fencing that guides animals to safer crossing areas. The following crossing locations have been identified by mountain lion experts and should be prioritized for the implementation of crossing infrastructure: 1) I-15 Freeway at Temecula Creek Bridge to enhance the Palomar Linkage and connect the Santa Ana and Eastern Peninsular Mountain Ranges (Gustafson et al. 2017; Zeller et al. 2017; Ernest et al. 2014; Riley et al. 2018); 2) I-15 Freeway at "Site 5" as described in Riley et al. (2018); 3) Hwy-101 at West Liberty Canyon. (Riley et al. 2018.)

2. Improve or add large culverts to existing freeways in areas suitable for mountain lion crossing. (Vickers 2015).

3. Dedicate sufficient Wildlife Conservation Board, Habitat Conservation Fund and other state funding sources towards acquiring key mountain lion habitat and for establishment of highway crossing infrastructure.

4. Ensure that suitable habitat exists (through preservation or restoration/enhancement) on both sides of crossing structures and culverts (South Coast Wildlands 2008). Restrict human activity near crossing structures and relocate foot trails away from these structures (South Coast Wildlands 2008).

5. Fully protect mountain lion habitat, including resource-use patches and corridors (Zeller et al. 2017; Vickers et al. 2015). Prohibit large-scale development in primary travel corridors and habitat linkages, such as in and around the last remaining linkage for statewide genetic connectivity in the Tehachapi and Sierra Pelona Mountains (Gustafson et al. 2018) and in corridor areas between the SAM and EPR (Gustafson et al. 2017).

6. Require analysis of region-wide wildlife connectivity in all new development proposals (Gustafson et al. 2018).

7. Reduce depredation conflicts that precipitate mountain lion deaths (Vickers et al. 2015). Develop and implement outreach and education activities to promote use of predator-proof enclosures for domestic animals. (Vickers et al. 2015.) Expand CDFW's new three-step depredation permit policy in the CC-S and SAM areas to include all mountain lions across the state, or at a minimum, within the SGSB, EPR, CC-N, and CC-C population areas. Enhance the policy with enforceable implementation of non-lethal protective measures and reporting requirements.

8. Prohibit the use of second-generation anticoagulant rodenticides ("SGARs"), such as brodifacoum, bromadiolone, difenacoum, and difethialone in Southern California and Central Coast mountain lions' core habitat areas and linkages. Limit the use of other pesticides and herbicides that may have negative effects on mountain lion populations in Southern California and the Central Coast.

9. Identify "priority areas" for establishing wildlife passage features for the Southern California and Central Coast mountain lions using the best available science, including data collected by various agencies, academic institutions, and organizations, including but not limited to the National Park Service, the Karen C. Drayer Wildlife Health Center at UC Davis, the Road Ecology Center at UC Davis, and the Santa Cruz Puma Project at UC Santa Cruz.

10. Require Caltrans to analyze how projects in the State Highway Operation Protection Program and State Transportation Improvement Program can be designed to facilitate wildlife connectivity through wildlife passage features such as culverts, undercrossings, overcrossings, bridges, directional fencing, scuppers, barrier breaks, roadside animal detection systems, etc. Require Caltrans to collect and analyze roadkill data to identify hotspots where mountain lions are killed. Require Caltrans to implement wildlife passage features to the greatest extent feasible and as expeditiously as possible.

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State of California
Department of Fish and Wildlife

Memorandum

Date: December 10, 2025

To: Melissa Miller-Henson
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Status Review Report for the Petitioned Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lion (*Puma concolor couguar*)

The California Department of Fish and Wildlife (Department) has prepared the attached status review report for the petitioned Southern California/Central Coast Evolutionarily Significant Unit (ESU) of mountain lion (*Puma concolor couguar*) for the California Fish and Game Commission (Commission) pursuant to the California Endangered Species Act, Fish and Game Code section 2050 et seq. The Commission published the Notice of Candidacy Findings on May 1, 2020, directing the Department to prepare a status review report. On April 14, 2021, the Commission approved a department request for a 6-month extension to further analyze the petition and complete its status review report.

The Department completed the attached status review report as required by Fish and Game Code section 2074.6. The status review report contains the Department's review of the best scientific information available to the Department on the status of the mountain lion in the petitioned area and serves as the basis for the Department's recommendation to the Commission that listing a distinct population segment of the mountain lion as threatened is warranted. The Department finds that although not presently threatened with extinction, a distinct population segment of the mountain lion is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA.

If you have any questions or need additional information, please contact Scott Gardner, Branch Chief, Wildlife Branch at (916) 801-6257 or by email at wildlifemgt@wildlife.ca.gov.

Attachment

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State of California
Natural Resources Agency
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Report to the California Fish and Game Commission

A Status Review of the Petitioned Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lion (*Puma concolor couguar*) in California



Charlton H. Bonham, Director

California Department of Fish and Wildlife

December 2025

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Cover photograph by Irvine Ranch Conservancy on Orange County Parks Land; used with permission.

Executive Summary

This status review contains the most current information available on the mountain lion (*Puma concolor couguar*) in the central coast and southern parts of California and serves as the basis for the California Department of Fish and Wildlife's (Department) recommendation to the California Fish and Game Commission (Commission) on whether to list the species in those areas as threatened or endangered under the California Endangered Species Act (CESA).

On June 25, 2019, the Commission received a petition from the Center for Biological Diversity and the Mountain Lion Foundation that proposed the listing of the mountain lion as threatened or endangered in a portion of the state identified as the Southern California/Central Coast Evolutionarily Significant Unit (ESU). The petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing, that the Commission consider whether any of the six populations, singularly or in combination, comprise an ESU and meet the criteria for listing. On April 16, 2020, the Commission considered the petition, the Department's petition evaluation and recommendation, and comments received. The Commission found that sufficient information existed to indicate the petitioned action may be warranted and accepted the petition for consideration. The Commission's "may be warranted" decision initiated this status review to inform the Commission's decision on whether listing the petitioned ESU or any portion of the Southern California/Central Coast mountain lion population is warranted. The term "petitioned ESU" is used throughout this report. When "petitioned ESU" appears, it is intended to encompass the petitioners' proposal to list the petitioned area as a single ESU.

Species Description, Biology, and Ecology

Mountain lions are large felids that are primarily solitary, territorial, and occur in low density. In California their primary prey are deer, and they have large home ranges often comprised of multiple vegetation types including riparian, chaparral, oak woodlands, coniferous forests, grasslands, and deserts, and occur from near sea level to high elevations. Mountain lions reach sexual maturity at two to four years, and females care for their young for the first one to two years without help from males.

Population Structure

Mountain lion populations in California are genetically structured (differentiated) by natural barriers such as mountain ranges, water bodies, and deserts, as well as urbanization and the proliferation of highways and interstates. In combination these barriers to movement have facilitated the creation of six distinct genetic populations within the petitioned ESU. Roughly, these are:

1) Central Coast North (CC-N), including the Santa Cruz Mountains and San Francisco Bay Area counties to the east;
2) Central Coast Central (CC-C), generally the coastal mountains from southern Monterey Bay to Ventura County;
3) Central Coast South (CC-S), including the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills;
4) San Gabriel and San Bernardino Mountains (SGSB);
5) Santa Ana Mountains (SA); and

6) Eastern Peninsular Range (EPR), including the mountains of San Diego County, extending east possibly as far as the Colorado River and the Arizona border, and bounded on the south by the border with Mexico.

These genetic populations experience varying levels of isolation and gene flow, and physical signs of inbreeding have been documented in the CC-S, SA, and EPR genetic populations. Available genetic information reveals some level of differentiation between these genetic populations.

Status and Trends

Significant changes in mountain lion distribution have occurred within the petitioned ESU due to habitat loss and fragmentation from land use changes that began in the late 1700s and continue to the present. Agricultural, residential, and industrial development, including the creation of modern transportation and infrastructure networks, has resulted in significant habitat fragmentation and barriers to movement in portions of the petitioned ESU. Mountain lions were historically controlled to protect livestock, and the Department paid a bounty for mountain lions from 1906 to 1963. The size of the California mountain lion population has been estimated periodically. Biologists estimated there were 600 mountain lions in California in the mid-1950s during the bounty period. By 1976, the population was estimated to be 2,400. A 1989 study estimated 4,100–5,700 mountain lions in the state. In 1990, the voters of California enacted Proposition 117, known as the California Wildlife Protection Act of 1990 and codified as Fish and Game Code section 4800, et seq., which prohibited take of mountain lions except in certain limited circumstances. The Department's current and most rigorous statewide population estimate to date is 4,172 (95% CI 3,645–4,750) mountain lions, including dependent young. The current estimate should be considered a refinement of earlier estimates and should not be interpreted to mean the actual population has declined since 1989. There are an estimated 1,449 (95% CI 1,272–1,638) mountain lions within the petitioned area.

Threats

Primary threats to mountain lions in the petitioned ESU include continued habitat loss and isolation of small populations due to expanding human infrastructure. Especially in Southern California, distinct genetic populations inhabit mountain ranges that are surrounded by human development or desert, such that dispersal to and from those ranges is significantly constrained by the presence of freeways and urban areas. From 1974 to 2020, the top sources of mortality throughout the state were removal in response to livestock or property damage and vehicle strikes. These mortality sources exceed "natural" causes of mortality. However, in recent years the number of mountain lions killed for depredating livestock or pets has dropped sharply (as a result of the Department's ongoing efforts to balance Proposition 117's conservation purpose and emphasis on the use of nonlethal methods with the need to provide a reasonable approach to depredation). Rodenticides and infectious disease kill relatively few mountain lions outright but can weaken individuals and make them less resilient to other threats. Recent intense wildfires have killed animals in already small, isolated populations (e.g., the Santa Monica Mountains) and may temporarily reduce habitat suitability. Human infrastructure that challenges or prevents gene flow between the genetic populations is a major concern in much of the petitioned ESU. Malformed sperm and/or kinked tails have been recorded in the SA, EPR, and CC-S genetic populations. Isolation and inbreeding increase the chance of extinction and the SA genetic

population has a 16–21% chance of extirpation over the next 50 years if current low levels of gene flow continue.

Although the cumulative population estimate for the petitioned area is over 1,400 animals, the population is not continuous. Instead, it is broken into six genetic populations with varying levels of connection to adjacent populations. Each of the genetic populations has a low or very low effective population size (Ne; the estimated number of individuals in a population that participate in producing the next generation, which is smaller than the estimated population size), with estimates ranging from 3 to 57. None of the six genetic populations has an estimated effective population size of 100 or more, which would help avoid negative impacts from inbreeding in the long term at the population level. Improved connectivity is needed to increase gene flow, mitigate the negative impacts of isolation, and reduce the risk of localized extirpations from a variety of threats.

Recommendation

Although Petitioners seek to have these mountain lion populations listed as one or more ESUs, the Department concludes they are more appropriately analyzed as a distinct population segment (DPS).[1] The Department finds that neither the petitioned ESU nor genetic populations within the petitioned area, singly or in combination, could appropriately be considered an ESU. The genetic populations are not known to be both substantially isolated from other populations *and* important components of the evolutionary legacy of the mountain lion species.

However, the Department also examined whether the mountain lions comprising the six petitioned genetic populations constitute a DPS, based on a federal policy that is applied in listing evaluations under the federal Endangered Species Act and which has previously been used by the Department in CESA evaluations. A DPS is a population or group of populations that is discrete from other populations of the species and significant in relation to the entire species (in this case the statewide population). The Department finds that the mountain lion population composed of the six petitioned genetic populations is discrete, significant, and imperiled; therefore, the Department recommends the Commission find a DPS of mountain lions in an area largely coinciding with the petitioned area[2] should

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[1] Both DPSs and ESUs are concepts originally developed in the context of the federal Endangered Species Act. The Department and the Commission are not required to apply either the federal ESU policy or the federal DPS policy. CESA permits the Commission to list "species or subspecies" (See Fish & G. Code, §§ 2062, 2067, 2068). To the extent the Commission concludes that an ESU or a DPS of a particular species constitutes a "subspecies" within the meaning of CESA, it may recommend listing of that subspecies as an ESU or DPS (See *Cal. Forestry Assn. v. Cal. Fish and G. Com.* (2007) 156 Cal.App.4th 1535).

[2] For the DPS assessment, the Department made modifications to the petitioned ESU boundary. Areas of the southeastern deserts were excluded because no genetic samples from the area have been evaluated, making it impossible to assign lions in this area to a genetic population. Additionally, areas of intensive agriculture in the northeastern portion of the petitioned ESU were excluded. See sections 6 and 9 of this report for more details.

be listed as threatened. The Department further recommends implementation of the management recommendations and recovery measures described in this status review.

1. Introduction

1.1 CESA Petition History

On June 25, 2019, the California Fish and Game Commission (Commission) received a petition from the Center for Biological Diversity and the Mountain Lion Foundation (hereafter "the petitioners") to list the mountain lion (*Puma concolor couguar*) in a portion of the state identified as the Southern California/Central Coast Evolutionarily Significant Unit (ESU) as threatened or endangered under the California Endangered Species Act (CESA). The petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing, that the Commission consider whether any of the six populations, singularly or in combination, comprise an ESU and meet the criteria for listing. Commission staff transmitted the petition to the Department of Fish and Wildlife (Department) pursuant to Fish and Game Code section 2073 on July 5, 2019, and published a formal notice of receipt of the petition on July 26, 2019 (Cal. Reg. Notice Register 2019, No. 30-Z, p. 1086).

On January 31, 2020, the Department provided the Commission with its evaluation of the petition, "Evaluation of a Petition from the Center for Biological Diversity and the Mountain Lion Foundation to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act," to assist the Commission in making a determination as to whether the petitioned action may be warranted based on the sufficiency of scientific information in the petition (Fish & G. Code, §§ 2073.5 & 2074.2; Cal. Code Regs., tit. 14, § 670.1, subds. (d) & (e)). Focusing on the information available to the Department relating to each of the relevant categories, the Department recommended to the Commission that the petition be accepted. At its public meeting held via teleconference on April 16, 2020, the Commission considered the petition, the Department's petition evaluation and recommendation, and comments received. The Commission found that sufficient information existed to indicate the petitioned action may be warranted and accepted the petition for consideration. Upon publication of the Commission's notice of its findings, the Southern California/Central Coast ESU of mountain lions became a CESA candidate species on May 1, 2020 (Cal. Reg. Notice Register 2020, No. 18-Z, p.692).

The Commission's action designating the mountain lion within the boundary of the petitioned Southern California/Central Coast ESU as a candidate species triggered the Department's process for conducting a status review to inform the Commission's decision as to whether listing the petitioned ESU or any portion of the Southern California/Central Coast mountain lion population as threatened or endangered is warranted. At its scheduled public meeting on April 14, 2021, the Commission granted the Department a six-month extension to complete the status review and facilitate external peer review.

1.2 Status Review Overview

This status review serves as the basis for the Department's recommendation to the Commission on whether the petitioned action to list the mountain lion in the petitioned ESU as threatened or endangered under CESA is warranted. It is based upon the best scientific information available to the Department. It is not intended to be an exhaustive review of all published scientific literature on the mountain lion; rather, it is intended to summarize key points relevant to the status of the species and

address regulatory report requirements. All the required elements in Fish and Game Code sections 2072.3 and 2074.6, as well as in California Code of Regulations Title 14 section 670.1, are included and addressed in this status review.

Specifically, this status review addresses each of the required petition components and the listing factors that the Commission must consider in making its determination. A petition to list a species under CESA must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant" (Fish & G. Code, § 2072.3; see also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). A status review must include a preliminary identification of the habitat that may be essential to the continued existence of the species and recommend management activities and other recommendations for recovery of the species (Fish & G. Code, § 2074.6). Additionally, a species shall be listed as threatened or endangered "if the Commission determines its continued existence is in serious danger or is threatened by any one or any combination of the following factors: present or threatened modification or destruction of its habitat, overexploitation, predation, competition, disease, or other natural occurrences or human-related activities" (Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A)).

In addition to addressing each of the petition components and listing factors, the Department must make a recommendation to the Commission as to whether the petitioned action to list the mountain lion as threatened or endangered is warranted. An endangered species is defined under CESA as one "which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (Fish & G. Code, § 2062). A threatened species under CESA is one that "although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]" (Id., § 2067).

Receipt of this report is to be placed on the agenda for the next available meeting of the Commission after delivery. At that time, the report will be made available to the public for a 30-day public comment period prior to the Commission taking any action on the petition.

1.3 Notifications, Information Reviewed, and Peer Review

Following the Commission's action to designate the mountain lion as a candidate species for threatened or endangered status, the Department notified affected and interested parties and solicited data and comments on the petitioned action pursuant to Fish and Game Code section 2074.4 (see also Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2)).

Tribal notifications were distributed by letter and email to tribes identified by the Native American Heritage Commission as having a cultural or traditional affiliation within the geographic area of the mountain lion. The Department received 10 comments in response to the tribal notifications. See Appendix B for additional details.

Public notifications were distributed to affected and interested parties and sent to email distribution lists maintained by the Department and the Commission. A press release was also distributed through the Department's website. The Department received 21 comments in response to public notifications. See Appendix B for additional details.

The draft status review was independently peer reviewed by five experts external to the Department (Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2)). The Department evaluated the input received and amended the status review as appropriate. See Appendix C for additional details and the Department's written response to peer review.

1.4 Administrative Status

For much of the 20th Century, mountain lions were a bountied predator in California (Young and Goldman 1946; Dellinger and Torres 2020). In 1964, bounties ceased and the mountain lion was classified as a nuisance or vermin species that could be taken without a hunting license and with no limits (Dellinger et al. 2021b). In 1969, mountain lions were classified as a game species that could be hunted by licensed hunters. From 1972–1986, mountain lions were classified as a non-game mammal with a moratorium on hunting. Their status as a game species was reinstated in 1986. However, no mountain lions were harvested between this status change and a ballot initiative (Proposition 117) approved in 1990 which classified mountain lions as a "specially protected mammal species" (Fish & G. Code, § 4800). That classification continues to this day, and state law prohibits the take, possession, transport, import, or sale of a mountain lion or mountain lion products with limited exceptions. Take is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86). Take of mountain lions is allowed only under specified conditions, including for the protection of public health and safety, the protection of listed or fully protected bighorn sheep species (*Ovis canadensis* spp.), and in response to livestock or property damage.

1.5 Summary of Petitioned Action

The Petitioners propose listing mountain lion populations south of San Francisco Bay in the coastal, Transverse, and Peninsular Mountain Ranges, the Sonoran Desert, part of the Central Valley, and part of the Mojave Desert as a single Southern California/Central Coast ESU. Alternatively, the Petitioners propose the Commission determine whether one or more of the six genetic populations in the following areas identified by Gustafson et al. (2019) comprise an ESU and meet the criteria for listing as threatened or endangered:

1) Central Coast North (CC-N), which includes the Santa Cruz Mountains and San Francisco Bay Area counties to the east;
2) Central Coast Central (CC-C), generally from southern Monterey Bay to Ventura County in the coastal mountains;
3) Central Coast South (CC-S), which includes the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills;
4) San Gabriel and San Bernardino Mountains (SGSB);
5) Santa Ana Mountains (SA); and

6) Eastern Peninsular Range (EPR), which includes the mountains of eastern San Diego County, extending east possibly as far as the Colorado River and the border with Arizona, and is bounded on the south by the border with Mexico.

These populations are six of the 10 genetically discernible populations in California as delineated in Gustafson et al. (2019) (Fig. 1).

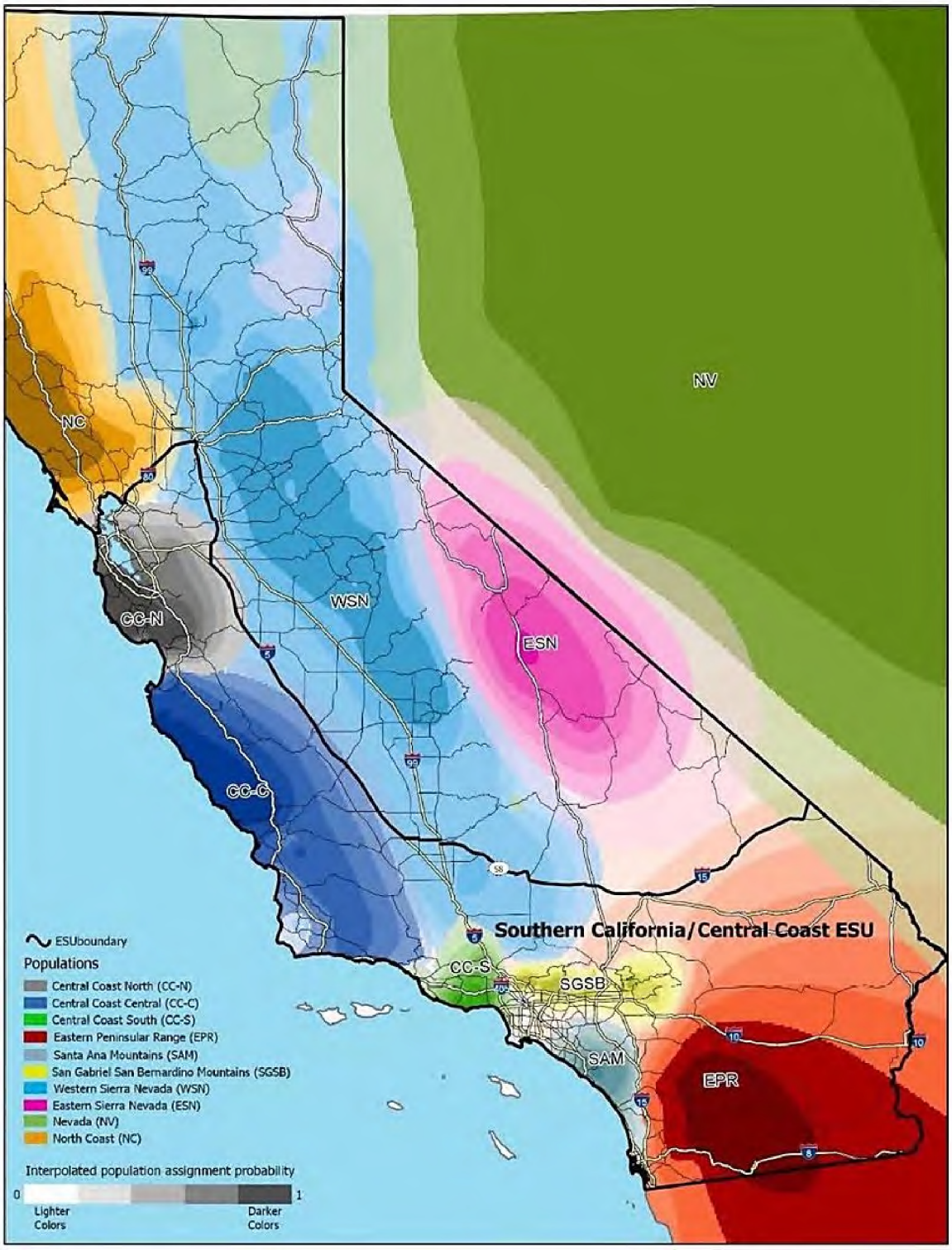

Figure 1. Fine-scale genetically discernible mountain lion populations and major roadways in California based on data collected from 1992 to 2016 (genetic information from Gustafson et al. 2019). Black line outlines the petitioned Southern California/Central Coast ESU boundary. This figure is from the Petition, Figure ES 1.

The Evolutionary Significant Unit concept was developed primarily for use in salmonids by the National Marine Fisheries Service (NMFS) and has been used to list populations of anadromous salmon under the federal Endangered Species Act such as the Columbia River chum salmon ESU (64 Fed. Reg 14508–14517 (March 25, 1999)). The use of ESUs by the Department to evaluate the status of species pursuant to CESA is supported by recent listing determinations by the Commission (e.g., Southern Sierra Nevada Fisher ESU; Coho salmon Central California coast ESU) and by the determination of California's Third District Court of Appeal that the term "species or subspecies" as used in CESA (Fish & G. Code, §§ 2062 and 2067) can include ESUs (*Cal. Forestry Assn. v. Cal. Fish and G. Com.* (2007) 156 Cal.App.4th 1535).

To be considered an ESU under federal policy, a population must meet two criteria: 1) it must be substantially reproductively isolated from other conspecific (i.e., same species) population units; and 2) it must represent an important component of the evolutionary legacy of the species that contributes to the genetic diversity of the species as a whole (Waples 1991). The genetic isolation "does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in different population units" (Waples 1991). Although neither the Department nor the Commission is bound by the federal ESU policy or the federal DPS policy, the Department has found these approaches useful for assessing the existence of a subspecies under CESA, has used these criteria in its prior evaluations of ESUs for species such as the Pacific fisher and Coho salmon, and uses them in this status review.

For brevity, the term "petitioned ESU" is used throughout this report. When "petitioned ESU" appears, it is intended to encompass the petitioners' proposal to list the petitioned area as a single ESU.

2. Biology And Ecology

2.1 Species Description and Life History

Mountain lions belong to the mammalian order Carnivora and are members of the cat family Felidae, subfamily Feline, and a part of the puma lineage. They have numerous other common names including puma, cougar, panther, painter, and catamount (Young and Goldman 1946; Hunter 2015). Mountain lions were once widespread in the Americas, but Euro-American settlers extirpated them from most of the U.S. and Canada east of the continental divide by the beginning of the 20th century, with only a small population (< 200 individuals) remaining in Florida and a population of unknown size in western and southern Texas. Populations in Mexico and other countries in Central and South America do not appear to have suffered similar extirpations (Hall and Kelson 1959; Pierce and Bleich 2003). However, since the late 20th century, breeding populations of mountain lions have returned to some areas east of the continental divide, including North and South Dakota and Nebraska (Hunter 2015; Cougar Fund 2023).

There are currently two recognized subspecies of mountain lion throughout the Americas (Culver et al. 2000; Kitchener et al. 2017). Mountain lions in North and Central America are classified as *P. c. couguar,* while most mountain lions in South America are classified as *P. c. concolor.* The Department formerly recognized another subspecies, the Yuma puma (*P. c. browni*) (Williams 1986; Kucera 1998; CDFW 2022a). However, research by McIvor et al. (1995) and Culver et al. (2000) detected little morphological or genetic support for retention of the *P. c. browni* subspecies. Consequently, the Department no longer

considers mountain lions from the Colorado River valley and adjacent Sonoran Desert uplands to be a distinct taxonomic unit.

Adult mountain lions are large and slender with muscular limbs and a long, black-tipped tail that is about one third of the animal's total length. Males are typically larger than females. Males generally weigh 55–65 kg (121–143 lbs.) with a length of 2.2–2.3 m (7.2–7.5 ft.) from nose to tail tip, and females generally weigh 35–45 kg (77–99 lbs.) with a length of 2.0–2.1 m (6.6–6.9 ft.) (Currier 1983).

Deer (*Odocoileus* spp.) are the most common prey of mountain lions in the United States, Canada and parts of Mexico, composing about 70% of their diet (Ruth and Murphy 2009). The relationship between mountain lions and deer is so strong that lion distribution throughout the Americas has been described as largely a function of deer distribution (Young and Goldman 1946; Pierce et al. 2000). However, mountain lions are opportunistic predators and are known to eat at least 232 different species of mammals, birds, and reptiles across their extensive geographic range. Larger prey are favored in temperate forest, desert, and grassland biomes, whereas smaller prey are more often consumed in tropical forest biomes (Karandikar et al. 2022). Prey species in North America include, elk (*Cervus canadensis*), feral horses (*Equus ferus caballas*), feral burros (*Equus asinus*), wild pigs (*Sus scrofa*), pronghorn (*Antilocapra americana*), bighorn sheep, coyotes (*Canis latrans*), bobcats (*Lynx rufus*), porcupines (*Erethizon dorsatum*), fishers (*Pekania pennanti*), rodents, wild turkeys (*Meleagris gallopavo*), and livestock (Young and Goldman 1946; Currier 1983; Iriarte et al. 1990; Sweitzer et al. 1997; Wengert et al. 2014; Allen et al. 2015; Vickers and Garcelon 2022).

Mountain lions reach sexual maturity at two to four years, and females care for their young for the first one to two years (Quigley and Hornocker 2009). Mature females typically breed every other year (Robinette et al. 1961). Males will mate with multiple females and do not contribute to rearing young (Logan and Sweanor 2010). Mates locate each other with auditory and olfactory signals including scrapes—shallow troughs with a small mound of debris at the distal end, made using their hind feet. These forms of communication are also vital for maintaining family cohesion and avoiding competition or direct threats from other mountain lions. Identity, social status, and reproductive condition may all be possible functions of scent markers (Logan and Sweanor 2010). Mountain lion scent marks seem to serve as "bulletin boards" which males and females visit to determine the temporal presence, reproductive status, and possibly even the individual identity of other mountain lions (Currier 1983; Logan and Sweanor 2001; Harmsen et al. 2010; Allen et al. 2014).

Gestation lasts 82–96 days (Young and Goldman 1946; Currier 1983; Hunter 2015). Litter size ranges from one to six, though two to four kittens are typical (Pierce and Bleich 2003; Beier et al. 2010; Riley et al. 2014). Reproductive females tend to avoid human disturbances. Wilmers et al. (2013) found that mountain lions exhibiting reproductive behaviors (denning and chemical and vocal communication) avoided human disturbances by distances four times greater than non-reproductive mountain lions. As young reach 12–18 months of age, mothers may come into estrus and become aggressive towards them, encouraging their dispersal (Pierce and Bleich 2003). Adult males are also known to kill kittens, yearlings, subadults, and occasionally other adults (Logan and Sweanor 2010; Riley et al. 2014; Benson et al. 2020). Survivorship of dispersing mountain lions is low relative to adults with established home ranges (Benson et al. 2016; Benson et al. 2020), and dispersing young are more likely than resident mountain lions to be involved in depredation incidents or other conflicts with humans as they try to

find prey without the advantage of an established home range (Torres et al. 1996).

Mountain lions are known to move long distances while dispersing. One subadult male was documenting moving 2,450 km (1,522 mi.) from South Dakota to Connecticut (Hawley et al. 2016). Vickers et al. (2015) documented numerous Southern California study animals dispersing > 80 km (50 mi.), and one young male moved approximately 150 km (93 mi.) from California south into Baja California, Mexico and back. Most long-distance dispersers are thought to be young males in search of available mates (Hawley et al. 2016).

A study of juvenile lion dispersal was conducted by Beier et al. (1995) in the Santa Ana Mountains of Southern California from 1988 to 1992. Juvenile mountain lions dispersed via habitat corridors in a landscape fragmented by urbanization. Each collared male dispersed over several weeks to months, and as many as four temporary home ranges were occupied sequentially. The mean dispersal distance from a sample of eight males was 63 km (39.1 mi.). The one monitored female disperser wandered throughout the northern half of the Santa Ana Mountains, changing directions ≥ 5 times upon encountering the urban-wildland interface and covered ≥ 342 km (212.5 mi.) without establishing a temporary home range. Four months after beginning her dispersal, she returned to the edge of her natal range and bedded near her mother for one day before dying near that location days later of unknown causes. All travel in corridors and habitat peninsulas occurred at night.

Adult mountain lions are primarily solitary, territorial, and occur in low density. They require large areas of habitat with adequate prey abundance (Quigley and Hornocker 2009). Their home ranges are often comprised of multiple vegetation community types including riparian, chaparral, oak woodlands, coniferous forests, grasslands, and deserts (Grinnell 1914; Grinnell et al. 1937; Williams 1986; Dickson et al. 2005; McClanahan et al. 2017; Dellinger et al. 2019) and occur from near sea level to high mountain elevations (Grinnell et al. 1937; Young and Goldman 1946; Hunter 2015).

Average home range size in California varies substantially depending on sex, season, and area of the state. The average male home range size is larger than the average female home range size. Home ranges change size depending on season and tend to be larger in the Sierra Nevada compared to the Coastal Ranges. In the Santa Ana Mountains and the Eastern Peninsular Range, Zeller et al. (2017) found that home range size varied from 41–497 km^2 (16–192 $mi.^2$; mean = 231 km^2; female mean = 188 km^2; male mean = 316 km^2). In the Santa Monica Mountains and surrounding areas, Riley et al. (2021) found the average home range size was 134 km^2 (52 $mi.^2$) for females and 372 km^2 (144 $mi.^2$) for males. In contrast, in the Sierra Nevada Mountains the average home range size for females in summer was 541 km^2 (209 $mi.^2$) and 349 km^2 (135 $mi.^2$) in winter (Grigione et al. 2002). For males it was 723 km^2 (279 $mi.^2$) in summer and 469 km^2 (181 $mi.^2$) in winter. While male home ranges can overlap spatially, male mountain lions are territorial, making temporal overlap between males rare (Logan and Sweanor 2001). However, males attempt to overlap their home ranges with multiple female home ranges to enhance breeding opportunities (Logan and Sweanor 2010). Females are less territorial, with their home ranges often including significant overlap, and the degree of home range overlap is typically greater where prey densities are higher (Stoner et al. 2018). Subadult males are generally met with aggression from resident adult males and can disperse long distances (see above). Only about half of subadult females disperse from their natal area (Logan and Sweanor 2010). Due to these behavioral mechanisms, local abundance of male mountain lions is generally limited by available

habitat (Maletzke et al. 2014), while female abundance is generally limited by prey availability (Stoner et al. 2018). Given the importance of females to population growth, and because one male can breed with multiple females, mountain lion populations can be primarily limited by prey availability (Pierce et al. 2000; Logan and Sweanor 2001; Logan 2019).

Mountain lions have few natural predators in California. Mountain lions are subordinate to black bears (*Ursus americanus*) and gray wolves (*Canis lupus* sp.) across parts of their geographic range including California (Elbroch and Kusler 2018). Black bears occasionally kill mountain lion kittens (Elbroch and Kusler 2018), but mainly affect mountain lions through the plundering of kills and cache sites in California (Elbroch et al. 2015a). Where gray wolves and mountain lions coexist in North America, wolves are known to affect adult and kitten survival, resource selection, prey selection, bedding locations, and local abundance (Bartnick et al. 2013; Elbroch et al. 2015b; Kusler et al. 2017; Elbroch and Kusler 2018; Elbroch et al. 2020). In 2021, a GPS-collared wolf dispersed into the petitioned area before being struck and killed by a vehicle on Interstate 5. In the summer of 2023, the Yowlumni wolf pack was identified in southern Tulare County, with an activity center approximately 80 km (50 mi.) north of the petitioned ESU boundary; however, there are currently no resident wolf packs or individuals known within the petitioned ESU area.

2.2 Range and Distribution

A species' range is the general geographic area within which it normally occurs, while its distribution is the locations it occupies within its range at a given time. For purposes of CESA and this Status Review, the term range refers to the species' California range (*Cal. Forestry Assn. v. Cal. Fish and Game Com.* (2007) 156 Cal. App. 4th 1535, 1551), though emphasis is on the geographic area of the petitioned ESU. The current range of the mountain lion includes much of California. Though verified mountain lion sightings and encounters have occurred in all counties in the last decade, they are most commonly reported from the more mountainous areas of the state (Dellinger et al. 2021b). Mountain lions are most likely to establish home ranges in areas with sufficient forest and/or shrub cover which promotes presence of their primary prey, mule deer (*Odocoileus hemionus*) and provides cover for stalking (Dellinger et al. 2020a). In California, these areas include the coastal mountain ranges from Southern California north to the Oregon border, the Transverse Ranges, the Sierra Nevada, the southern Cascade Range, the Klamath Mountains, and the Modoc Plateau (Fig. 2).

The areas with the least suitable habitat (i.e., lowest densities of mountain lions), include intensively farmed areas of the Central Valley and lowlands of the inland desert regions of the state. However, resident breeding populations have recently been documented near the Sutter Buttes in the Sacramento Valley and in the Mojave Desert (McClanahan et al. 2017; Dellinger et al. 2019). The distribution of mountain lions in California has changed little from what Grinnell et al. (1937) described in the early 1900s, although they are now absent or uncommon in the large, high density urban areas of the San Francisco Bay Area and the Los Angeles–San Diego coastal plain and inland valleys. They are also absent or uncommon in intensively farmed agricultural areas such as the Salinas Valley and the Central Valley, where historical reports noted mountain lions were not uncommon in riparian areas (Fig. 3) (Newberry 1857). Historically, those riparian corridors likely played an important role in connecting mountain lion populations in the Sierra Nevada with populations in coastal mountain ranges.

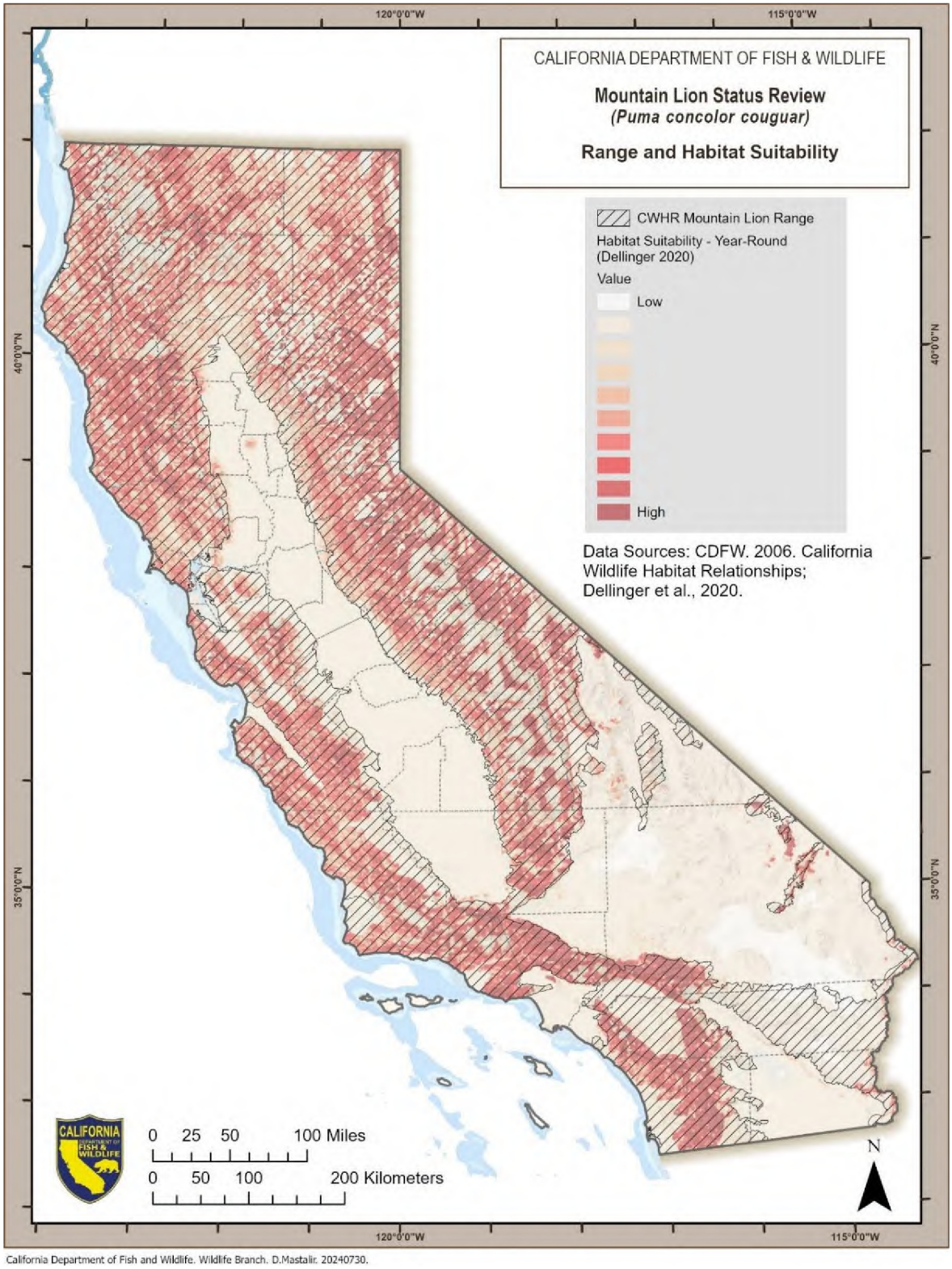

Figure 2. Range and habitat suitability for mountain lions in California. Darker red indicates a higher probability of mountain lion occupancy (Dellinger et al. 2020a). Mountain lions may occasionally occur at low densities outside of this range (most often non-breeding or dispersing individuals).

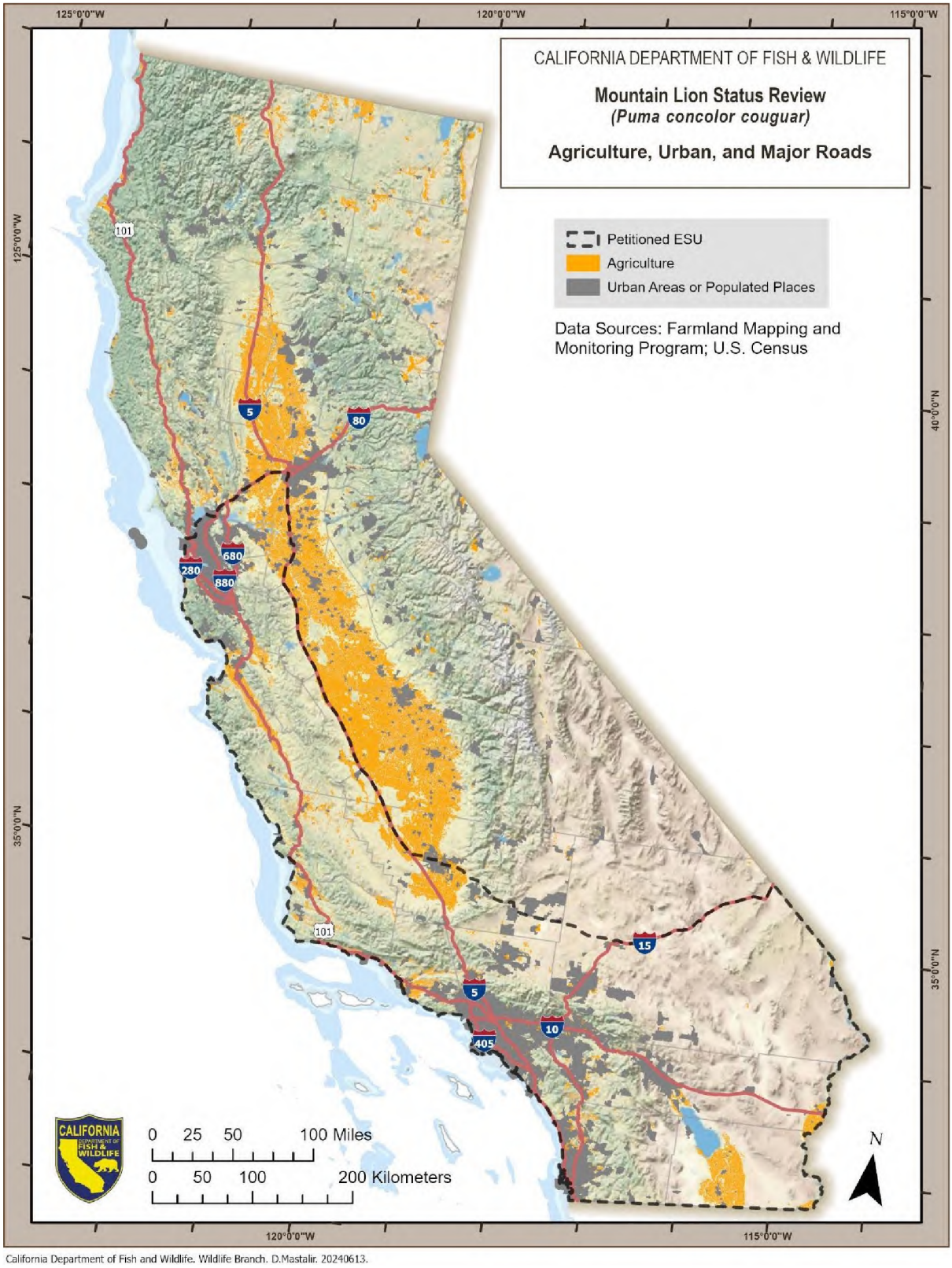

Figure 3. Agricultural and populated areas and major roadways in California.

2.3 Habitat That May Be Essential to the Continued Existence of the Species

Dellinger et al. (2021b) described general patterns of habitat use and selection[3] in California:

> "Mountain lions are among the most widely distributed carnivore species (Logan and Sweanor 2001). This wide distribution is a product of their ability to persist in almost any habitat provided adequate prey is available. When establishing a home range, mountain lions select habitat with adequate prey and stalking cover to aid in meeting energetic demands. After establishing a home range, many things, including human activity, can influence habitat use patterns (Wilmers et al. 2013).
>
> In California, mountain lion habitat use patterns were found to be seasonal in the more temperate areas of the state (Dellinger et al. 2018) while, in the more Mediterranean areas, mountain lion habitat use patterns are more stable between seasons (Wilmers et al. 2013)."

Mountain lions in North America have associations with vegetative and topographic cover, steep slopes, and higher elevations, while avoiding areas of open agricultural land, sagebrush (*Artemesia tridentata*) dominated communities, open meadows, and pastures (Fig. 2) (Murphy 1983; Logan and Irwin 1985; Laing 1988; Lindzey et al. 1994; Pierce and Bleich 2003).

Zeller et al. (2017) found that in Southern California, mountain lions preferred to establish home ranges that contained chaparral, scrub, and grasslands, but within those home ranges, primarily spent their time in relatively rugged terrain, riparian areas, and woodland. Dickson and Beier (2002) noted that riparian areas were selected by mountain lions in all seasons in Southern California and suggested the preference is related to the presence of stalking cover and prey. Riley et al. (2021) found that mountain lions in the Santa Monica Mountains and surrounding areas selected "chaparral, riparian woodland, and coastal sage scrub. The two features of the landscape that they consistently avoided were grasslands and altered open areas, which were also the most open portions of the landscape. These results are consistent with previous work showing that mountain lions select areas with dense stalking cover and avoid open areas to facilitate hunting success." However, Burdett et al. (2010) speculated that dense, mature late seral chaparral may be avoided because mule deer prey cannot easily move through such stands and thus may select against them.

2.4 Population Structure

There are currently two recognized subspecies of mountain lion throughout the Americas (Culver et al. 2000; Kitchener et al. 2017). Mountain lions in North and Central America are classified as *P. c. couguar,* while most mountain lions in South America are classified as *P. c. concolor* (the subspecific identity of some mountain lions west of the Andes in South America remains uncertain). This taxonomy is partly based on the finding that the entire North American population is genetically homogenous across several mitochondrial loci (Culver et al. 2000, Caragiulo et al. 2014). Genetic diversity is greater in Central and South American mountain lions, and it is hypothesized that the North American population derived from a relatively recent (i.e., late Pleistocene, circa 10,000 years ago) recolonization by a small

[3] Habitat selection is the choice by an organism of habitats relative to their availability on the landscape.

number of founders whose ancestors originated in eastern South America 200,000–300,000 years ago (Culver et al. 2000, Caragiulo et al. 2014).

Several studies have demonstrated that the complex geography and land use patterns in California have influenced patterns of gene flow and genetic exchange among mountain lions in different areas of the state (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019; Gustafson et al. 2022). Two studies are especially relevant to understanding the genetic structure of mountain lions within the petitioned ESU. The first is Gustafson et al. (2019), which the petitioners referenced extensively. Gustafson et al. (2019) collected samples from 992 mountain lions in California and Nevada (obtained from 1992–2016) and examined genetic diversity across 42 microsatellite markers[4]. The authors identified nine geographic clusters of samples containing similar genetic characteristics in California and one cluster in Nevada (Fig. 1). In addition to the six clusters within the petitioned ESU, the other clusters in California include North Coast (NC), Western Sierra Nevada (WSN) and Eastern Sierra Nevada (ESN) (Fig. 1). In this report, the Department follows Gustafson et al. 2019 in referring to these clusters as genetic populations. Though mountain lions associated with these genetic populations show significant genetic differentiation, the populations are not fully isolated from one another (Fig. 4). The bidirectional migration rates calculated by Gustafson et al. (2019) demonstrate important historical connectivity between the Western Sierra Nevada (WSN) genetic population and the Central Coast populations (CC-S, CC-C, CC-N) and populations to the north and east (North Coast (NC) and Eastern Sierra Nevada (ESN)). Additionally, the SGSB genetic population functions to some extent as a linkage between genetic populations to the south (EPR and SA) and the north (WSN and the Central Coast genetic populations), although gene flow through this linkage appears to be very limited.

[4] Microsatellites are short repetitive segments of DNA base pairs (nucleotides) scattered throughout the genome, often in noncoding regions between or within genes.

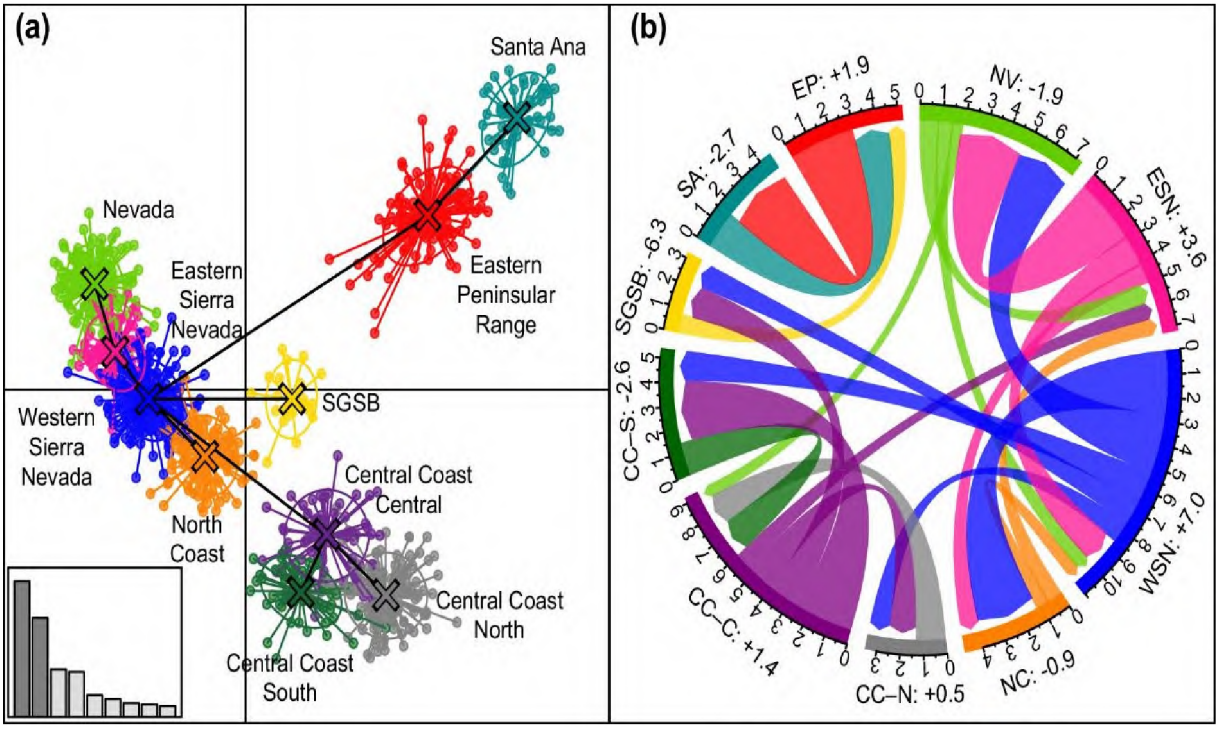

Figure 4. Functional connectedness of mountain lion genetic populations, based on (**a**) discriminant analysis of principal components and (**b**) bi-directional migration rate estimates (multiplied by 100 for visualization). Each dot represents an individual (**a**). Each color (**a, b**) represents a population. Black lines (**a**) indicate the most closely related population based on genetic dissimilarities. The inset barplot (**a**) shows which axes are being displayed (i.e., discriminate functions 1 and 2) and the relative proportion of variation explained by each of the nine discriminant functions. Two-thirds of the individuals in each population are contained within the corresponding ellipsoid. For a biologically meaningful interpretation, only estimates of interpopulation migration rates with 95% confidence intervals that do not cross 0 are presented (**b**). Net genetic source-sink migration rates are presented next to population names with positive values indicating net genetic source and negative values indicating net genetic sink (e.g., WSN exported 9% of migrants and received 2% so its net rate is +7%). Reproduced from Gustafson et al. (2019).

The second study particularly relevant to understanding genetic structure in the petitioned ESU is Gustafson et al. (2022), which analyzed 16,285 genome-wide single-nucleotide polymorphisms[5] (SNPs) from 401 mountain lions sampled broadly across the state from 2011–2017. Using SNPs, Gustafson et al.'s (2022) best supported model identified four broad-scale genetic groups concordant with California's geography: North Coast (NC); Sierra Nevada (SN); Central Coast (CC), which includes Gustafson et al.'s (2019) CC-N, CC-C, and CC-S genetic populations; and Southern Coast (SC), which includes Gustafson et al.'s (2019) SA, SGSB, and EPR genetic populations (Fig. 5).

[5] A SNP is a random substitution of the nucleotides at a single position on a DNA sequence.

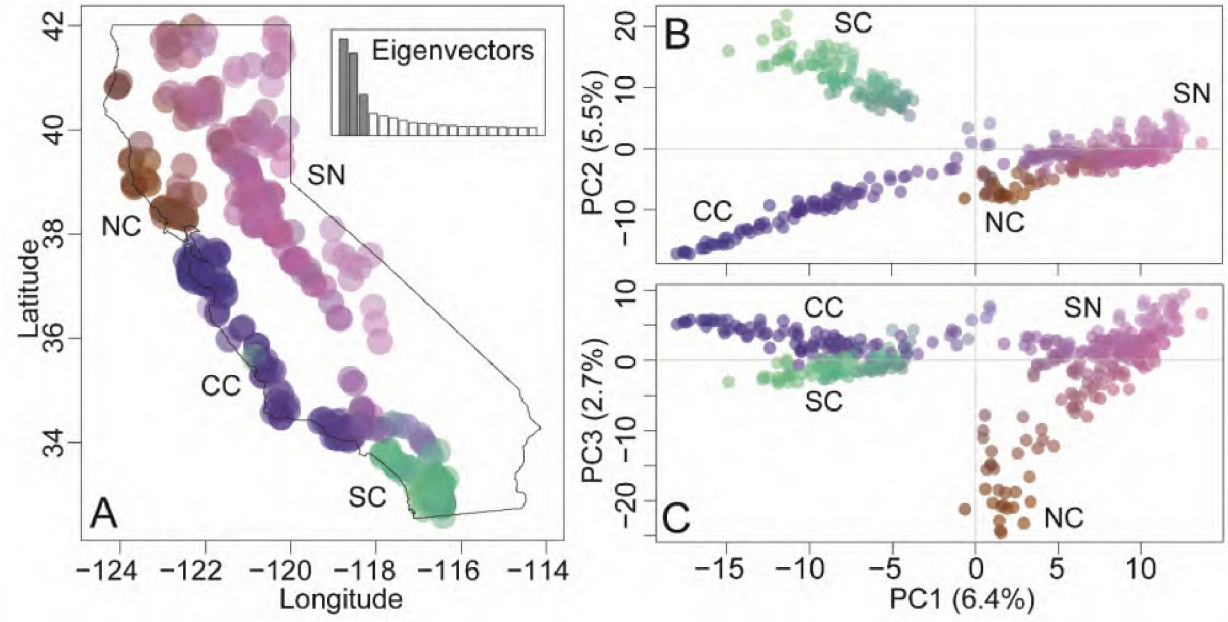

Figure 5. Principal component analysis (PCA) of 401 mountain lions at 16,285 SNPs reveals four broad-scale genetically discernible groups (NC = North Coast, CC = Central Coast, SC = Southern Coast, SN = Sierra Nevada). (A) The color plot of the PCA represents colors corresponding to a combination of the first 3 eigenvectors. The inset plot shows the proportion of the variance explained by shaded PC eigenvectors 1–3 compared to other eigenvectors. The color values are plotted at sample locations to demonstrate geographic structure. Color plots of (B) PC1 and PC2 and (C) PC1 and PC3 resolved the 4 broad-scale genetically discernible groups. Reproduced from Gustafson et al. (2022).

On a finer scale, both cluster analyses and genetic differentiation tests by Gustafson et al. (2022) also supported the presence of nested substructure within the four well-supported, broad-scale groups. The authors found evidence of 10 fine-scale genetically discernible populations roughly corresponding to the genetic populations identified by Gustafson et al. (2019) (Fig. 6). Consistent with the 2019 study, the authors found evidence these fine-scale populations are not fully genetically isolated and have experienced gene flow.

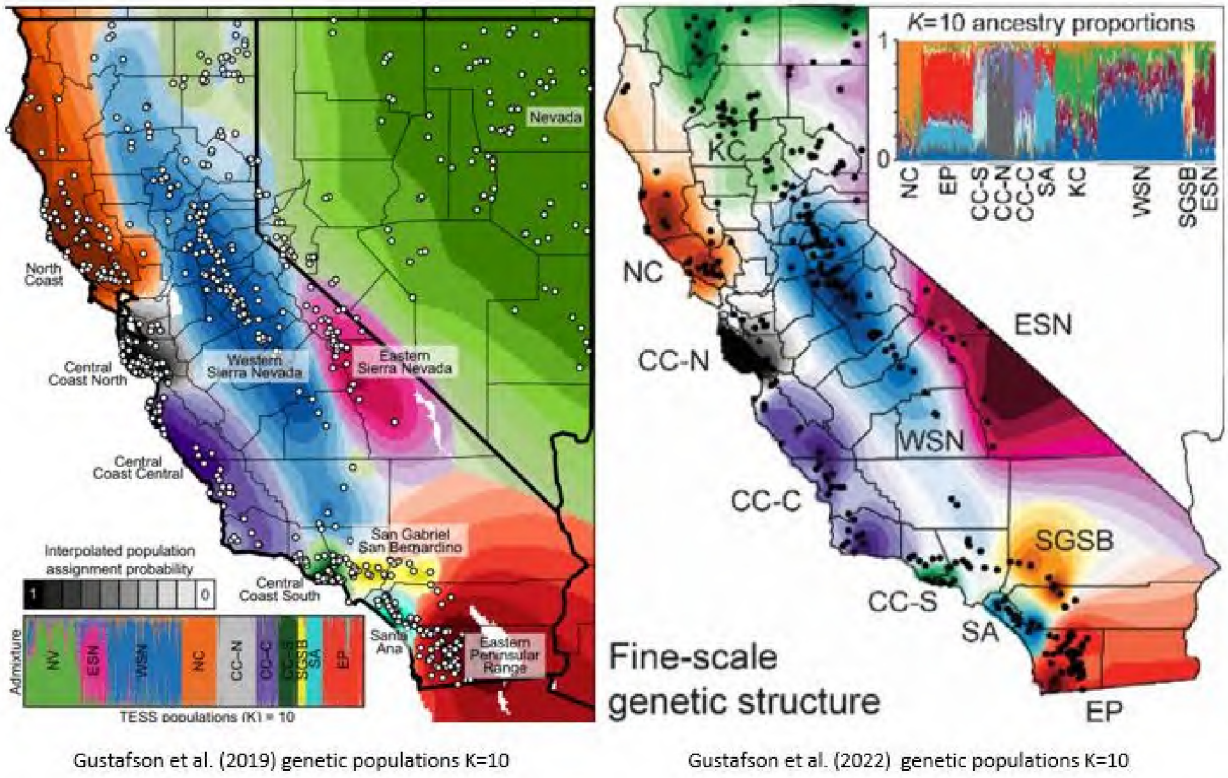

Figure 6. The geographic distribution of 10 discernible genetic populations from Gustafson et al. 2019 (left) and Gustafson et al. 2022 (right). Dots indicate locations of genetic samples. Note that in Gustafson et al. (2019), 9 of the 10 clusters are in California while in Gustafson et al. (2022), all 10 clusters are in California.

Figures 7 through 10 use pie charts to represent the ancestry of the individual lions sampled in Central and Southern California in the Gustafson et al. 2019 and 2022 studies. Each pie chart represents the location where a genetic sample was obtained from an individual mountain lion and the genetic affinities of that individual The different colors show the percentage of the ancestry of sampled lions that was assigned to different genetic populations. A pie chart that is fully or almost fully one color is strong evidence that both parents were from the same genetic population. If the pie chart of a sampled mountain lion is in the same genetic population as its parents (e.g., a fully gray sample in the Santa Cruz Mountains in Fig. 7), it means the sampled lion is unlikely to have moved from the genetic population of its parents. If a mostly solid pie chart is located outside of the population of its parents, that is strong evidence that it is a first-generation migrant that moved to a new population during its lifetime. It is important to recognize that lions that appear to have dispersed from their parent population may or may not have contributed genes to another genetic population depending on whether they produced surviving offspring in the new location or died before they were able to breed. A pie chart with multiple colors suggests gene flow (movement with breeding) occurred in the past. A pie chart that is a 50/50 split is good evidence of a hybrid offspring among parents from two different genetic populations (i.e., likely the offspring of a migrant). As the pie pieces get smaller, hybridization between genetic

populations occurred further and further back among more distant ancestors. Very small pie segments may represent statistical 'noise' in the ancestry calculation.

Gustafson et al.'s 2022 SNP analysis shows evidence of historical genetic exchange among the fine-scale genetic populations, with the WSN genetic population acting as a source of gene flow to the Central Coast genetic populations, to SGSB, and to populations to the north and east. The SGSB genetic population may have historically acted as a linkage between the EPR and SA genetic populations and the WSN and the Central Coast populations (Figs. 7, 8). Many of the samples in the CC-S, SGSB, and the southern part of the WSN genetic population show ancestry from multiple genetic populations, which is to be expected from an area acting as a crossroads. Similarly, the mixed ancestry of individuals in the CC-S and CC-C indicate some level of historical connectivity with one another and with the WSN and SGSB (Fig. 8).

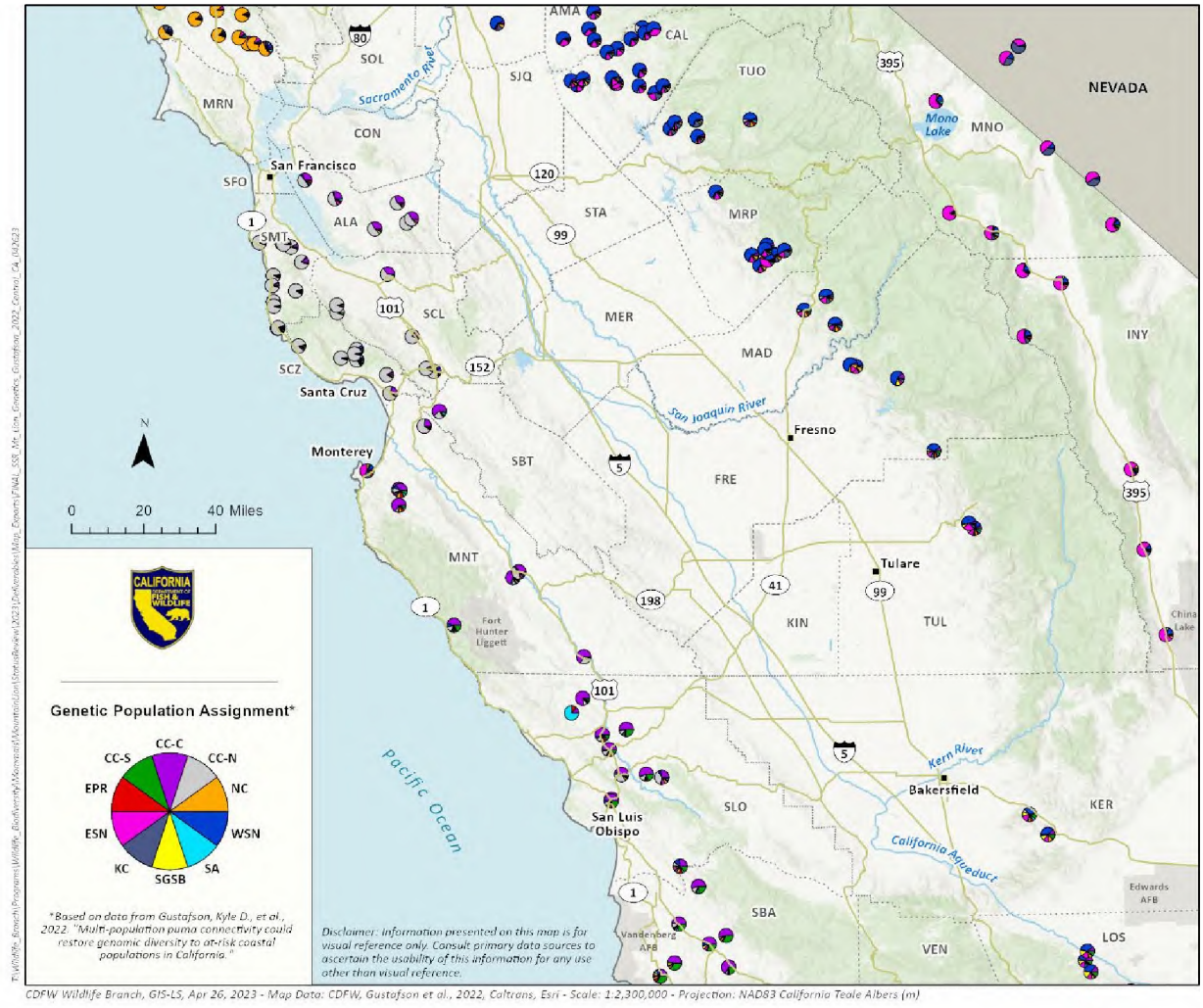

Figure 7. Assignment of individual mountain lion samples from Central California to genetic populations identified by Gustafson et al. (2022) using Single Nucleotide Polymorphisms.

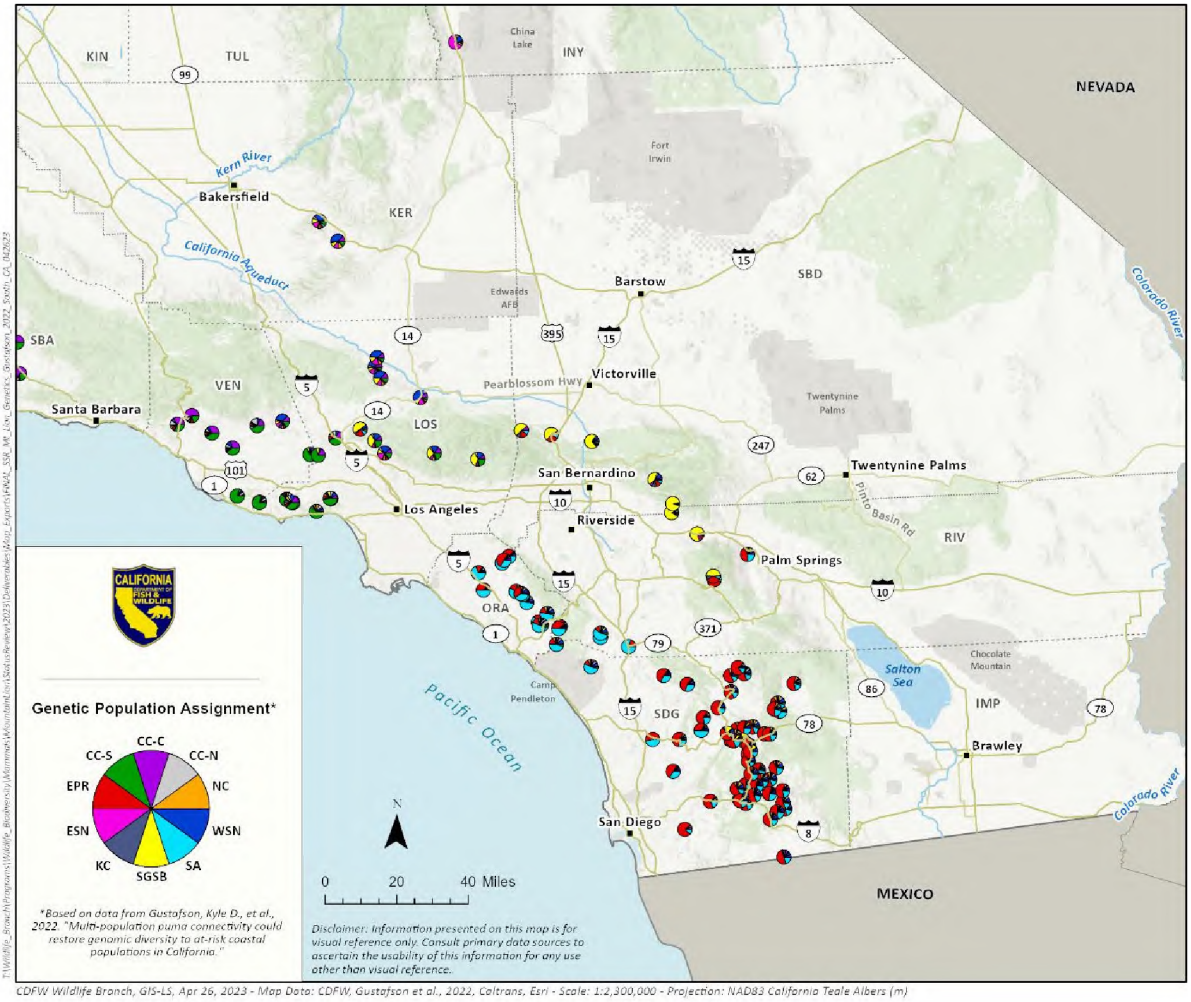

Figure 8. Assignment of individual mountain lion samples from Southern California to genetic populations identified by Gustafson et al. (2022) using Single Nucleotide Polymorphisms.

The microsatellite data from Gustafson et al. 2019 show fewer animals of shared ancestry, and samples are more likely to be assigned to one genetic population (i.e., there are more pies of a solid color in Figs. 9, 10). Microsatellites are fast-evolving genetic markers, and they may represent more contemporary patterns of gene flow relative to the SNP markers. These data suggest relatively little gene flow between populations, potentially due to the expansion of human development and highways making movement more difficult (Gustafson et al. 2019). The population structure revealed by Gustafson et al. (2019; 2022) is consistent with both natural landscape features (e.g., Central Valley, San Francisco Bay, Sierra Nevada Crest) and development (e.g., roads and highways, housing developments) impeding gene flow at various temporal and spatial scales.

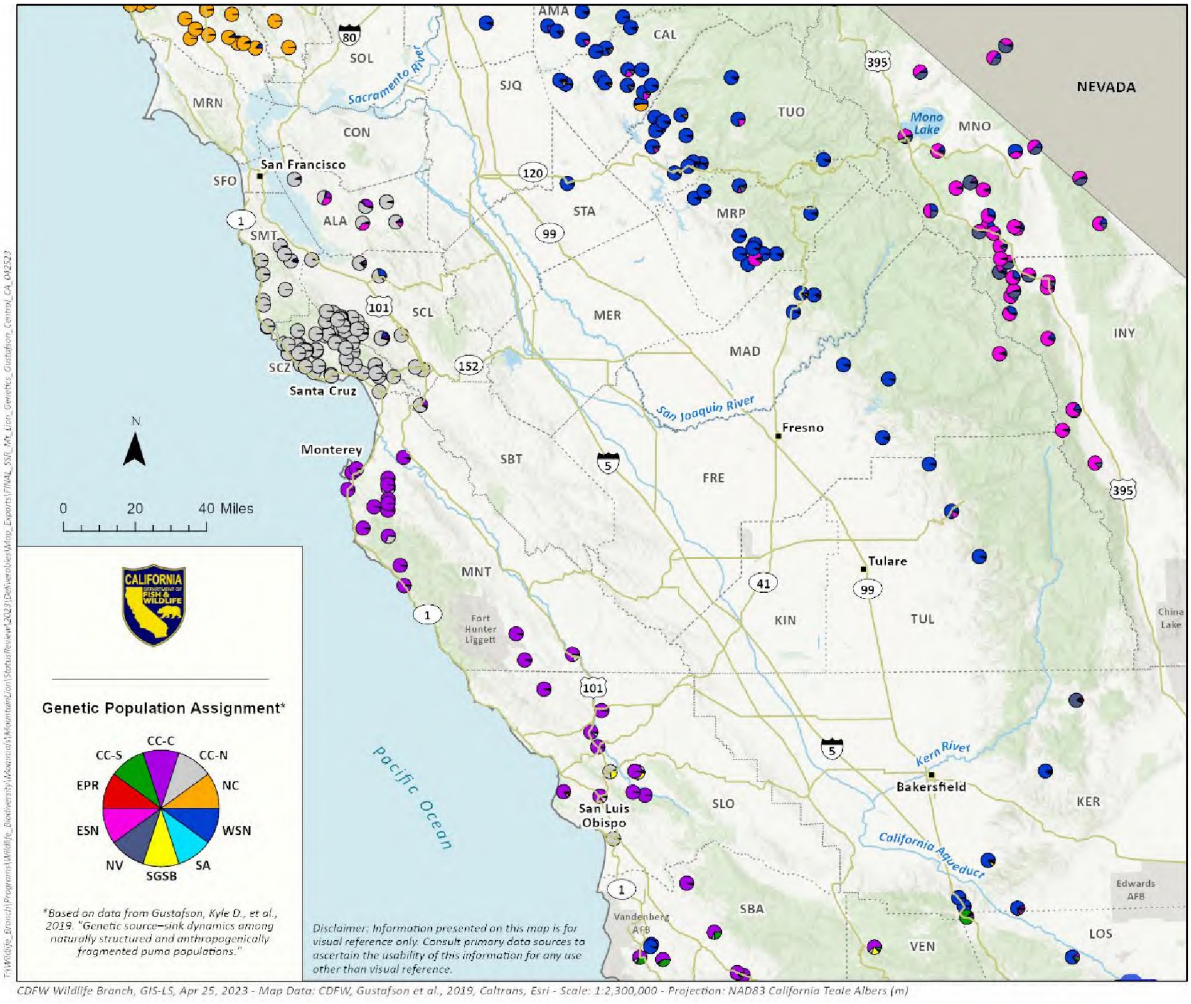

Figure 9. Assignment of individual mountain lion samples from Central California to genetic populations identified by Gustafson et al. (2019) using microsatellite DNA markers.

According to the microsatellite data, the area occupied by the CC-S population, especially north of the Santa Monica Mountains, has been important for sustaining statewide gene flow because of the intersection of mountain lions from the Sierra Nevada and Central Coast broad-scale genetic groups (Fig. 10). The data also reveal some gene flow between CC-C and CC-N, and CC-C and CC-S. The samples show movement between SA and EPR, and EPR and SGSB. However, these three South Coast populations are fairly isolated from other genetic populations in California. Few animals with ancestry from the WSN or the Central Coast group were found south or east of Los Angeles (Fig. 10). The 2022 genetic analysis indicated likely movement of animals from the WSN through the Tehachapi Mountains and into the CC-S and perhaps SGSB populations (Fig. 10). The Tehachapi Mountains seem to provide the only corridor for regular movement between the petitioned areas and more robust mountain lion populations in the Sierra Nevada.

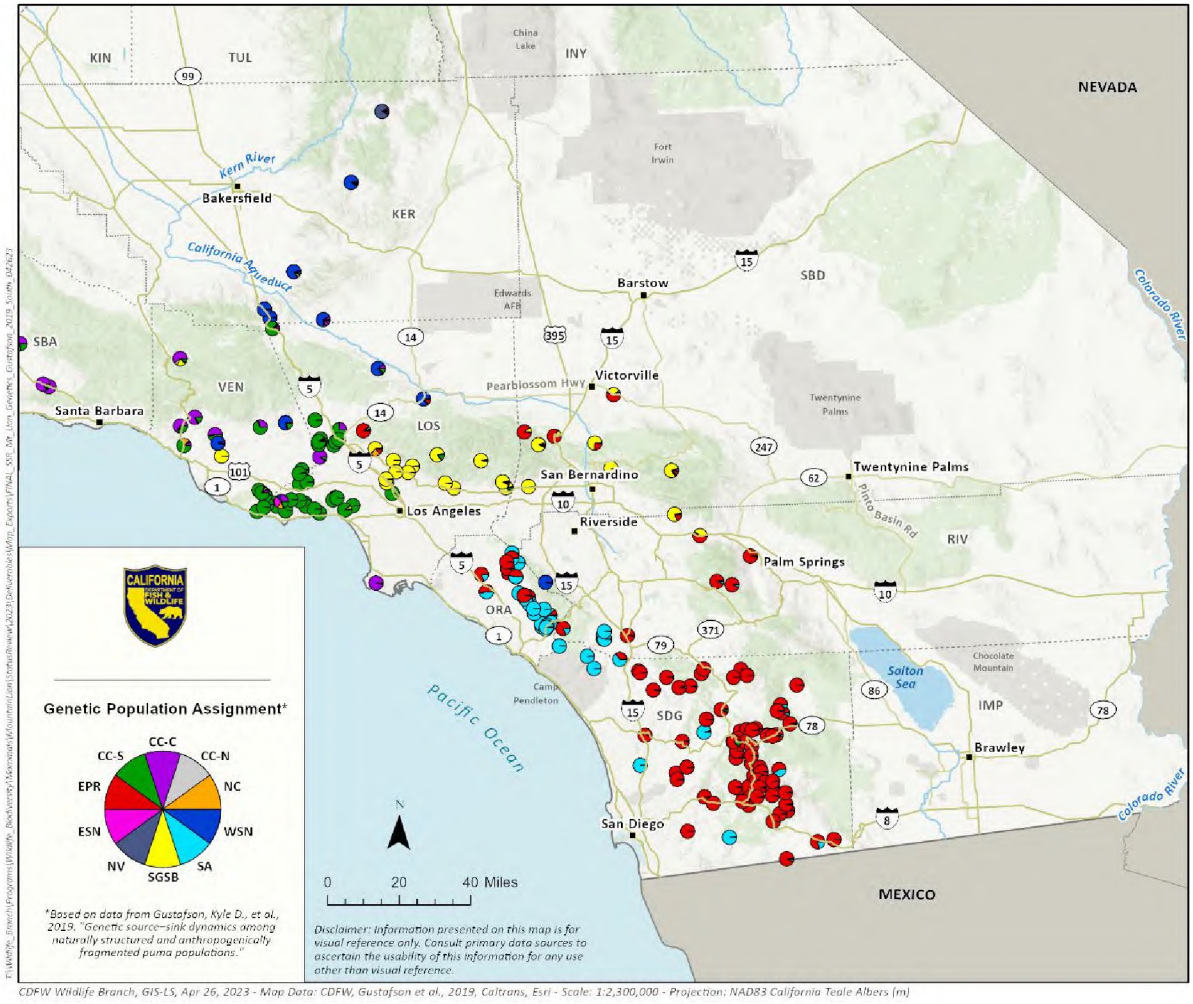

Figure 10. Assignment of individual mountain lion samples from Southern California to genetic populations identified by Gustafson et al. (2019) using microsatellite DNA markers.

Another commonly used measure of genetic differentiation between populations (i.e., genetic population structure) is the fixation index (F_{ST}). F_{ST} was originally developed to estimate differentiation among all subpopulations within a metapopulation (i.e., global F_{ST}; Wright 1931) but is now more commonly used in pairwise fashion to compare two subpopulations (i.e., pairwise F_{ST}). High pairwise F_{ST} values between populations is the result of population isolation reducing the number of migrants and interbreeding. Low F_{ST} values suggest less isolation between populations and more interbreeding. F_{ST} values range from 0 to 1. A value of 0 implies the two populations are completely interbreeding. A value of 1 implies that the two populations do not share any genetic diversity. Values of 0 and 1 are largely theoretical and are not expected to be found in nature. More practically, values of $F_{ST} > 0.15$ are generally considered to represent substantial genetic differentiation between populations, while values < 0.05 are considered minimal differentiation (Frankham et al. 2002).

Gustafson et al. 2022 found that the four broad-scale genetic groups were moderately differentiated, with the South Coast group being the most differentiated from the others and the Sierra Nevada group the least (Table 1). Most of the fine-scale genetic populations within the area of the petitioned ESU had

substantial genetic differentiation from each other (Table 2), indicative of limited gene flow between those populations.

Table 1. Mean pairwise genetic distance values for the broad-scale $K = 4$ genetic clusters. Weir and Cockerham F_{ST} is presented below the diagonal, and Nei's F_{ST} is presented above the diagonal (WC\Nei). Higher values indicate greater genetic differentiation and suggest less connection between populations. All pairwise F_{ST} estimates were significant ($p < 0.001$) based on a bootstrapping analysis. Modified from Table 2 in Gustafson et al. 2022.

K = 4	SN	SC	CC	NC
SN	-	0.133	0.124	0.100
SC	0.129	-	0.173	0.198
CC	0.120	0.173	-	0.156
NC	0.094	0.196	0.156	-

Table 2. Mean pairwise genetic distance values for the fine-scale $K = 10$ genetic clusters. Weir and Cockerham F_{ST} is presented below the diagonal, and Nei's F_{ST} is presented above the diagonal (WC\Nei). Higher values indicate greater genetic differentiation and suggest less connection between populations. All pairwise F_{ST} estimates were significant ($p < 0.001$) based on a bootstrapping analysis. Modified from Table 2 in Gustafson et al. 2022.

K =	CC-N	CC-C	CC-S	SGSB	SA	EPR	WSN	ESN	KC	NC
CC-N	-	0.098	0.148	0.210	0.319	0.231	0.188	0.233	0.183	0.229
CC-C	0.100	-	0.060	0.140	0.254	0.164	0.121	0.168	0.117	0.164
CC-S	0.152	0.059	-	0.163	0.287	0.196	0.147	0.189	0.146	0.202
SGSB	0.221	0.141	0.164	-	0.212	0.130	0.106	0.116	0.109	0.205
SA	0.320	0.251	0.289	0.217	-	0.100	0.222	0.226	0.215	0.301
EPR	0.227	0.163	0.192	0.132	0.095	-	0.163	0.163	0.141	0.214
WSN	0.176	0.116	0.136	0.106	0.203	0.146	-	0.045	0.022	0.26
ESN	0.237	0.168	0.183	0.113	0.221	0.166	0.045	-	0.041	0.183
KC	0.178	0.114	FST0.137	0.105	0.202	0.141	0.022	0.041	-	0.093
NC	0.230	0.164	0.203	0.210	0.300	0.211	0.118	0.183	0.093	-

3. Status and Trends in California

3.1 Historical Distribution and Abundance

Habitat loss and fragmentation resulting from land use changes in the petitioned ESU began in the 1700s and continues to the present. Those changes have significantly affected mountain lion distribution in some areas. Many areas within the petitioned ESU have been modified by urban and agricultural development, primarily in the San Francisco Bay Area, Southern California, and the Central Valley, making them mostly unsuitable for mountain lions (Fig. 3). Near the coast in Southern California, extensive urbanization from Ventura County to the border with Mexico has supplanted large areas of mountain lion habitat in the coastal valleys and plains and has isolated patches of remaining habitat in the Santa Monica, San Gabriel, San Bernardino, and Santa Ana Mountains (Fig. 3; Vickers et al. 2015; Benson et al. 2016; Benson et al. 2019). The Eastern Peninsular Range is also affected by human

development and road networks but to a lesser degree than the aforementioned mountain ranges. Likewise, remaining habitat in the Santa Cruz Mountains and the southern San Francisco Bay Area is increasingly constricted by development and busy highways (Wilmers 2014; Wang et al. 2017). In contrast, the Santa Lucia and other rugged mountains of the central coast have fewer highways and relatively little development and the distribution of lions has likely changed little there from the pre-European era.

3.2 Population Size

Historical estimates of the size of the mountain lion population within the petitioned ESU do not exist. While some historical estimates of the statewide mountain lion population exist, the methods used to derive the estimates, and the statistical rigor of the estimates varied substantially. As such, these estimates are not directly comparable and cannot be used to examine trends in the statewide population over time.

The Department paid a bounty for mountain lions from 1906–1963 (Dellinger and Torres 2020). McLean (1954) presented bounty numbers from 1907-1950 and estimated there were 600 mountain lions in California. Over a decade after the end of the bounty period, Sitton (1977) estimated that there were approximately 2,400 mountain lions in California. A 1989 study estimated 4,100–5,700 mountain lions in the state based on the amount of suitable habitat and adult density estimates from prior studies (Mansfield and Weaver 1989).

The Department recently developed a statistically rigorous estimate of the statewide mountain lion population size using DNA from the scats of 335 individual mountain lions collected in 2017–2022 from 13 study sites distributed widely across the state. The detection histories of individually identifiable mountain lions from these samples were used to estimate the statewide population size using a Bayesian Spatial Capture Recapture (SCR) model. SCR includes a spatial scale parameter (e.g., how the probability of detection of a mountain lion varies over its home range) that is critical for accurately scaling estimated abundances to density and population size (Royle et al. 2013). Using this method, the Department estimates there are approximately 4,172 (95% CI 3,645–4,750) mountain lions in the state. This population estimate includes all age classes of mountain lions, including dependent young. The estimate represents an average annual number of mountain lions over a recent 5-year period (i.e., 2017–2022). An important caveat is that extrapolation from the modeling was limited to only those portions of state that were mapped as mountain lion habitat by Dellinger et al. (2020b). Accordingly, the estimate may be undercounting a small number of mountain lions outside of the mapped range (e.g., Central Valley and some desert areas). These results are preliminary and may change based on peer review when a manuscript is submitted to a scientific journal for publication.

As part of this analysis, the Department used available California GPS telemetry data from 152 mountain lions to inform the spatial scale parameter in the SCR model. The result of this exercise was that spatial inferences from the telemetry were consistent with those from the scat (e.g., <5% difference) which provides validation that the statewide population estimate is accurate.

The Department also generated regional scale current estimates of abundance that roughly correspond to the genetic populations in Gustafson et al. 2019 (Table 3). The boundaries for the regional genetic population estimates come from Figure 1 in Dellinger et al. (2020b). The Department used SCR to create

density estimates that vary over space depending on relative use of specific habitats within an area of interest. However, the covariates the Department used were more effective for extrapolating a statewide population total than drawing accurate inferences about density in specific areas. For this reason, these local estimates may be less accurate than the statewide estimate. The total population estimate within the petitioned ESU is 1,449 mountain lions (95% CI 1,272–1,638). However, each of the genetic populations comprising the petitioned ESU is moderately to considerably isolated from adjacent populations. The petitioned area does not support a single well-connected population and instead effectively consists of several mostly isolated smaller populations. Estimates for the CC-S, SGSB, and SA genetic populations are each lower than 100 individuals. The best currently available data indicate most of the populations within the petitioned ESU have small effective population sizes and low genetic variation (see Section 4.9), which could put them at increased risk of local extirpation (Beier 1993,1995; Dickson et al. 2005; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016; Benson et al. 2019; Gustafson et al. 2019; Gustafson et al. 2022).

Table 3. Estimates of total population sizes and 95% confidence intervals for the genetically distinct mountain lion populations identified in Gustafson et al. 2019. The boundaries used to calculate the population sizes come from Dellinger et al. 2020b. Note: these estimates were derived from modelling at a different geographic scale than the statewide and petitioned area estimates, and consequently, the summed estimates differ from the statewide estimate.

Population	Estimated Population Size (95% CI)
Central Coast North (CC-N)	219 (193–247)
Central Coast Central (CC-C)	480 (422–540)
Central Coast South (CC-S)	64 (56–72)
San Gabriel/San Bernardino (SGSB)	94 (82–107)
Santa Ana Mountains (SA)	67 (59–75)
Eastern Peninsular Range (EPR)	459 (383–546)
North Coast (NC)	821 (707–943)
Modoc Plateau (MP)	377 (307–456)
Western Sierra Nevada (WSN)	1,199 (1,050–1,360)
Eastern Sierra Nevada (ESN)	398 (320–489)

3.2.1 Survival and Sources of Mortality

Benson et al. (2023) analyzed data from 590 radio collared mountain lions in 24 California study areas from 1974 to 2020 (76% of the study animals were collared after the year 2000). They estimated an annual survival rate of 0.67 for males (95% CI 0.63–0.72, n = 297 males and n = 151 deaths) and 0.80 for females (95% CI 0.77–0.83, n = 293 females and n = 112 deaths). Of the 263 known mortalities, 199 were attributable to a specific cause. Management killing had the highest annual mortality rate at 6%. Management killing includes lethal removal of mountain lions following livestock depredations (75% of the mortalities in this category), lethal removal following bighorn sheep depredations (23% of the category), and lethal removal of lions that posed a public safety threat (2%). After management killing,

the greatest sources of mortality were vehicle strikes (4%), non-strife natural mortality including starvation and disease (3%), intraspecific strife (3%), poaching (3%), and other human causes including mortalities directly attributable to rodenticide poisoning and wildfire, which combined resulted in a 1% annual mortality rate (Benson et al. 2023).

The Department's approach to issuing depredation permits has evolved toward increased emphasis on nonlethal methods of take, and the relative importance of this mortality factor may have declined (for more detail see section 4.3.2). Benson et al. (2023) found that as human-caused mortality increased in an area, so did natural mortality, though the trend was not significant. This suggests human caused mortality may have been additive during the study period and did not just affect animals that would have otherwise died of natural causes. They also found that human population density influenced mountain lion mortality rates, with human density being a better predictor of mortality risk than the density of sheep and goat farms on the landscape. Both human-caused and natural mortality were highest in areas of the state with intermediate human density, and lower in both high human density areas and remote, low human density areas (Benson et al. 2023).

4. Factors Affecting Ability to Survive and Reproduce

4.1 Past and Threatened Modification and Destruction of Habitat

4.1.1 Urbanization

Anthropogenic habitat loss and fragmentation have been occurring in California since the arrival of Spanish settlers in the 18th century and increased dramatically with expansion of mining and agriculture in the mid-19th century. Early 20th century naturalists catalogued the flora and fauna throughout the state and noted the loss of formerly abundant prey species of the mountain lion, including elk, mule deer, pronghorn, and beaver (*Castor canadensis*) (Stephens 1906; Grinnell 1914; Merriam 1919; Leopold 1966). Successive waves of agricultural and other development, including railroads, canals, roads, and highways resulted in the conversion of natural vegetation and led to further loss and fragmentation of mountain lion habitat. Development impacts have been extensive in the greater San Francisco Bay area, Sacramento and San Joaquin valleys (water diversions, agricultural development, and urban development), and the Los Angeles Basin and adjacent mountain ranges and valleys south to San Diego (urban, agricultural, and industrial uses).

The California State Wildlife Action Plan summarizes existing stressors on wildlife populations and ecosystems in the state and describes recent and ongoing habitat loss, fragmentation, and degradation in California (CDFW 2015). Significant habitat loss continues in many important California ecosystems. For example, over 195,000 ha (480,000 acres) of California rangeland habitats were converted to other uses between 1984 and 2008 (approximately 3% of available rangelands) - primarily due to residential and commercial development and agricultural intensification. Additionally, habitat degradation—resulting from pollution, invasive species, livestock grazing, intensive recreation, soil erosion, drought, flooding, or wildfire—is a widespread stressor to wildlife populations in California (CDFW 2015).

Habitat fragmentation occurs when portions of habitat are lost or degraded such that natural areas are divided into small and isolated remnants (CDFW 2015). This fragmentation can have numerous negative impacts on wildlife including declining biodiversity and impairment of ecosystem functions, isolation of

species into small subpopulations susceptible to extinction, and inhibition of movement between populations that leads to reduced genetic variation and inbreeding (Ibid.). Species with large home ranges, like mountain lions, require large contiguous areas of habitat or connectivity between multiple diffuse patches of habitat. Habitat loss and fragmentation can eliminate or isolate key habitat elements from home ranges, such as water and prey associated with riparian zones, and can reduce access to breeding and foraging habitat (Ibid.). These effects impact mountain lion populations as well as populations of their prey. When resources are dispersed across a broader area or fragmentation limits access to resources, mountain lions may be required to expend more time and energy to meet their needs, exposing them to more risk.

In Southern California, human populations are especially dense, and land conversion has been extensive. The significant amount of urban, suburban, and rural development in this area—resulting from population pressures of the region's 24 million residents (Wikipedia 2024)—has led to substantial habitat loss and fragmentation (CDFW 2015). Currently, nearly 40% of the land area in southern coastal California is in urban and suburban use (CDFFP 2010). Sprawling development with residential housing located far from existing urban centers has required new or enlarged roads and infrastructure. These development patterns not only reduce the amount of habitat available but also degrade the quality of adjacent habitat making the remaining natural habitats more vulnerable to the incursion of invasive species, air and water pollution, and altered fire regimes (Ibid.). In addition, the developed areas, roads, and utility corridors fragment the landscape leaving few or no movement corridors between natural areas (Ibid.).

Historical habitat loss and fragmentation have caused reductions in the geographic distribution of mountain lions in the petitioned ESU. Moreover, in the absence of adequate habitat conservation efforts, including connectivity measures, such reductions are expected to continue. A study of mountain lion habitat in CC-S and EPR showed that nearly half of mountain lion habitat in the study area is on private land, and the authors estimated approximately one-third of the lands that were available habitat in 1970 would be developed by 2030 (Burdett et al. 2010). Additionally, some habitat that is currently adjacent to development may become fragmented, with potential loss of connectivity and increased risk to mountain lions from vehicle strikes and depredation take (Burdett et al. 2010). For example, Development within key connectivity areas such as the Tehachapi Mountains near Interstate 5, if not carefully planned, could further constrain lion movement within a relatively narrow corridor of highly suitable habitat connecting the western Sierra Nevada with the central coast and Southern California (Penrod and Smith 2022).

Additionally, limited habitat connectivity has resulted in highly restricted gene flow in many areas of central and Southern California. For example, connectivity between the EPR and the SA genetic populations is limited due to the barrier effect of Interstate 15 in the Temecula region. Similar connectivity challenges occur due to Interstate 5 and Highway 58 between the CC and SN genetic groups. Recently published information on reproductive and morphological abnormalities in mountain lions in the Santa Monica Mountains, SA, and EPR indicate that habitat loss and fragmentation, and associated dispersal challenges, have led to inbreeding (Huffmeyer et al. 2022). See section 4.9 for more information on the inadequate habitat connectivity and highly impeded gene flow for these populations.

Residential and industrial development is projected to continue within the petitioned ESU, even in the areas that are already highly urbanized (EPA 2017). Projections of increased housing density through the year 2050 demonstrate that continued development will exacerbate existing barriers to mountain lion movement, effectively rendering existing pathways less permeable, and in some areas may lead to complete isolation of portions of genetic populations (Ibid.). Areas that are projected to become substantially more isolated by the year 2050 due to residential development include the Santa Cruz Mountains of the CC-N, the San Gabriel and San Bernardino Mountains, the Santa Monica and Santa Susana Mountains, and the Sierra Pelona and Tehachapi Mountains near the nexus of the WSN, CC-S, and SGSB genetic populations (Ibid.).

The cumulative effects of approximately 250 years of habitat loss and fragmentation due to development and road construction, loss of riparian habitat, and the associated reduction and shifting of prey species appear to have contributed to the separation of mountain lions into smaller genetic populations in the central and southern regions of California. See section 4.9 for information on the risks to small and isolated populations.

4.1.2 Agriculture and Forestry

The conversion of native habitat to intensively farmed crops and pasture has resulted in large swaths of land that no longer provide foraging and breeding habitat for mountain lions (Fig. 3). This conversion began as early as the 1700s in coastal California and accelerated rapidly in the 19th and 20th centuries as water storage and delivery systems were developed enabling the irrigation of crops. Approximately 43% of California's land area is used for agricultural production (CDFA 2009). In recent years over 9 million acres has been in irrigated agricultural production (DWR 2024). Although the same pattern of conversion of native plant communities to agricultural uses occurred wherever suitable soils and adequate water existed, this change has been most dramatic in the Central Valley, by far the largest contiguous region of intensively farmed land in the state. The Central Valley appears to form a largely semi-impermeable barrier to mountain lion movement between coastal mountain ranges and the Sierra Nevada and Cascade Mountains. Historically, the Central Valley contained extensive riparian forests along the Sacramento and San Joaquin Rivers, their tributaries, and in the Delta which likely provided corridors of suitable cover for mountain lions living in and traveling through the valley. Within the petitioned area, these historical habitats likely facilitated genetic connection between the WSN and NC genetic populations and the Central Coast group. However, it is estimated that 92-97% of such riparian forests have been lost through channelization, altered hydrology, and conversion to agricultural and urban uses, and much of the remaining riparian forest has been modified (CDFW 2014). The loss of Central Valley riparian forests and scrub, in combination with the development of significant highways and other infrastructure, is likely a major driver of contemporary mountain lion population structure.

Commercial timber harvesting in the petitioned area primarily occurs in the redwood-dominated (*Sequoia sempervirens*) forests of the CC-N. Although the impacts are less intense and less permanent than commercial agriculture, commercial timber harvesting can modify mountain lion habitat in that region. A study of nine mountain lion home ranges in the redwood forest of northwest California found mountain lions used forest areas with a greater proportion of fragmentation and edge more frequently than areas of more contiguous forest; however, mountain lions generally avoided areas of active timber harvest operations (Meinke 2004). Mountain lion home ranges included different stages of forest

succession from freshly harvested stands to late seral forests, perhaps indicating commercial timber management, as regulated by the California Department of Forestry and Fire Protection (CAL FIRE), does not fragment mountain lion habitat or isolate populations. Conversely, Smallwood (1994) found mountain lion use of forest stands of the central coast, north coast, and Sierra Nevada sharply declined within six years following clear cut harvest. The timing and extent of mountain lion use of clearcut harvest units likely depends on how rapidly shrub and small tree cover develops in the harvested area, which is influenced by the tree and shrub species composition of the harvested stand, the nature and extent of post-harvest site preparation treatments, and the management of young stands.

4.2 Vehicle Strikes, Roads, and Rail Lines

As mentioned in the section on survival and sources of mortality (3.2.1), vehicle strikes were the second most common cause of known mortalities of mountain lions in California from 1976–2020 (Benson et al. 2023). Figure 11 displays documented mountain lion mortality events caused by vehicle strikes in 2000–2023. The Road Ecology Center at the University of California, Davis (UC Davis) has records of 535 mountain lions killed on state highways in 2015–2022 (Shilling et al. 2023). However, because all vehicle strikes were unlikely to have been reported, the true number is likely higher.

In Southern California, Los Angeles, Orange, and San Diego Counties are major areas of road mortalities (Shilling et al. 2023). From 1981 to 2013, reported vehicle strikes accounted for 50 of 94 (53%) known mountain lion deaths in the Santa Ana Mountains (which includes parts of the greater Los Angeles metropolitan area) and 46 of 154 known deaths (30%) in the Eastern Peninsular Range (which includes the greater San Diego metropolitan area) (Vickers et al. 2015). Vehicle strikes were the main mortality factor for mountain lions in the SA genetic population, and a secondary mortality factor in the EPR genetic populations (Ibid.). The enhancement and/or creation of safe wildlife road crossings may be critical for maintaining lion persistence in these genetic populations.

In the Bay Area (CC-N), vehicle strikes are also a significant source of mortality. California State Routes SR-12, SR-17, SR-1, and especially Interstate-280 have high numbers of mountain lion mortalities (Shilling et al. 2023). Shilling et al. (2023) identify the stretch of I-280 northwest of San Jose as the deadliest highway in California for mountain lions with 20 deaths documented along a 32 km (20 mi.) stretch from 2015 to 2022.

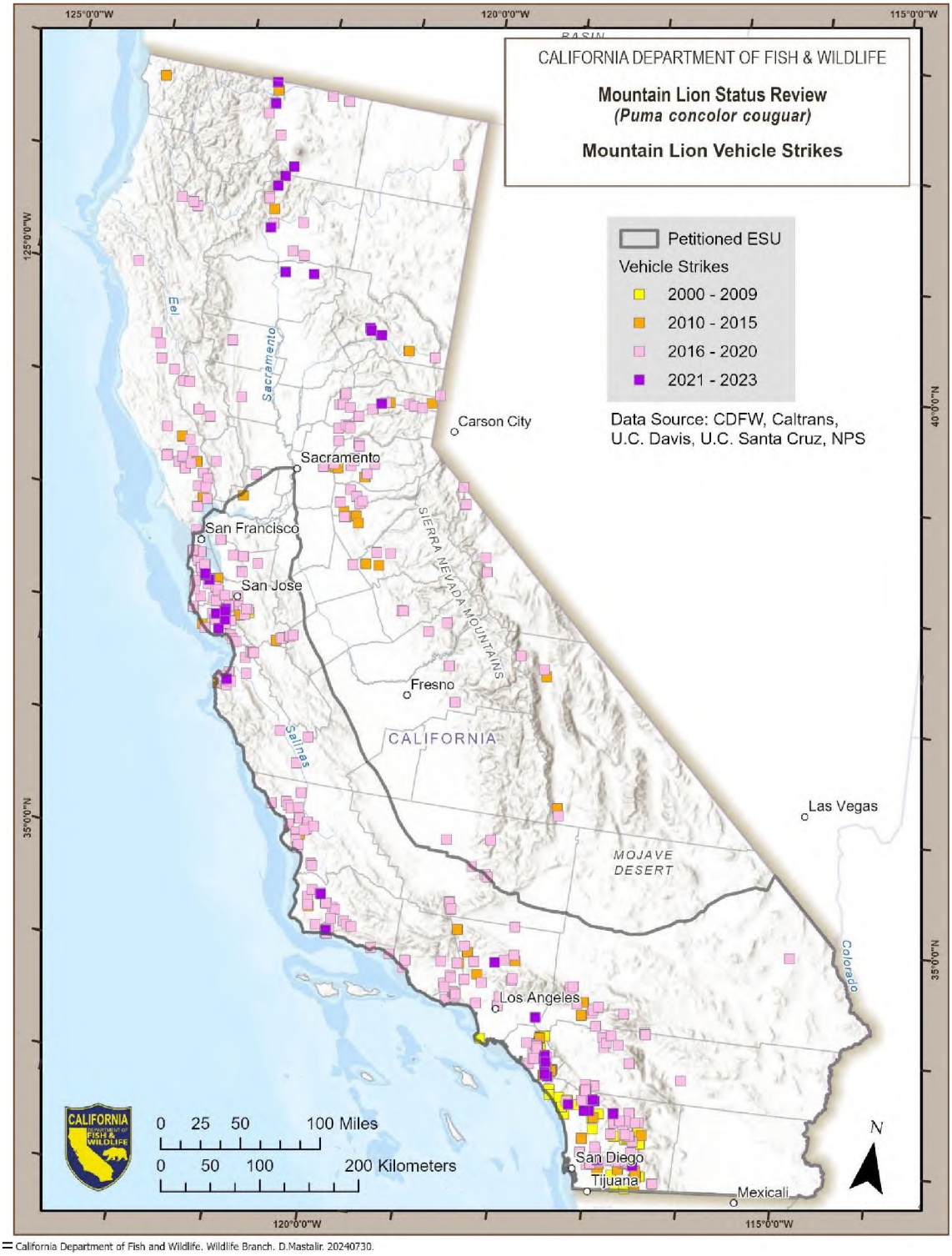

Figure 11. Mountain lion vehicle strike mortality incidents from 2000 to 2023. Roadkill reports are from Department records, Dr. Fraser Shilling and Dr. Winston Vickers at the University of California Davis, Dr. Chris Wilmers at the University of California Santa Cruz, and Dr. Seth Riley at National Park Service.

The threat of vehicle strikes is not limited to roads and highways. Trains also kill wildlife (Gangadharan et al. 2017), and railways often parallel highways and roads (e.g., an existing railway runs roughly parallel to Interstate-15 in the Cajon Pass area between the San Gabriel and San Bernardino Mountains). A high-speed rail line will run along I-15 from Rancho Cucamonga to Las Vegas with multiple crossings for wildlife planned (CDFW 2023). Another planned route for high-speed rail in the petitioned area is from San Jose through Pacheco Pass east to Merced (California High-Speed Rail Authority 2024).

Vehicle strikes may also cause indirect mortality of dependent young mountain lions. When a female with dependent young is struck by a vehicle, the kittens likely starve to death or become easy prey for predators, including other mountain lions. If the kittens are larger and more mobile, they may approach areas where they are more likely to encounter humans as they search for food. This occurred in November 2017, when a mother mountain lion was killed by a vehicle strike in the SA and two of her kittens were found roaming nearby urban areas—one in a backyard and the other along a road (Veklerov 2018). Both kittens, too young to survive on their own, were removed from the wild and placed in the Oakland Zoo.

In addition to direct mortality from vehicle strikes, roads also pose a threat to mountain lions by restricting movements. Radio and satellite-tracking data have revealed that mountain lions will sometimes approach a busy freeway, hesitate to cross, linger in the area, or pace back and forth parallel to the freeway before turning back (Sweanor et al. 2000; Stoner et al. 2008). For example, GPS data from collared mountain lions in the Santa Ana Mountains have revealed that on multiple occasions lions approached one of the three regional freeways that surround the mountains (I-5, I-15, SR-91), only to range back and forth along them before turning back (W. Vickers unpublished data). Only three GPS-collared mountain lions have crossed I-15, the critical barrier between the SA and the EPR genetic populations, during the 19 years that UC Davis researchers have studied mountain lions in the Santa Anas. All three crossed west to east (from SA into the EPR), and all three were dispersal age animals (two males and one female). However, crossing a major barrier like a road does not guarantee the individual will stay or breed in the new area. Of the three who crossed I-15, one was killed on a depredation permit in the EPR within 3 weeks, while the other two returned to the SA after a short period and did not cross the freeway again before their collars dropped off as scheduled (W. Vickers unpublished data). Two uncollared mountain lions have been recorded crossing I-15 on cameras monitoring crossing structures at Temecula Creek and culverts south of that location. Those individuals also crossed I-15 west to east, but no mountain lions have been recorded crossing east to west despite numerous photos of mountain lions being captured along the east side of the freeway (W. Vickers unpublished data). Though one GPS-collared mountain lion has crossed SR-91 from the main body of the Santa Ana Mountains into the Chino Hills and back several times, the Chino Hills are completely surrounded by development and do not provide a pathway to the San Gabriel Mountains to the north.

Planning for safe wildlife crossings in Southern California has been underway for nearly two decades. In 2008, the South Coast Missing Linkages Project identified areas in the coastal areas of Southern California where linkages are needed (South Coast Wildlands 2008). The County of Ventura has incorporated these linkages into its General Plan land use zones to help ensure these important wildlife movement corridors remain passable (Ventura County 2019). In 2020, CDFW assessed priority barriers

to wildlife movement throughout the state, and in 2022, 12 were considered to be top priorities, including several in the petitioned ESU area (Fig. 12, CDFW 2022c).

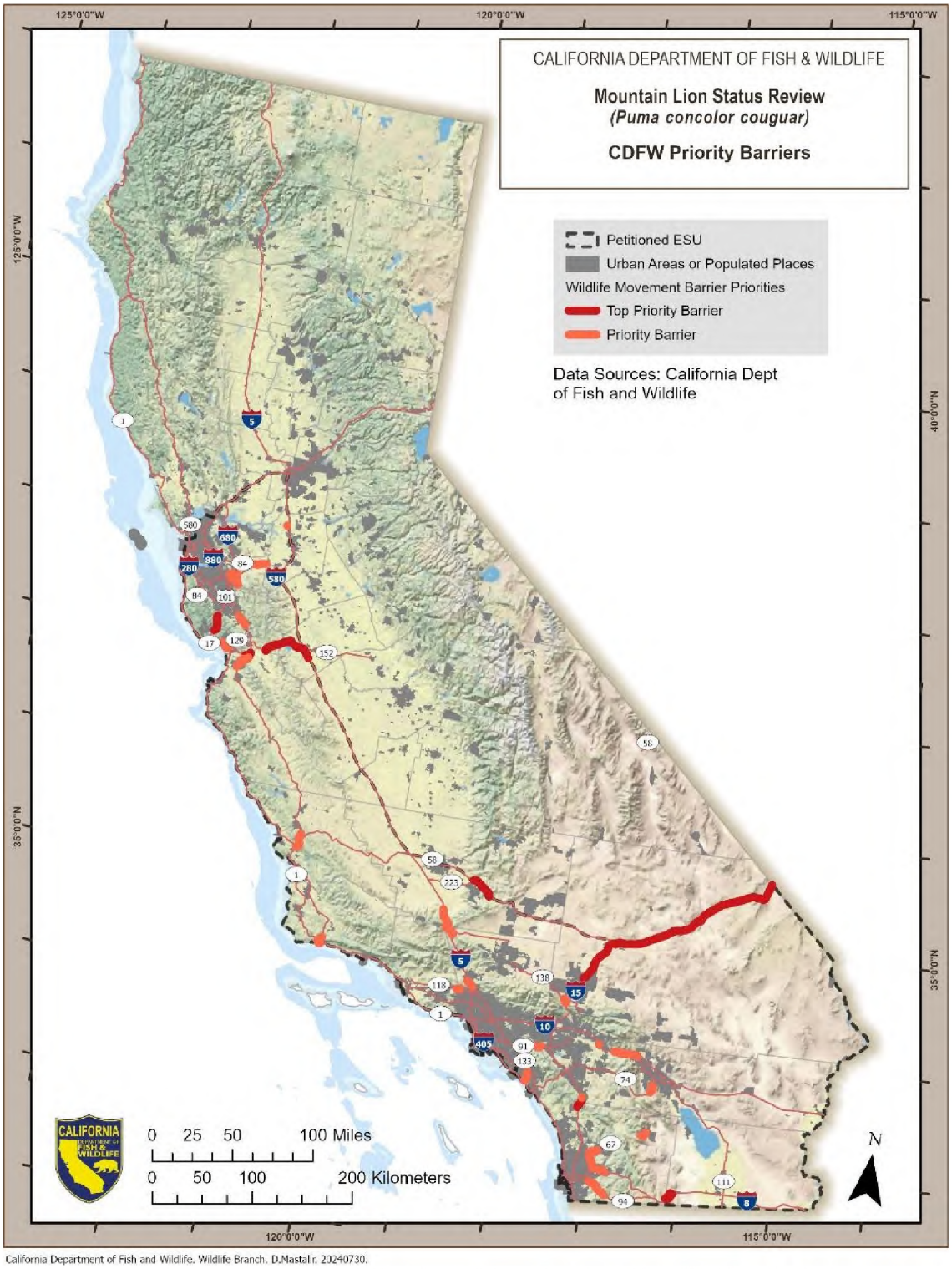

Figure 12. Priority movement barriers within the petitioned area as identified by the Department (CDFW 2022c).

In general, funding to implement wildlife crossing projects, including land acquisition to preserve natural habitat on both sides to make the crossing more suitable for wildlife, has been limited to date. The lack of wildlife crossings with appropriate fencing, and lack of fencing near existing crossing structures, particularly in highly urbanized areas or across major transportation corridors, contributes to continuing vehicle strikes and to the barrier effects on movement and gene flow. However, several crossings have recently been planned and/or approved. Construction of the Wallis Annenberg Wildlife Crossing over Highway 101 in the Liberty Canyon area of CC-S (Fig. 13) began in 2022. The crossing, including the approaches and the crossing over adjacent Agoura Road, is expected to be completed in late 2026. The overpass will help facilitate mountain lion movement between the Santa Monica Mountains and the Simi Hills and could ultimately contribute to genetic exchange throughout the CC-S genetic population, between CC-S and CC-C, and ideally between CC-S and WSN. It may also minimize some local vehicle-related mortality on Highway 101. A wildlife undercrossing with associated fencing and habitat conservation was constructed under Highway 17 in the Santa Cruz Mountains in February of 2023. Another wildlife crossing over Highway 101 in San Benito County is in the planning and fundraising phase. Together, these crossings should help facilitate the movement of mountain lions between the Santa Cruz Mountains in CC-N and the Gabilan Mountains in CC-C. In addition, initial design and environmental studies are being completed for a new crossing structure across I-15 south of Temecula, and improvements to the Temecula Creek passageway are planned. Other connectivity studies are being initiated along I-10 in the Banning Pass area that is critical to mountain lion movement between the EPR and SGSB genetic populations (W. Vickers pers. comm.). Lastly, the Department and the California Department of Transportation (Caltrans) have announced there will be three new wildlife overcrossings along I-15 and the high-speed rail line in San Bernardino County and existing undercrossings and culverts along the corridor will be improved and maintained, all of which should facilitate the movement of mountain lions and other species (CDFW 2023).



Figure 13. Rendering of Wallis Annenberg Liberty Canyon Wildlife Crossing. Source: Santa Monica Mountains Conservancy.

4.3 Overexploitation

4.3.1 Historical Bounties and Hunting

The management of mountain lions in California has varied widely in the last century. From the early 20th century until 1964, mountain lions were a bountied predator in California (Young and Goldman 1946; Dellinger and Torres 2020). During the bounty period, approximately 12,580 mountain lions were killed across California (Dellinger et al. 2021b). Nearly one-third of the bounties paid in the first few decades were in Humboldt, Trinity, Mendocino, and Lake Counties (Dellinger and Torres 2020). Additionally, the Department employed 1–5 hunters whose only job was to remove mountain lions throughout the state (McLean 1954; Dellinger and Torres 2020). One of those hunters, Jay Bruce, killed 669 mountain lions during his long career (Bruce 1953).

When bounties ended in 1964, mountain lions were classified as a nuisance or vermin species—while there was no longer paid incentive for removal, they could be killed year-round without a hunting license and with no limits (Dellinger et al. 2021b). From 1969–1972, mountain lions were considered a game species and could be hunted with a proper hunting license. Two hunting seasons took place (1970–1971) during which 118 animals were harvested from 4,953 permits issued (Dellinger et al. 2021b). Following the second hunting season, a legislative moratorium ceased further mountain lion hunting (Fitzhugh and Gorenzel 1986). From 1972–1986 mountain lions were classified as a non-game mammal and the hunting moratorium remained in place. Their status as a game species was reinstated from 1986, and the Department began to establish hunting zones and harvest quotas and issue tags. However, no mountain lions were harvested due to this change before a 1990 ballot initiative (Proposition 117) approved by California voters classified mountain lions as a "specially protected mammal species" with significant new protections for the species starting in 1991 (Fish & G. Code, § 4800). That classification continues today (see section 1.4). As a specially protected species, the only allowable take of mountain lions occurs via depredation permits when mountain lions have killed or are encountered attacking or threatening livestock, to protect public safety, and the targeted removal of individuals negatively impacting federally listed bighorn sheep populations (Fish & G. Code, §§ 4801–4809).

4.3.2 Poaching

Poaching and other unpermitted take is rarely reported but has been observed in the CC-S, SA, and EPR (Beier and Barrett 1993; Riley et al. 2014; Vickers et al. 2015) as well as in the CC-N (Yap et al. 2019). Benson et al. (2023) reported 26 out of 199 mortalities from known causes in the years 1974–2020 were due to poaching, translating to a 2%–3% annual rate of mortality. This annual mortality rate is lower than the rate for depredation take (6%), vehicle collisions (4%), natural mortality (3%), and being killed by another mountain lion (3%). However, the fact that mortalities from poaching are unreported and difficult to detect means the actual poaching-related mortality rate may be higher than reported in the literature.

4.4 Depredation and Public Safety Management

The interactions between humans and mountain lions in California have profound impacts on the conservation and management of the species. Human-wildlife conflict occurs "when humans and wild animals interact in an unwanted or unsafe way" (CDFW 2024a). As the State's Trustee Agency for fish

and wildlife resources (Fish & G. Code, § 1802), the Department's responsibilities include serving as the primary state agency charged with helping to resolve human-wildlife conflict and public safety wildlife incidents.

4.4.1 Depredation Permits

When mountain lions have attacked or killed domestic animals, depredation permits issued by the Department allow them to be taken, nonlethally and, in some very limited circumstances, lethally (Fish & G. Code, § 4801.5 and 4802, et seq.). Nonlethal methods of take include, but are not limited to, practices such as hazing with hounds and use of less-than-lethal projectiles. Mountain lions encountered in the act of pursuing, inflicting injury to, or killing livestock or domestic animals may be taken—nonlethally or lethally—by landowners and their agents without prior authorization (Id., § 4807). Additionally, the Department or local public safety agencies may take mountain lions perceived to be an imminent threat to public health and safety (Id., §§ 4801, 4801.5).

In 2013, the Department implemented a situation-specific approach to responding to human-mountain lion conflict, which addressed mountain lions in areas of human habitation, mountain lions depredating pets/livestock, and mountain lion public safety situations (CDFW 2013). The most noteworthy change in management action reflected in this approach was specifying that no more than one mountain lion could be taken under a single depredation permit. In 2017, the Department amended its approach, consistent with Fish and Game Code section 4801.5, to prioritize non-lethal measures for dealing with mountain lion depredation in the Santa Monica and Santa Ana Mountains where research indicated that local mountain lion populations constrained by anthropogenic barriers lacked genetic variation (CDFW 2017). Following the Commission's decision to make mountain lion a candidate species in 2020, the Department expanded the area where non-lethal measures would be prioritized to the entire petitioned ESU (CDFW 2020a), and later to the entire state (CDFW 2020b), consistent with Fish and Game Code section 4801.5.

From January 2010 through 2020, the Department recorded 3,637 reported mountain lion incidents statewide. These included depredations, public safety concerns, as well as sightings and nuisance reports[6]. There were 2,202 depredation incidents, wherein mountain lions were reported to have attacked pets and/or livestock.

Across California from 1972 to 2019, the number of reported depredation events trended upward for large hoofstock (cows and horses), small hoofstock (mostly sheep and goats), and pets (Dellinger et al. 2021a). Sheep and goats accounted for 59.4% of confirmed depredations, while large hoofstock accounted for 13.1%, and pets accounted for 10.4%.

From 1972 to 2020, at least 3,694 mountain lions were removed in depredation incidents (Dellinger et al. 2021b), and such removal was the leading cause of attributable mortality of collared mountain lions

[6] When reporting a nuisance animal, the reporting party can select "There is/are wild animals on or around my property that I would consider pests and I would like more information" or "There is/are wild animals on or around my property that is/are disturbing my garbage, causing noise or creating some other type of disturbance."

in 1974–2000 (Benson et al. 2023). Between 2001 and 2020, an average of approximately 92 mountain lions were lethally removed pursuant to depredation permits per year statewide (Dellinger et al. 2021b). With recent efforts to prioritize non-lethal measures in response to livestock damage, the number of mountain lions lethally removed pursuant to depredation permits statewide dropped to 3 in 2021, 10 in 2022, and 15 in 2023 (Fig. 14, CDFW 2022b; 2024b; 2025).

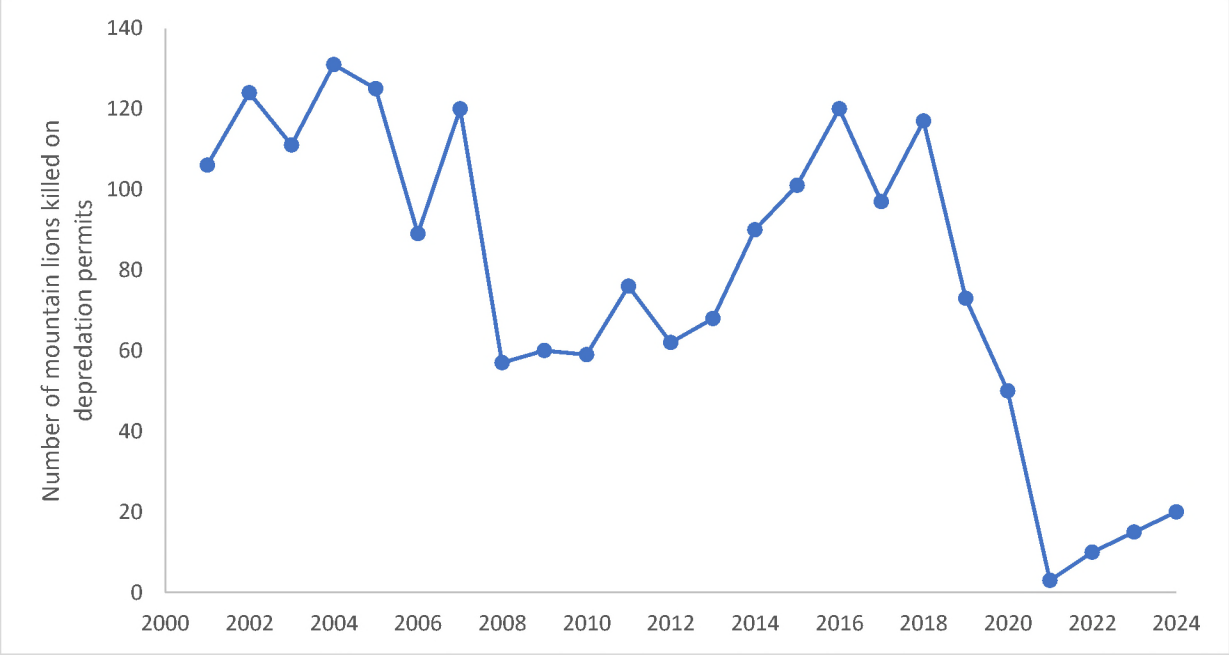

Figure 14. The number of mountain lions reported killed pursuant to depredation permits in California in 2001–2024. Data from (Dellinger et al. 2021b; CDFW 2022b, 2024b, 2025). The Department's approach to mountain lion depredation and public safety response was modified in 2013, amended in 2017, and amended again in 2020.

Interestingly, researchers have noted that at the county level, mountain lion depredation rates increased by 9% for every lion removed through a depredation permit the prior year (Dellinger et al. 2021a). This general pattern of increased depredations in an area the year after mountain lion removal was also seen in Washington State, though removals were done via sport hunting and therefore less targeted to individual mountain lions that may have been involved in depredations (Peebles et al. 2013). Dellinger et al. (2021a) suggested this pattern could be a result of subadults moving to territories vacated when resident adults were removed. Research shows subadults can be more likely to use areas closer to people (Kertson et al. 2013), but evidence that subadults mountain lions have less well-developed hunting skills and are more likely to target easily killed domestic animals is not conclusive (Linnell et al. 1999; Peebles et al. 2013).

Mountain lion removal through depredation permits diminishes the total abundance of mountain lions in an area, and the lions removed are predominantly males (Sweanor et al. 2000). For example, from 1981 to 2013 in the Santa Ana Mountains and the Eastern Peninsular Range, 3.4 times as many males were taken for depredation than females (Vickers et al. 2015). Because males are more likely to disperse

than females, depredation removal may thus further inhibit adequate gene flow between mountain lion populations in Southern California by removing the animals most likely to move between genetic populations (Vickers et al. 2017).

To further reduce the number of mountain lions killed for depredation, best practices to minimize livestock predation should be consistently employed. Unfortunately, mountain lions may not adequately interpret human cues and risk levels to substantially modify their behavior and thus reduce the number of conflicts with humans. In the Santa Cruz Mountains, during the day, mountain lions avoided areas of housing where they were most likely to come into conflict with humans (Nisi et al. 2022). However, at night mountain lions were more likely to use areas of intermediate housing density than during the day. Areas of intermediate housing density are where they were also most likely to be killed in response to depredation events. This suggests that improving livestock husbandry to minimize the risk of depredation is vital to further reduce the lethal take of mountain lions.

4.4.2 Bighorn Sheep Management

Mountain lions are occasionally removed when predating upon state and federally endangered Sierra Nevada bighorn sheep (*O. canadensis sierrae*) or state and federally threatened Peninsular bighorn sheep (*O. canadensis nelsoni*). The Department is authorized to take such actions by Fish and Game Code section 4801, and such actions are identified in each species' federal recovery plan (USFWS 2000, 2007). Between 1999 and 2019, 26 mountain lions were lethally removed in the Eastern Sierra Nevada Mountains as part of bighorn sheep recovery (CDFW 2021). These lethal removals occurred outside the petitioned ESU boundary and where mountain lion populations are relatively large and well connected.

4.4.3 Public Safety

The Department prioritizes public safety and lethally removes or attempts to remove mountain lions that represent an immediate threat to human safety. Specifically, a threat to public safety is when a mountain lion "exhibits one or more aggressive behaviors directed toward a person that is not reasonably believed to be due to the presence of responders." (Fish & G. Code, § 4801.5, subd. (b).) From 1986 to April 2024 there were 25 reported mountain lion attacks on humans in California, 4 of them fatal (CDFW 2024c). The Department has records of 10 mountain lions being euthanized following attacks on humans in California between 2000 and 2024 (reliable records prior to 2000 are unavailable).

Collectively, all forms of permitted take are unlikely to negatively influence mountain lion populations and trends at the statewide level or within the relatively large and well-connected NC and SN genetic populations. However, the additive mortality resulting from lethal removals associated with depredations and human conflicts in areas where mountain lion groups are already small and isolated such as California's central and south coasts may result in local population declines (Benson et al. 2023). Importantly, Benson et al. (2023) noted the risk of mortality from management killing declined dramatically from 2001 to 2020, and raised the possibility that the decline may be related to the 2017 changes in CDFW's management policies. The number of management killings decreased sharply after 2020 (Fig. 14), and therefore its relative importance as a source of mortality has decreased.

4.5 Competition

Mountain lions compete with other large carnivores in most areas of their range. Mountain lions and

black bears regularly overlap in space in almost all mountain lion-occupied areas in California except for the Santa Cruz Mountains and the Santa Monica Mountains. In a study in the Mendocino National Forest in Northern California, black bears displaced mountain lions from about 50% their kills (Elbroch et al. 2015a), depriving them of calories, and potentially forcing them to expend additional energy hunting to procure more prey (Allen et al. 2021). Instead of avoiding areas with bears, mountain lions increased their predation rates to compensate for the kills stolen by bears (Elbroch et al. 2015a). It is unknown whether displacement by black bears occurs frequently enough to affect mountain lion survival and reproductive rates (Elbroch and Kusler 2018).

In western North America, gray wolves can affect adult and kitten survival by directly killing individual mountain lions, and can affect habitat and prey selection, bedding locations, and population size (Bartnick et al. 2013; Elbroch et al. 2015b; Kusler et al. 2017; Elbroch and Kusler 2018; Elbroch et al. 2020). Mountain lions can also kill individual wolves. In Washington State, at least four collared wolves were killed by mountain lions from 2013–2022 (WDFW 2022). However, given the small size and limited distribution of California's current gray wolf population, competition between wolves and mountain lions has not been a significant threat to the persistence of mountain lions in the petitioned ESU. Wolves are currently absent from the petitioned ESU and therefore wolf competition is not considered a current threat; however, wolves are rapidly expanding their range in the state with one pack known to occupy a portion of the southern Sierra Nevada. If wolf distribution continues to expand, competition between wolves and mountain lions in the petitioned area may become a threat in the future. Finally, smaller predators and scavengers such as coyotes are known to opportunistically feed from mountain lions kills (Brunet et al. 2022), although the degree this loss of food resources impacts lions is difficult to quantify.

Intraspecific conflict and aggression (i.e. aggressive interactions between two or more mountain lions) appears to be a significant mortality factor in areas where mountain lions occupy small patches of suitable habitat surrounded by urban and agricultural development and other dispersal barriers (Riley et al. 2014; Vickers et al. 2015; Benson et al. 2020). Intraspecific aggression was identified as the leading cause of mortality for the nearly isolated mountain lions in the Santa Monica Mountains (a portion of the CC-S; Riley et al. 2014), although more recently, vehicles and toxicants have caused similar levels of mortality (Benson et al. 2020). From 2002 to 2018, about 41% of deaths of telemetered mountain lions tracked in the Santa Monica Mountains were determined to have resulted from intraspecific aggression. There were multiple documented cases of adult males killing their siblings, offspring sired by other males (i.e., infanticide), and previous mates (Riley et al. 2014; Benson et al. 2020). Additionally, in the SA, intraspecific predation was documented on two occasions in recent years (W. Vickers, unpublished data). Therefore, this form of competition should be considered a potential threat to mountain lion populations in small, isolated genetic populations such as the CC-S, SA, and the SGSB. While the effect of inter- and intraspecific competitions on mountain lions within the entire petitioned ESU is unknown, in the smaller genetic populations it likely exacerbates the threats associated with small, isolated populations.

4.6 Toxicants

Mountain lions throughout California are exposed to toxic chemicals in their environment. Depending on the extent of exposure, toxicants may cause clinical signs of disease or debilitation, or may lead to

toxicosis and death or debilitation. Some ingested toxicants can be transferred in utero to fetuses, and debilitated lions may be more susceptible to other forms of mortality such as starvation and traumatic injuries.

Anticoagulant rodenticide (AR) baits are commonly used to control rodent pests in urban, suburban, and agricultural areas (Litovitz et al. 1998; Maroni et al. 2000). As summarized in Serieys et al. (2015), ARs interrupt the production of vitamin K-dependent blood clotting proteins, leading to the depletion of these proteins over a period of days and inducing mortality by internal hemorrhage. Comprised of two classes of compounds, ARs are the primary chemical method used worldwide for the control of rats and mice. First-generation ARs, including warfarin, diphacinone, and chlorophacinone, are more readily metabolized, have a shorter half-life in liver tissue (two weeks to several months), and must be consumed in multiple feedings to reach a lethal dose. Second-generation ARs include brodifacoum, bromadiolone, difenacoum, and difethialone, and were developed to target rodents with genetic resistance to warfarin. Due to increased toxicity and persistence in animal tissues, with half-lives ranging from 6–12 months, second-generation ARs may persist in liver tissue for more than a year in some species. Both classes of compounds have a delayed onset of action, and death from AR consumption can occur up to 10 days after ingestion. Individual rodents may continue to accumulate the compounds over a period of days, increasing their likelihood of capture by predators as they become weakened by the toxicant. For these reasons, ARs have the potential of creating primary and secondary poisoning risks to non-target wildlife. Predatory animals are at significant risk of secondary poisoning if they consume prey that had previously ingested ARs. AR exposure in wildlife has been positively associated with proximity to urban areas, raising concerns about long-term conservation impacts of AR exposure on non-target wildlife populations on the fringe of urban areas (Hosea 2000; Riley et al. 2007; McMillin et al. 2008; Gabriel et al. 2012; Serieys et al. 2015; Serieys et al. 2018).

Mountain lions can be exposed to ARs in many settings including near human settlements where legal ARs are used to control vertebrate pests (Moss et al. 2016; Smith et al. 2016). However, even in remote locations on public lands, mountain lions can come into contact with prohibited rodenticides as they are often used to protect illicit cannabis plantations (Gabriel et al. 2012). The Department's Wildlife Health Lab detected AR exposure in 94.2% (343/364) of tested mountain lion livers submitted between 2016 and 2022 (Fig.15; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data). Second-generation ARs were more commonly detected than first-generation ARs, despite a 2014 California regulatory change restricting second-generation AR use to certified pesticide applicators (Rudd et al. 2018; Rudd and Rogers 2021). Eighty-five percent of the mountain lion livers (306/364) tested had two or more different ARs present at the time of death, with 52.2% (190/364) of individuals testing positive for three or four different ARs, which indicates multiple exposure events are common (Fig. 16; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data). The 94.2% (343/364) total exposure prevalence recorded between 2016 and 2022 is higher ($X^2 = 14.8$, $p < 0.001$) than the 82.4% (103/125) exposure prevalence found in mountain lion livers analyzed from across the state between 2003 and 2015 (Poppenga et al. unpublished data). In samples from 2003–2015, 67.2% (84/125) of livers indicated exposure to multiple AR compounds, which was lower than the exposure prevalence rate in livers tested between 2016 and 2022 ($X^2 = 15.4$, $p < 0.001$).

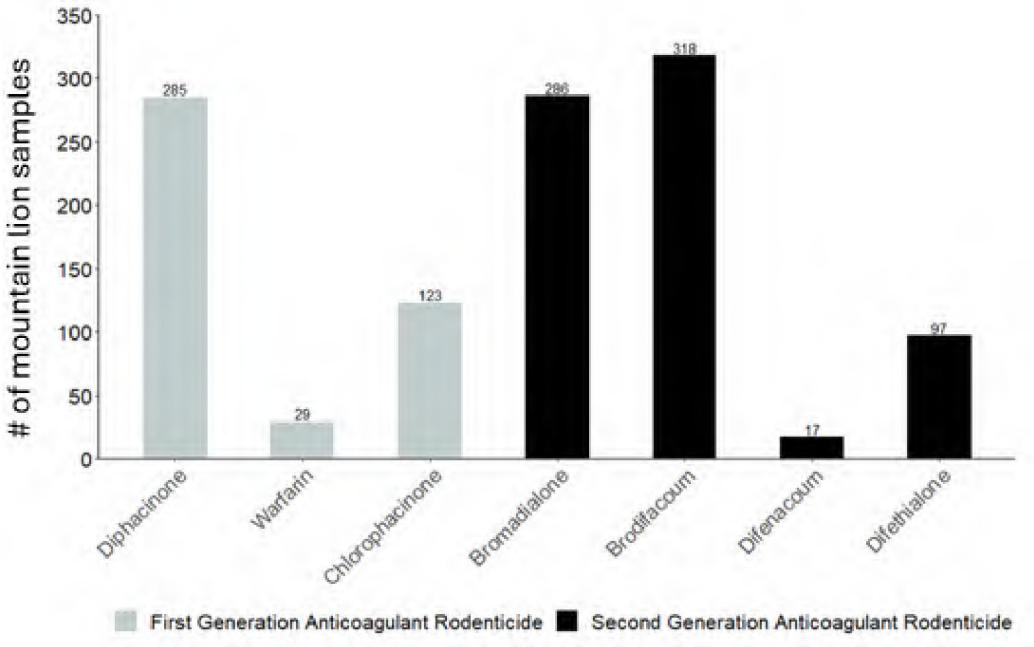

Figure 15. Anticoagulant rodenticide residues detected in 364 livers of mountain lions submitted to the Wildlife Health Laboratory for postmortem examination 2016–2022 (Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022, CDFW unpublished data). Numbers on top of the bars are the number of livers that the specific residue was found in.

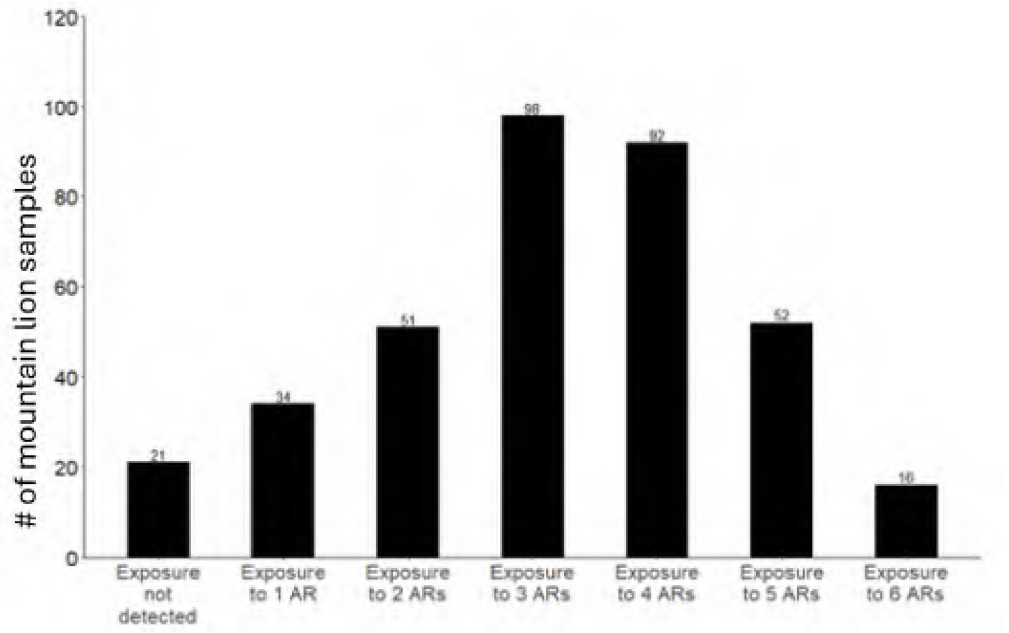

Figure 16. Number of different anticoagulant rodenticide analytes detected in 364 individual mountain lion livers analyzed from 2016–2022 (Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data).

Fetal AR exposure occurs in mountain lions, as exposure was detected in four of eight (50%) instances where both pregnant female mountain lions and fetal or placental tissues were tested (Table 4; CDFW unpublished data; National Park Service (NPS) unpublished data). Many toxic substances, including ARs, can adversely affect fetal development and survival at doses that may not produce toxic effects in the mother (Gupta 2012). Fetuses are also typically more susceptible to AR toxicity because the placenta is the only source of vitamin K for the fetus (Gupta 2012). AR-related coagulopathy and toxicity was not observed in any of the examined fetuses with AR exposure (Rudd et al. 2020, CDFW and NPS unpublished data).

Table 4. Anticoagulant rodenticide test results for liver samples from 8 pregnant mountain lions and their fetuses, pooled fetal tissue, or placenta (CDFW and NPS unpublished data). BRD: brodifacoum, BRM: bromadiolone, CHL: chlorophacinone, DIF: difethialone, DIPH: diphacinone. An asterisk (*) indicates that the samples were pooled together for qualitative and quantitative analyses (i.e., samples too small to be evaluated individually).

ID	Cause of Mortality	County	ARs detected in pregnant adult (ppb)	# of fetuses	ARs detected in fetal tissue (ppb)
Z16-1126	Depredation	Tuolumne	BRD (230), BRM (trace)	4*	Not detected
Z17-0199	Hit by car	Santa Barbara	BRD (71), BRM (130), CHL (trace), DIF (trace), DIPH (830)	2	**1.** BRD (trace), DIPH (150) **2.** BRD (trace), DIPH (160)
Z17-0281	Depredation	Trinity	BRD, BRM, DIF, DIPH (all trace)	4*	Not detected
Z17-0328	Depredation	Yuba	BRD (trace), BRM (120), DIPH (trace)	3*	Not detected
Z19-0793	Depredation	Amador	BRD, BRM, DIPH (all trace)	3*	Not detected
P054	Hit by car	Los Angeles	BRD (83), BRM (930), CHL (trace), DIF (190), DIPH (230)	4	**1.** BRD (trace), BRM (trace), CHL (trace), DIPH (120) **2.** BRD (trace), BRM (trace), CHL (trace), DIPH (140) **3.** BRD (trace), BRM (trace), CHL (trace), DIPH (130) **4.** BRM (trace), CHL (trace), DIPH (120)
Z23-0437	Depredation	El Dorado	BRD, BRM, CHL, DIPH (all trace)	4*	DIPH (trace)
Z23-1178	Depredation	Yuba	BRD (trace), BRM (400), CHL (trace), DIPH (400)	3	**1.** DIPH (100) **2.** DIPH (86) **3.** DIPH (68)

In the Santa Monica Mountains National Recreation Area (CC-S), the deaths of seven mountain lions since 2004 have been associated with AR exposure and toxicosis (Riley et al. 2007; NPS 2021). Between 2002 and 2019, out of 26 known deaths of adults and subadults in that population, 5 were from AR toxicosis (Benson et al. 2020). Two mountain lions that died from AR toxicosis in 2004 in CC-S also had infestations of notoedric mange (Riley et al. 2007; Uzal et al. 2007). Notoedric mange, typically caused in felids by the parasitic mite *Notoedres cati,* may cause fatal disease in bobcats and mountain lions (Foley et al. 2016). Exposure to higher doses of ARs or to more than one AR was associated with greater likelihood of dying due to severe mange (Serieys et al. 2015).

In addition to ARs, risk of pesticide exposure may also come from neurotoxic rodenticides, such as bromethalin, which have become more widely used as restrictions on ARs have increased (McMillin et al. 2016). Bromethalin is a single-feed neurotoxic rodenticide which once ingested is absorbed and processed in the liver to form its highly toxic metabolite, desmethylbromethalin (DMB). Both bromethalin and DMB accumulate in fat and brain tissues. Lethal intoxication leads to a death via respiratory failure, while sublethal intoxication can cause neurological dysfunctions that may resolve, or result in death (McMillin et al. 2016).

Bromethalin was thought to have low risk of secondary exposure, yet in recent years has been documented in nontarget wildlife in California (McMillin et al. 2016; Rudd et al. 2021; Rudd et al. 2022). Because exposure was documented in probable mountain lion prey species, CDFW and the California Animal Health and Food Safety Laboratory tested fat or brain tissue from 49 mountain lions for the metabolite DMB over two years. In 2021 and 2022, four of 32 (12.5%) and six of 17 (35.3%) mountain lions tested positive for DMB exposure, respectively (Rudd et al. 2021, 2022). Continued surveillance for bromethalin exposure is warranted and more research is needed on exposure pathways and the sublethal effects on mountain lions due to bromethalin products entering the food web.

The Petition cited Rudd et al. (2019) to state that mountain lions in California are exposed to dangerously high levels of illegal pesticides, such as carbofuran. However, this citation is incorrect; the Department has not documented any cases of carbofuran toxicity in mountain lions to date. Further research is needed to investigate the lethal and sub-lethal effects of anticoagulants and other toxicants on wildlife in terrestrial environments (Riley et al. 2007; Gabriel et al. 2015; Rudd et al. 2018).

4.7 Infectious Diseases

Mountain lions are afflicted by various viral, bacterial, and parasitic pathogens. It is not known if these pathogens and their respective diseases alone could imperil the species in California. However, small, isolated mountain lion populations are at greater risk of experiencing population-level impacts from disease, which could reduce their ability to persist into the future, especially when combined with other threats (Foley et al. 2013). Recent detections of emerging diseases in California mountain lions coupled with potential future changes in the distribution of pathogens and disease vectors due to habitat modification and climate change supports the value of continued mountain lion mortality monitoring and disease surveillance (White et al. 2018; Thurman et al. 2024). The following are pathogens documented to have caused the death of at least one mountain lion in California since 2019.

Highly Pathogenic Avian Influenza (HPAI). Since October 2021, outbreaks of H5N1 HPAI belonging to Eurasian lineage, clade 2.3.4.4 have been detected in wild birds and domestic poultry throughout Europe and North America. The majority of H5 HPAI virus detections in both wild and domestic birds have overlapped with annual fall migration and large aggregations of overwintering waterbirds (Verhagen et al. 2021). In California, six GPS-collared mountain lions were documented to have died from the virus: two from Mono County in December 2022 and January 2023, one from Butte County in January 2023, and three from Modoc County in March 2023 (Rudd et al. 2024). Occasionally, wild birds, including waterfowl, can make up a component of the natural diet for mountain lions, and at least three of the mountain lions that died had a history of hunting wild Canada geese (J. Rudd, CDFW, pers. comm.). While infection with H5N1 HPAI is considered uncommon in mammals, there is evidence suggesting that certain mutations in the H5N1 virus may lead to mammal-to-mammal transmission (Plaza et al. 2024). While H5N1 infection has not been detected to date in coastal populations of mountain lions, the potential for it to occur in and to impact the smaller genetic populations within the petitioned area is of concern. Given the six documented H5N1 HPAI-related mortalities in California mountain lions over a four-month period, infections in mammals in general, multiple possible transmission routes, and the potential for zoonotic transmission, H5N1 or other HPAI viruses should be closely monitored in mountain lions.

Feline leukemia virus (FeLV). FeLV is a common immunosuppressive viral pathogen in domestic cats known to cause morbidity and mortality. While infection is seemingly rare in non-domestic felids, FeLV is considered a disease of potential epidemic concern for small populations. Researchers have found antibody test-based infection prevalence in mountain lions to be low, ranging from 0–5.4% (Paul-Murphy et al. 1994; Foley et al. 2013). More recently, the Department, in collaboration with Colorado State University, documented a FeLV infection prevalence of 2.4% in lymph nodes collected from 130 necropsied CA mountain lions tested using Polymerase Chain Reaction from 2016–2018 (J. Rudd, CDFW, pers. comm.). To date, the Department has documented two mountain lion mortalities due to suspected FeLV-related infections (e.g., opportunistic bacterial and fungal infections and anemia)—one in 1993 (Jessup et al. 1993), and another in 2020 (J. Rudd and Q. Martins, unpublished data).

Feline Panleukopenia Virus (FPV). FPV belongs to a family of parvoviruses that are closely related to canine parvovirus and mink enteritis virus (Truyen and Parrish 2013). FPV primarily infects felids and has a high mortality rate, although individuals that do survive infection generally have life-long immunity (Sykes 2014). Antibodies to FPV were detected in 36% of wild mountain lions from California sampled from 1991–2008 (Foley et al. 2013). Infection with FPV resulted in the illness and death of two six-week-old mountain lion siblings from Ventura County in 2021 and was the cause of illness in an emaciated 11-month-old mountain lion with impaired balance and coordination from Nevada County that was euthanized in July 2022 (J. Rudd, CDFW, pers. comm.). Pathological findings for all three mountain lions demonstrated viral-associated encephalitis.

Mange. Notoedric and sarcoptic mange are skin diseases caused by highly contagious parasitic mites. Severe and sometimes fatal mange epidemics from these mites have been described worldwide, and wild felids in California have been infested with the mite *Notoedres cati* (Riley et al. 2007; Serieys et al. 2013; Foley et al. 2016). In wildlife, mange causes considerable suffering, predisposing the individual to secondary bacterial infections through open wounds, changes in behavior, emaciation, and death

(Maehr et al. 1995; Bornstein et al. 2001; Serieys et al. 2013; Niedringhaus et al. 2019). Mange poses a considerable threat to wildlife species that are more social or have high spatial overlap, which can promote transmission (Rudd et al. 2020a). In the Santa Monica Mountains, there have been six known cases of notoedric mange in mountain lions, including one adult female who died of the disease in March of 2022 (S. Riley pers comm. March 2024). Given mountain lions' largely solitary nature, and that *Notoedres* mites are not thought to survive off of the host animal (Paterson 2008), the potential for disease spread population-wide is presumably low. However, notoedric mange had a negative impact on the bobcat population in CC-S in 2002-2004 (Riley et al. 2007), and in 2019-2021 there has been regular bobcat mortality from mange in the same area (S. Riley pers. comm March 2024).

4.8 Wildland Fire and Fire Management

Fire is a natural disturbance in many California ecosystems. However, intense, high-severity burns can significantly modify ecosystems by changing plant and animal community compositions temporarily or long term (Williams et al. 2023). Wildfires in California can cause direct mortality to mountain lions and can result in temporary adverse modification of their habitats. However, after wildfires, deer populations typically respond favorably to the resulting plant regrowth (Lewis et al. 2022).

In California's wildland-urban interface and in many habitats prone to fire, changes in temperature, humidity, and wind patterns attributable to climate change, in combination with other human activities, have led to more frequent wildfires that burn larger areas (Syphard et al. 2007; Syphard et al. 2009; Keeley and Syphard 2017,2021). In California's central coast and south coast regions, Keeley and Syphard (2017) found the area burned per decade increased dramatically from the 1930s to the 2010s. Keeley and Syphard's more recent work (2021) examined wildfire records over a longer period (1860s–2020) and revealed more complex patterns in the central and south coast regions. They found fire frequency peaked during two periods: the 1920s and the 2000s and has been declining since the 2000s. The average fire size in the central coast region was similarly found to have significantly increased from the 1950s through 2020, but no significant trend in average fire size was found in the south coast region.

Keeley and Syphard (2021) distinguished fuel-dominated and wind-dominated fires and considered the latter type more dominant in the grasslands, shrublands, and woodlands of California's central and southern coast. They pointed out that wind-dominated fires rely on both an extreme wind event and an (usually human-caused) ignition source. The authors considered the major driver of wind-dominated fire impacts to be more frequent ignitions associated with human population growth and the expansion of residential developments into the wildland-urban interface (Keeley and Syphard 2021). Climate models predict increasing temperatures and decreasing humidity in the future, and strong, dry easterly winds (i.e., Santa Ana winds) may become more frequent and extend into the late fall and early winter when fuel loads are highest and fuel moistures lowest—suggesting extreme fire events will become more frequent in the future (Miller and Schlegel 2006; Jennings et al. 2016).

Since 2000, a substantial proportion of the mountains in southwestern California where undeveloped mountain lion habitat remains have burned in wildfires (Fig. 17). Fire-return intervals (the average number of years between successive fires in the same location) in Southern California shrublands historically ranged from 30–100 years but return intervals are now 33% shorter (Jennings et al. 2016). This shortened interval between fires can interrupt plant community successional cycles, reduce plant diversity, favor the establishment of non-native species, and shift shrublands to grass-dominated

landscapes (Keeley 2005; Jennings et al. 2016). Jennings et al. (2016) warn that if trends continue, vegetative communities preferred by mountain lions such as riparian areas, oak woodland and conifer forests could be converted by repeated, short interval fires into homogenous non-native annual grasslands, which are typically avoided by mountain lions. Should this occur in key locations, migration between genetic populations could be further limited.

The central coast of California has similarly experienced a succession of large, severe wildfires in the last two decades. Major fires in the year 2020 alone included the 160,508 ha (396,624 acres) SCU Complex Fire in the interior of CC-N, the 35,009 ha (86,509 acres) CZU Lightning Complex Fire in the Santa Cruz Mountains (also in CC-N), the 50,555 ha (124,924 acres) Dolan Fire in Big Sur, and the 19,461 ha (48,088 acres) River Fire on the eastern slopes of the Santa Lucia Mountains in Monterey County (CAL FIRE 2020). In the central coast region, the annual distribution of fire sizes has trended toward larger fires in the last 75 years, although trends in the frequency of large fires (≥ 10,000 ha) in over the same period are less apparent (Keeley and Syphard 2021). Trends in annual area burned in the central coast region differ by responsibility area, with U.S. Forest Service (USFS)-managed areas located primarily in the interior coastal mountains experiencing an approximately ten-fold increase between 1940 and 2000, from 5,000 ha/million ha in the 1940s to nearly 50,000 ha/million ha in the 2000s (50 mi.^{2}/10,000 mi.^{2} to 500 mi.^{2}/10,000 mi.^{2}). By contrast, within the California Department of Forestry and Fire Protection (CAL FIRE) responsibility area (largely private lands and state lands located on the coastal plains, valleys, and lower slopes of interior mountains), the annual area burned decreased from approximately 15,000 ha/million ha in 1920 to less than 2,000 ha/million ha in 2010 (150 mi.^{2}/10,000 mi.^{2} to 20 mi.^{2}/10,000 mi.^{2}) (Keeley and Syphard 2017). Making predictions about future trends in this region is complicated by the interplay between precipitation levels and fuel accumulation. Within the central coast zone, projections indicate precipitation levels may increase in the north in coming decades potentially resulting in moister conditions and therefore lessened fire frequency, but higher severity fires when they do occur due to higher fuel loads; while in the south, precipitation is projected to decrease, potentially limiting fuel accumulation thereby limiting fire severity, although fires may become more frequent due to prolonged dry periods (Langridge 2018).

In the redwood forests of the Santa Cruz Mountains, mountain lions likely continue to use burned areas following most wildfires as redwoods are adapted to wildfire with trees frequently surviving low and moderate intensity wildfires and decay-resistant dead trees remaining standing for decades. In 2020, an unusually severe fire burned old growth redwoods in Big Basin Redwoods State Park north of Santa Cruz. Six months later, many trees were able to resprout, suggesting redwoods could have some resiliency to changing fire regimes (Peltier et al. 2023). Additionally, redwood sprouts and seedlings can be prolific following fires, numbering in the tens of thousands per hectare, and canopies can develop rapidly (Lazzeri-Aerts and Russell 2014). Consequently, dense cover favored by mountain lions for hunting and travel can develop within a few years following severe wildfire in these forests.

While mountain lions are likely able to escape most wildfires, quickly moving wind-driven wildfires described by Keeley and Syphard (2021) are capable of overtaking fleeing mountain lions or trapping lions between multiple fire fronts (Fig. 18). Vickers et al. (2015) documented the death of a collared mountain lion in the SA and one in the EPR due to burns from human-caused wildfires and, following the 2018 Woolsey Fire in the Santa Monica Mountains and Simi Hills, one collared lion was found in poor

condition with burned feet and eventually died. Another collared lion disappeared and was presumed to have died in the same fire (Blakey et al. 2022). A young lion found with burned paw pads following the 2018 Tomas Fire in the CC-C was treated and placed into captivity. An adult lion found unable to walk due to burned paw pads during the 2020 Bobcat Fire in the San Gabriel Mountains was cared for and released. In Northern California, a three-month-old male kitten suffering burn injuries to the feet and face from the 2020 Zogg Fire in Shasta County was treated and placed into captivity. The same year, the August Complex Fire in Colusa, Glenn, Mendocino, Tehama, Trinity, and Humboldt Counties was likely responsible for the death of one adult female lion and the orphaning of her two kittens which were rescued and placed in captivity (D. Clifford, CDFW, pers. comm.).

Additionally, wildfires can temporarily displace mountain lions, increasing the distances they move and amount of area they use (Blakey et al. 2022). In developed areas, this increased movement may lead them to cross over roads more often, exposing them to vehicle strikes, and potentially bringing them in contact with other mountain lions, increasing the chance of intraspecific aggression (Jennings et al. 2016; Blakey et al. 2022).

Post-fire habitat use by mountain lions may vary over time, with lions initially avoiding heavily burned areas but then utilizing them more as vegetation regenerates (McLean 1954). A study in the Santa Monica Mountains and Simi Hills after the 2018 Woolsey fire showed that, in general, mountain lions avoided burned areas up to 15 months post fire (Blakey et al. 2022). However, assessing use up to 9 years post-fire, Jennings et al. (2016) found mountain lions used regenerating shrub-dominated habitats in the Santa Ana Mountains and the Eastern Peninsular Range to a greater extent than would be expected based on availability (Jennings et al. 2016). The same study assessed suspected cache and kill sites from 44 collared mountain lions and found there were more such sites than expected in recently burned areas (≤ 6 years old), likely reflecting intensive use of recent burned areas by mule deer taking advantage of nutritious young foliage.

Several strategies are employed in different California wildland habits to help minimize the potential for catastrophic wildfires, including prescribed burns and mechanical fuel reduction. Like wildfires themselves, these actions have the potential to benefit or harm mountain lions and their prey. Prescribed fires and mechanical fuel removal can result in the short-term loss of vegetation and cover favored by mountain lions, while over slightly longer terms encouraging vigorous regrowth of palatable foliage favored by key mountain lion prey species.

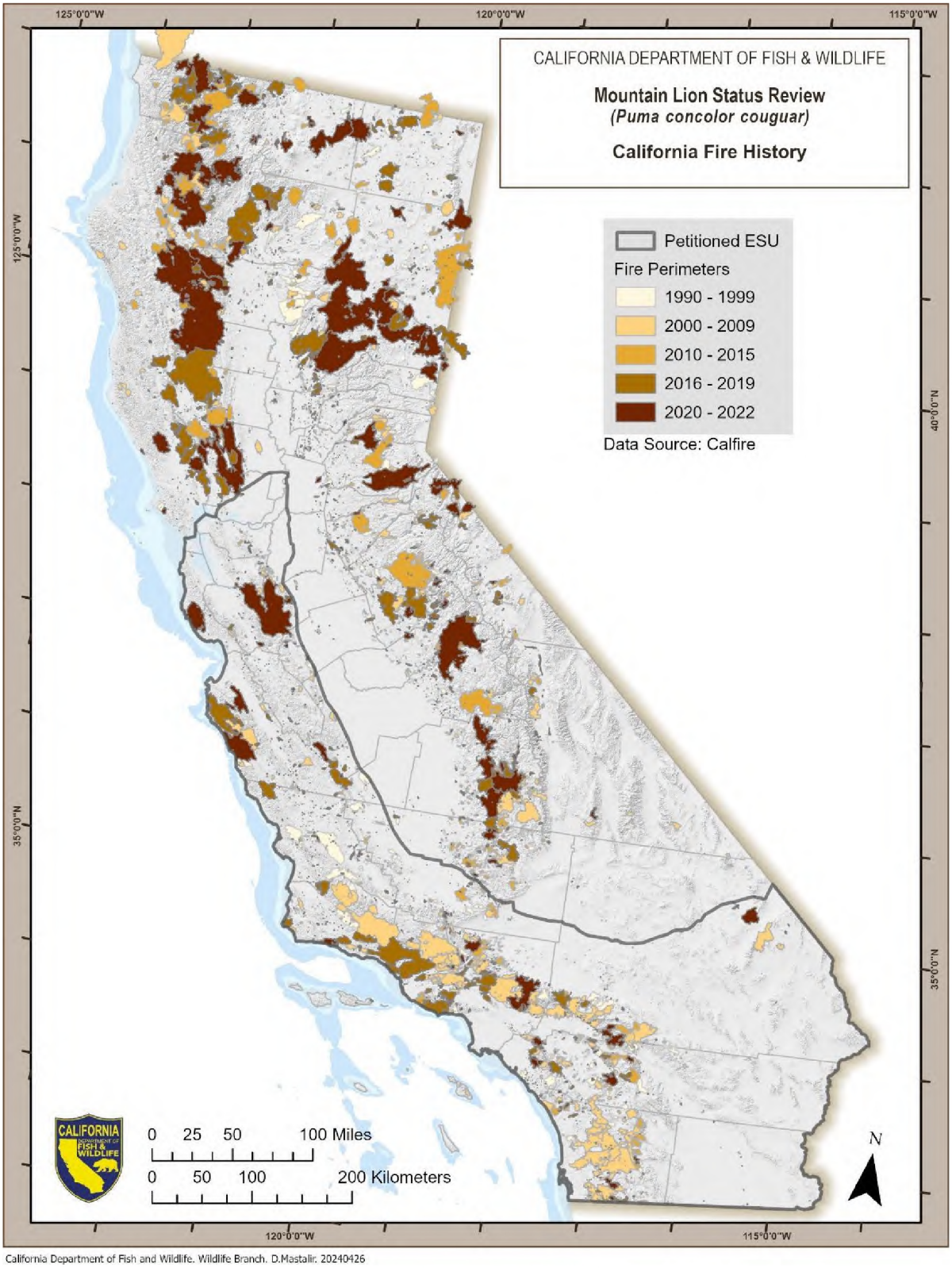

Figure 17. Wildfire perimeters in California by fire year, 1990–2022.



Figure 18. Left: Burned paw of female mountain lion F121 (L) with phalanges showing, found deceased following the Bond Fire in Orange County, California. (Photo Credit: Nick Molsberry, CDFW). Right: F121 prior to the fire (Photo Credit: UC Davis Wildlife Health Center).

4.9 Climate Change

Human-mediated climate change (Bedsworth et al. 2018) threatens biodiversity through both direct effects and interrelated indirect threats (Garcia et al. 2014; González-Orozco et al. 2016). A species' vulnerability to the direct effects of climate change is a function of its level of exposure and its sensitivity to such effects mediated by its ability to adapt physiologically or behaviorally (Dawson et al. 2011). Indirect effects of climate change are those ecosystem changes that affect organisms—including increased frequency and severity of drought, wildfires, flooding, and landslides—which in turn can lead to shifts in vegetation patterns, changes in habitat quality, and modified predator-prey relationships (Williams et al. 2008; Keeley and Syphard 2016).

There has been a consistent trend in recent decades of warming temperatures in California. Average state temperatures have increased by about 1.67°C (3°F) since the beginning of the 20th century (Frankson et al. 2022). The warmest three years on record since 1895 have all occurred in the last decade (OEHHA 2024a), and 2021 was the warmest summer on record in the state (Frankson et al. 2022). Climate model projections for annual temperature in California in the 21st century range from 1.5–4.8°C (2.7–8.8°F) greater than the 1960–2005 mean (Bedsworth et al. 2018).

Temperature increases have not been consistent across California. Rapacciuolo et al. (2014) found that while temperatures generally warmed in California between the historical period (1900–1939) and modern period (1970–2009), increases in mean annual temperature were greatest in Southern California, an area roughly corresponding to the extent of the South Coast large-scale genetic population

in Gustafson et al. (2022). During that period the mean annual maximum temperature increased in Southern California but decreased in much of central and Northern California (Rapacciuolo et al. 2014). Projections of future temperature conditions at specific locations in California are available from the State of California's Cal-Adapt program (https://cal-adapt.org/). Table 5 presents results for a representative location in each of the four broad mountain lion genetic groups areas described in Gustafson et al. (2022) from Cal-Adapt's Local Climate Change Snapshot (https://cal-adapt.org/tools/local-climate-change-snapshot/). Three measures of change in environmental temperature are presented: Annual Average Maximum Air Temperature (AAT_{MAX}), Annual Average Minimum Temperature (AAT_{MIN}), and Number of Extreme Heat Days per Year (EHD)[7]. For each measure, a baseline value modeled from measurements recorded from 1961–1990 is presented, along with modeled future values for the end of the 21st century (2070–2099). Averaged modeled values for the High Emissions scenario (known as Representative Concentration Pathway 8.5)—which most closely tracks current emissions trends—are presented, along with the range of averages from all the model runs. The sites chosen as representative of the broad-scale genetic groups are Willits, CA (NC), Placerville, CA (SN), Atascadero, CA (CC), and Fallbrook, CA (SC). Models for all temperature metrics of the four representative sites suggest substantial warming will occur at the sites during the 21st century.

Table 5. Baseline and projected changes in Annual Average Maximum Temperature (AAT_{MAX}), Annual Average Minimum Temperature (AAT_{MIN}), and Number of Extreme Heat Days (EHD) per year for four representative sites in the North Coast (NC), Sierra Nevada (SN), Central Coast (CC), and Southern Coast (SC) areas identified by Gustafson et al. (2022). Model data are derived from Cal-Adapt's Local Climate Change Snapshot tool, accessed November 2021. The CC group incorporates CC-N, CC-C, and CC-S, and the SC group is made up of SA, EPR, and SGSB. (For more detail, see Figs. 5 and 6).

Metric	Model/Projection Years	NC	SN	CC	SC
AAT_{MAX} (°F)	Modeled Average (1961–1990)	68.4	71.6	71.7	74.6
AAT_{MAX} (°F)	Projected Average (2070–2099)	75.8	80.3	79.3	82.4
AAT_{MAX} (°F)	Projected Range	70.8–78.3	76.8–83.9	76.6–82.7	79.3–85.7
AAT_{MIN} (°F)	Modeled Average (1961–1990)	38.9	47.7	41.9	50.5
AAT_{MIN} (°F)	Projected Average (2070–2099)	46.1	55.7	49.1	58.1
AAT_{MIN} (°F)	Projected Range	42.2–48.7	52.5–58.9	46.4–51.6	55.4–60.5
EHD (Days/Yr.)	Modeled Average (1961–1990)	3	3	5	4
EHD (Days/Yr.)	Projected Average (2070–2099)	27	53	42	45
EHD (Days/Yr.)	Projected Range	2–48	29–79	22–73	24–94

[7] AATMAX is calculated as the average of the maximum daily air temperatures recorded at a site over the entire year. AATMIN is likewise calculated as the average of all minimum daily temperatures for the year. The number of extreme heat days per year (EHD) is the modeled number of days when the daily maximum temperature is above a location-specific threshold temperature for the site. The threshold for a site is defined as the 98th percentile value of historical daily maximum temperatures (from 1961–1990, between April and October) observed at the location.

Precipitation change projections are less consistent than those for temperature, but recent studies indicate increasing variability in precipitation in California, with some areas getting a greater proportion of annual precipitation delivered by intensive atmospheric river storms, while others face an increased likelihood of extreme drought primarily due to rising temperatures (Cayan et al. 2005; Williams et al. 2015; Gershunov et al. 2019; Huang et al. 2020; OEHHA 2022). Similar to temperature rises, recent changes in precipitation and water availability have also not occurred equally throughout California. In the past century, Southern California experienced a decline in average total annual precipitation, while much of central and Northern California had an increase (Rapacciuolo et al. 2014). With increased temperatures and decreased precipitation, the southern third of the state (including the southern Sierra Nevada) experienced a dramatic increase in mean annual climatic water deficit—the amount of water plants would use if it were available in the soil – between the early 20th century (1900–1939) and the late 20th century (1970–2009) (Ibid.).

Increasing severity and frequency of drought is another consequence of climate change in California. From 2014–2017, 25-80% of California experienced extreme or exceptional drought and there was another serious drought period from 2021–2022 (Fig. 19; NIDIS 2022). Recent modeling predicts the average amount of drought from 2050–2099 in the southwestern U.S., inclusive of California, will likely exceed the Medieval-era megadrought between 1100–1300 CE, under both moderate and high greenhouse gas emissions models (Cook et al. 2015). The same study estimated the probability of a multidecadal (35-year) drought occurring during the late 21st century is greater than 80% (Ibid.). This would represent a climatic shift that not only falls outside of contemporary variability in aridity but would also be unprecedented in the past millennium (Ibid.).

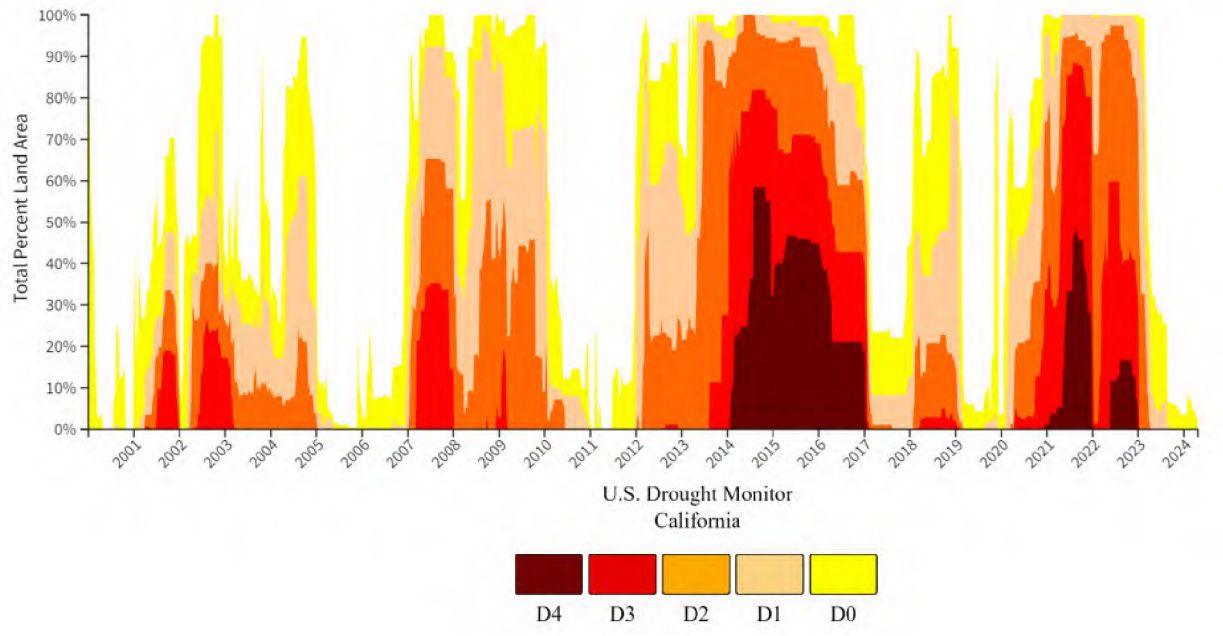

Figure 19. Percent of California land area in each Palmer Drought Index category, Jan 2000–April 2023. DO = Moderately Dry, D1 = Moderate Drought, D2 = Severe Drought, D3 = Extreme Drought, D4 = Exceptional Drought. Source: NIDIS (2024)

Drought can also exacerbate the effects of other environmental stressors. During the 2012–2017 drought, tree mortality increased dramatically and approximately 129 million trees died in California (OEHHA 2018). Multiple years of high temperatures and low precipitation left them weakened and more susceptible to pathogens and parasites (Ibid.). Vast areas of dead and dying trees are also more prone to severe wildfires (CNRA 2016).

The frequency and extent of wildfire is influenced by factors including temperature, fuel loads, and fuel moisture (Carter et al. 2008). As temperatures have warmed and mountain snowpack has tended to melt earlier, large-wildfire frequency and duration have increased, and wildfire seasons have lengthened (Westerling et al. 2006; OEHHA 2018). California's top three years for total acreage burned by wildfire were 2018, 2020, and 2021, and all but two of the 20 largest fires recorded in California occurred during those years (OEHHA 2024b). A positive feedback loop between climate change and wildfires exists as wildfires can accelerate the impacts of climate change through the emission of short-lived climate pollutants like black carbon (soot) and methane that have a warming effect that is tens to thousands of times greater than longer-living carbon dioxide (the focus of many greenhouse gas reduction efforts). Short-lived climate pollutants are responsible for 40% or more of global warming to date, and 64% of black carbon emissions are sourced from wildfires (CNRA 2016). For more discussion of the impacts of fire on mountain lions, see section 4.7.

Research suggests that most suitable mountain lion habitat in California is moderately vulnerable to climate change (Thorne et al. 2016; Dellinger et al. 2020a). As previously discussed, mountain lion habitat could be degraded if increased wildfire frequency and intensity convert shrublands to grasslands, which are generally avoided by mountain lions (Burdett et al. 2010; Jennings et al. 2016; Riley et al. 2021). Further, aspects of climate change may impact mountain lions via influence on prey populations. For example, low rainfall has been found to negatively influence mule deer doe and fawn survival in parts of the western U.S., likely because there is less food available (Marshal et al. 2002; Bender et al. 2007; Monteith et al. 2014). With precipitation levels expected to become increasingly variable as the climate continues to change, mountain lion populations could be adversely impacted if their key prey species become less numerous. Reductions in the area and quality of suitable habitat and carrying capacity could negatively influence mountain lion population sizes and possibly gene flow.

Acute heat stress may also impact mountain lions and their prey. As large-bodied mammals, both mountain lions and deer may be sufficiently large enough not to be strongly affected directly by moderate increases in environmental temperature, which more drastically affect small-bodied mammals (Fuller et al. 2016; Naya et al. 2018). Further, the generally nocturnal habits of mountain lions and their prey may mitigate impacts from warmer environments. As mountain lions in California are currently able to survive across a variety of ecoregions and climatic conditions ranging from deserts to montane and coastal forests, their adaptability suggest broad near-term shifts in their distribution from the direct effects of a warming climate are unlikely.

4.10 Risks to Small, Isolated Populations

Small, isolated mountain lion populations—such as those in the Santa Monica Mountain portion of CC-S, and the SA and SGSB genetic populations, which are each estimated to number less than 75 individuals (Table 3)—are inherently vulnerable to extinction due to multiple factors. These factors may include

demographic stochasticity[8], genetic drift[9], lack of immigration, and inbreeding, which can eventually lead to inbreeding depression[10]. Genetic drift and inbreeding both reduce genetic variation which can diminish the ability of a population to adapt to changes in the environment (Primack 1993; Reed and Frankham 2003). Each of these effects can amplify the impact of the other effects, further reducing population size and accelerating local extinction in what has been termed an extinction vortex (Primack 1993).

4.10.1 Demographic and Environmental Stochasticity

Reproduction and survival rates vary among individuals and between years in wildlife populations. This variation leads to demographic stochasticity, which tends to average out in large populations but has a much greater effect on the rate of growth or decline in small populations. If a small population declines, subsequent generations become even more susceptible to demographic stochasticity. Additionally, unpredictable changes in the natural environment can cause the size of small populations to vary dramatically while larger, more widely distributed populations would remain more stable because these changes normally occur only in localized areas of the entire population's geographic range (Primack 1993). For example, changes in vegetation, abundance of resources, or disease and parasite exposure can cause the size of small, isolated wildlife populations to fluctuate wildly, possibly leading to local extinction (Primack 1993). Additionally, natural disasters such as droughts, fires, and severe storms can lead to dramatic population changes when populations are small and isolated to one location.

While the statewide population of mountain lions is large enough that demographic and environmental stochasticity is unlikely to be an issue, the smaller and more isolated populations (those in the Santa Monica Mountains portion of CC-S, and the SA and SGSB genetic populations) are potentially vulnerable to those impacts. Of specific concern are the increasingly large and severe fires leading to direct death or injury or significant habitat changes (see section 4.7). For example, the Woolsey Fire in 2018 burned about 39,235 ha (96,949 acres) in the center and western part of the Santa Monica Mountains National Recreation Area. According to the National Park Service, two of the 11 mountain lions with working radio-collars in and around the Santa Monica Mountains at the time of the Woolsey Fire succumbed to the fire or its impacts (Blakey et al. 2022). In such a small population (Table 3), the impact of just one event like the Woolsey Fire on the population could be substantial, especially if the animals killed or adversely affected were breeding adults.

4.10.2 Inbreeding and Genetic Drift

Inbreeding and genetic drift can both result in decreased genetic variation in wildlife populations. Deleterious alleles (maladaptive genes) can be present at low frequency even in large, healthy

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[8] Population changes such as sex and age ratios resulting from random variation in birth and death rates.

[9] Change in frequency of an existing gene variant in the population due to random chance. Genetic drift may cause gene variants to disappear completely and thereby reduce genetic variation. It could also cause initially rare alleles to become much more frequent and even fixed (NIH 2024).

[10] Reduced biological fitness (health and fertility) resulting from the concentration of deleterious alleles in the population from the mating of closely related individuals.

populations. But as populations become smaller, these maladaptive genes can increase in relative frequency, and populations may suffer the effects of inbreeding depression, resulting in offspring with a reduced ability to survive and reproduce (Frankham 2005; Harding et al. 2016). Genetic drift may also lead to the loss of beneficial alleles or the fixation of deleterious alleles in a small population due to a limited breeding pool (Hedrick and Kalinowski 2000). Deleterious fixed alleles can result in decreased fitness for all individuals and lead to population declines (Hedrick and Kalinowski 2000; Frankham 2005).

Multiple genetic studies have shown that certain mountain lion genetic populations along the southern coast of California have particularly low genetic variation (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019; Gustafson et al. 2022) which may be the result of habitat fragmentation and genetic isolation. Linkage decay analysis by Gustafson et al. (2022) showed evidence of inbreeding between closely related[11] individuals in at least four of the fine scale genetic populations (see details in section 4.9.4 below). Saremi et al. (2019) investigated mountain lion genomes and found additional evidence of recent inbreeding among closely related individuals (i.e., long runs of homozygosity) in the Santa Monica and Santa Cruz Mountains.

However, the results of Gustafson et al. (2022) suggest the problems of inbreeding and homozygosity do not occur in all California populations. Several larger California populations (e.g., Sierra Nevada) display little evidence of inbreeding (see section 4.9.4 below for details). Additionally, genetic variation in the broad-scale genetic populations may minimize the impacts of inbreeding depression in many of the fine-scale populations if gene flow can be enhanced (Gustafson et al. 2022). This conclusion is consistent with the results of Saremi et al. (2019) that indicated even though inbreeding had reduced variation in the genomes of many individual mountain lions, these low-heterozygosity genome regions were generally not shared between populations. These studies suggest genetic restoration is possible even among genetically depauperate populations. When considering that genetic variation is high in the WSN and ESN genetic populations (Gustafson et al. 2022), there is potential for long-term persistence of mountain lions throughout much of the state if adequate habitat can be protected and habitat connectivity can be restored and/or enhanced to facilitate increased genetic exchange between the genetic populations in the Sierra Nevada and those within the petitioned area (see Section 10.1 for more detail).

4.10.3 Loss of Genetic Variation

High levels of genetic variation have been shown to be positively correlated with survival and reproduction rates and decreased extinction risk (Hedrick and Kalinowski 2000; Reed and Frankham 2003). The concept of effective population size[12] (N_e) is useful for understanding the likelihood that a population will lose genetic variation through genetic drift or inbreeding. Ne is the size of an ideal population that would result in the same level of inbreeding or genetic drift as that of the population under study (Palstra and Ruzzante 2008). N_e is determined by several factors and its value is generally significantly smaller than the census population (i.e., the number of animals actually breeding in a

[11] "A common ancestor less than three generations ago" (Saremi et al. 2019) (i.e., first-cousins or closer).

[12] The number of individuals in a population that are contributing to the next generation (i.e., reproducing and passing on their genes).

population is usually significantly fewer than the total number of animals in the population; Palstra and Ruzzante 2008).

Both Franklin (1980) and Soulé (1980) reviewed the genetic considerations fundamental to species conservation. They proposed two primary considerations related to population viability: 1) an immediate danger in small populations due to inbreeding (i.e., inbreeding depression), and 2) the longer-term loss of additive genetic variation that would limit future evolutionary change (i.e., evolutionary potential). Their work led to the common adoption of what is now referred to as the 50/500 rule in conservation biology. Under this framework, in the absence of gene flow, a N_e of at least 50 should be maintained to avoid inbreeding depression in the short term for large mammal species (Harmon and Braude 2010). Franklin (1980) suggested that with a N_e below 500, genetic variance for complex traits would be lost significantly faster than it could be renewed by mutation. Soulé (1980) added that this size (500) was required to maintain sufficient genetic variation for populations to evolve to changing environments in the longer term (evolutionary potential).

Since then, the importance of conserving quantitative genetic variation has gained recognition, although there is disagreement about the appropriate value for N_e. Frankham et al. (2014) suggested that $N_e = 50$ would be raised to at least $N_e = 100$ to prevent inbreeding depression over short time scales (~5 generations). Frankham et al. (2014) also summarized several independent lines of theoretical and empirical evidence suggesting that at least $N_e = 1000$ is required to maintain evolutionary potential in perpetuity.

Regardless of whether $N_e = 50$ or $N_e = 100$ is used as a benchmark, nearly all the genetic populations within the petitioned area are below the population size needed to avoid inbreeding depression in the short term (Table 6). True extinction risk is often the result of the complicated interaction of both genetic and demographic factors. Recent analyses reveal that a minimum of 7,923 km^2 (3,059 mi^2) of protected suitable habitat[13] or 14,591 km^2 (5.633 mi^2) of overall suitable habitat is needed to allow mountain lions to maintain an $N_e \geq 50$ (Dellinger et al. 2020b). According to Dellinger et al. (2020b), the Central Coast (roughly equivalent to CC-C) is the only area where the mountain lions within the petitioned area occupy an area larger than this suitable habitat threshold; however, because of potential future development pressures, it is unknown whether the threshold will continue to be met over the long term. Dellinger et. al.'s conclusions (2020b) suggest that the long-term viability of mountain lions in the other genetic populations may be reduced unless suitable habitat and/or connectivity to other genetic populations is increased (Benson et al. 2016; Benson et al. 2019). While there are examples of small wild populations that persist below the suggested threshold, at least in the short term, it is not known whether the genetic populations within the petitioned area, facing increasing isolation and with low genetic variation, will ultimately maintain long-term viability (see examples in Harding et al. 2016)

[13] Dellinger et al. (2020b) considered all public lands and private lands overlain with conservation easements "protected".

Table 6. Estimated population (CDFW unpublished data) and effective population sizes of genetically distinct mountain lion populations identified in Gustafson et al. (2019). The boundaries used to calculate the population sizes come from Dellinger et al. (2020b). Estimates from Gustafson et al. (2019) are adapted from Table 3 and include parametric 95% confidence intervals. Estimates from Gustafson et al. (2022) are adapted from their Table 1 and confidence intervals were not reported.

Genetic Population	Estimated census size	Estimated N_e (Gustafson et al. 2019)	Estimated N_e (Gustafson et al. 2022)
Central Coast North	174	16.6 (15.1-18.2)	19
Central Coast Central	393	56.6 (47.4-69.0)	26.9
Central Coast South	50	2.7 (2.5-2.9)	4.1
San Gabriel/San Berardino	74	5 (3.3-6.4)	2.3
Santa Ana Mountains	52	15.6 (13-18.7)	3.5
Eastern Peninsular Range	297	31.6 (29.1-34.4)	14.8

An important metric of genetic variation is expected heterozygosity (H_E)[14]. Adequate genetic variation is important for maintaining evolutionary potential, as variation is the raw material that allows populations to adapt to changing conditions over generations. The amount of heterozygosity in California mountain lion genetic populations is highly variable (Gustafson et al. 2019; range of H_E = 0.33–0.53; based on microsatellite loci), but lower on average than other western states, including Wyoming, Nevada, Arizona, Utah, Colorado, and New Mexico (range of H_E = 0.49–0.59; (Anderson et al. 2004; McRae et al. 2005; Andreasen et al. 2012)). Compared to California, mountain lion populations in these states show less population genetic structure due to higher rates of gene flow, which in turn counteracts the effect of genetic drift in reducing heterozygosity (Anderson et al. 2004; McRae et al. 2005). The lower overall heterozygosity, as well as the large variance in heterozygosity among local genetic populations, observed in California is most likely driven by barriers to dispersal such as mountain ranges and contemporary patterns of urban and transportation development (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022).

Assessing heterogeneity among the four broad-scale mountain lion groups in California, Gustafson et al. (2022) found they have retained substantial heterozygosity, particularly in the Sierra Nevada region with its large stretches of undeveloped contiguous habitat (Dellinger et al. 2020b). Multiple genetic investigations have now demonstrated the importance of the Sierra Nevada region as a reservoir of genetic variation (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022). Bi-directional migration rate models based on genetic data indicated the WSN genetic population has served as a significant source of migrants into other regions of California, importantly the EPR, CC-N, and SGSB (Fig. 4; Gustafson et al. 2019).

Isolated populations can also become structured through natural selection as locally adaptive genes become more prevalent in the population. However, mountain lions are long-distance dispersers and

[14] Heterozygosity refers to having inherited two different alleles for a particular trait compared to homozygosity, in which the inherited alleles are identical at a given location of the genome.

inhabit all major mountain ranges in California (Dellinger et al. 2020b), suggesting local adaptation may be unlikely, despite current connectivity challenges. Gustafson et al. (2022) found no evidence for local adaptive differences among the four broad-scale geographic mountain lion groups, or among the 10 fine-scale genetic populations. Though the appropriateness of using reduced representation genome sequencing data (in this case, restriction site-associated DNA sequencing data) to detect local adaptation has been questioned within the scientific literature (Lowry et al. 2017), this approach has been employed successfully in other studies (Catchen et al. 2017). The results of Gustafson et al. (2022) found no evidence for local adaptive traits warranting specific conservation status, nor risk of outbreeding depression resulting from the mixing of genetic groups as a result of active management (e.g., translocations) (Frankham et al. 2011). However, the South Coast group contained some private alleles which were not found in other genetic groups and which should be conserved to help preserve statewide genetic variation (Gustafson et al. 2022).

While genetic risks may significantly increase a small population's risk of extinction, implementation of a well-planned conservation strategy can substantially mitigate risks associated with small populations. A comprehensive plan for long term viability should include the principles of representation, resiliency, and redundancy (Shaffer and Stein 2000; Wolf et al. 2015).

4.10.4 Genetic Impacts on the Populations Within the Petitioned ESU

Heterozygosity within the genetic populations of petitioned ESU is highly variable. Of the broad-scale groups, SC and CC have relatively low genetic variation while SN and NC have retained sufficient variation to be capable of serving as sources of genetic rescue under various management scenarios (e.g., improved connectivity, assisted gene flow). Maintaining and enhancing connectivity within and among broad-scale groups has the potential to counteract the effects of genetic drift and inbreeding to at-risk coastal genetic populations.

Sierra Nevada Group

Gustafson et al. 2019 and 2022 consider the Sierra Nevada region to be a major source of genetic diversity for mountain lions in California. This group is of critical importance to sustaining statewide gene flow as the Tehachapi range at its southern end is the only known area where there is current gene flow from outside the petitioned area into the CC and SC groups. Enhancing connectivity through the Transverse Ranges, including the Tehachapi, Sierra Pelona, San Gabriel, and San Bernardino Mountains, represents a critical conservation priority (Gustafson et al. 2019)

Central Coast Group

The three fine-scale genetic populations in the Central Coast Group differ significantly in their levels of genetic variation. The CC-C has the highest diversity with the Central Coast Group and the largest N_e estimates, though neither N_e estimate exceeds 100. The CC-N and CC-S genetic populations have low estimated N_e and represent areas of genetic management concern because the area they inhabit contains insufficient suitable habitat to sustain a mountain lion population with $N_e \geq 50$ (Gustafson et al. 2019; Dellinger et al. 2020b; Gustafson et al. 2022).

Central Coast-North. Lack of connectivity and inbreeding are concerns in CC-N. Gustafson et al. (2022) found evidence of close inbreeding in CC-N, which is consistent with the whole genome

sequencing results of Saremi et al. (2019) from the Santa Cruz Mountains which suggested close and recent inbreeding led to runs of homozygosity in the lion genomes. A long-term research project in the Santa Cruz Mountains has collared 147 adult and juvenile mountain lions with GPS and/or VHF collars over the past 15 years. During that time no collared animal has left the Santa Cruz Mountains to the east across the Coyote Valley to the Diablo Range or to the south across Highway 101 to the Gabilan Range (pers. comm C. Wilmers 2024). This suggests that there is very limited current connectivity between the major mountain ranges in CC-N, and further inbreeding is a concern.

Central Coast-Central. The CC-C population is currently the largest and most genetically robust of the genetic populations within the petitioned ESU, with N_e estimates of 57 (Gustafson et al. 2019) and 27 (Gustafson et al. 2022; Table 6). However, the amount of suitable habitat in the area that is currently conserved (6,780 km^2; 2,618 $mi.^2$) is more than 1,000 km^2 below the threshold Dellinger et al. (2020b) considered necessary to support an $N_e \geq 50$ and long-term population stability. Additionally, bi-directional migration rate models indicate CC-C serves as the most significant source of migrants to CC-S, and along with WSN, is one of only two occasional sources of migrants to CC-N and SGSB (Gustafson et al. 2019). This suggests protecting CC-C is key to maintaining the entire Central Coast Group and for maintaining what little genetic connectivity remains between the Central Coast Group and the South Coast Group (Figs. 4, 9, 10). Thus, maintaining or expanding this genetic population and its connectivity to adjacent genetic populations is critical for the long-term viability of the entire petitioned ESU.

Central Coast-South. As with CC-N, Gustafson et al. (2022) and Saremi et al. (2019) found evidence of close inbreeding in CC-S. Within CC-S, the Santa Monica Mountains in particular appear to have very low genetic variation and are exhibiting both genetic and phenotypic evidence of inbreeding (Ernest et al. 2014; Riley et al. 2014; Benson et al. 2019; Gustafson et al. 2019; Gustafson et al. 2022; Huffmeyer et al. 2022). This population is one of two in the petitioned ESU (see SA below) to have the lowest genetic variation observed for the species globally, apart from the endangered Florida panther (Riley et al. 2014). There are multiple known cases of close inbreeding, for example a male that had kittens with daughters, granddaughters, and great granddaughters (Riley et al. 2018a, S. Riley pers. comm. 2024). Phenotypic evidence of inbreeding depression in the form of kinked tails, failed descension of the testes, and abnormal sperm morphology have been observed. These irregularities have also been observed in Florida panthers (Roelke et al. 1993; Ernest et al. 2014; Huffmeyer et al. 2022). Freeway traffic and urban development have largely isolated the Santa Monica Mountains from animals in the rest of CC-S and therefore from the rest of the Central Coast and from the Sierra Nevada groups, severely limiting contemporary gene flow (Riley et al. 2014). For example, 2009 was the last time a mountain lion was documented crossing U.S. 101 and entering the Santa Monica Mountains (Benson et al. 2016). That male bred successfully and increased the genetic diversity of the Santa Monica Mountain population (Riley et al. 2014). Similarly, very few animals have been documented dispersing from the main body of the Santa Monica Mountains. A male lion, identified as P-22, which established a territory in Griffith Park in 2012 after migrating from the western Santa Monica Mountains, almost certainly crossing U.S. 101 and I-405 along the way, was the most famous of these. He died in 2023 without fathering cubs; however, in 2024, another mountain lion of unknown origin was sighted in Griffith Park (Gammon 2024). Models predict a 16–28% probability of the extirpation of the Santa Monica Mountains population within 50 years if immigration levels

remain the same or are reduced, in part due the impacts of inbreeding depression (Benson et al. 2016; Benson et al. 2019). In contrast, in the CC-S genetic population north of U. S. 101, two radio collared males dispersed from their natal range, crossed highways, and established home ranges as adults in the area of the Santa Susana Mountains, Simi Hills, and Los Padres National Forest (Riley et al. 2014). Therefore, the threat of isolation and potential inbreeding depression is more acute in the Santa Monica Mountains than in the CC-S genetic cluster as a whole.

South Coast Group

The South Coast Group is comprised of 3 genetic populations: Santa Ana Mountains (SA), Eastern Peninsular Range (EPR), and the San Gabriel/San Bernardino Ranges (SGSB).

San Gabriel/San Bernardino. The SGSB genetic population has low observed genetic variation, a very small estimated N_e (2.3–5; Table 6), and exhibits evidence of inbreeding (Gustafson et al. 2019; Gustafson et al. 2022). Additionally, the SGSB area is comprised of two discreet mountain ranges that area separated by roads and largely surrounded by urbanized areas and desert containing little shrub or tree cover. This isolation increases the genetic population's risk of inbreeding depression (Gustafson et al. 2019).

Santa Ana Mountains. The SA genetic population has an estimated N_e of 3.5–15 and concerningly low genetic variation (Gustafson et al. 2019; Gustafson et al. 2022) and available suitable habitat (Dellinger et al. 2020b). Along with the Santa Monica Mountains population, the SA has the lowest genetic variation of any known mountain lion population other than Florida panthers (Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019). Like the Santa Monica Mountains, genetic and phenotypic evidence of inbreeding depression in the form of kinked tails and teratospermia (> 60% abnormal sperm production) has been observed in the SA (Ernest et al. 2014; Huffmeyer et al. 2022). As with the Santa Monica Mountains, the main barriers to movement appear to be freeways and adjacent urban/developed areas, which have limited gene flow in recent decades (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Huffmeyer et al. 2022). While there is genetic evidence that individual animals from EPR historically were able to successfully move into the SA and breed (see the full red and half red samples in the Santa Ana Mountains in Fig. 10), that connectivity may no longer be viable due to the strength of I-15 as a barrier between the populations as traffic and nearby development have increased in recent years (Vickers et al. 2015). For example, a thirteen-year study (2001–2013) that collared 74 mountain lions in the SA and EPR observed only one animal move between the populations, and that individual was killed for depredating sheep before it could breed and introduce genetic material to the group (Vickers et al. 2015). The impact of this isolation and inbreeding has led to an estimated "16–21% probability of local extinction in the (Santa Ana Mountains) due purely to demographic processes over 50 years with current low levels or no immigration" (Benson et al. 2019).

Eastern Peninsular Range. The EPR genetic population has an estimated N_e of 15–32 and shows little evidence of inbreeding (Gustafson et al. 2019), although there has been a report of teratospermia (Huffmeyer et al. 2022). The EPR appears to have retained sufficient variation to be capable of serving as a source of genetic rescue for other genetic populations (Gustafson et al. 2019; Gustafson et al. 2022), and could perform an important role in increasing connectivity and gene flow within the broad-scale SC group if connectivity is improved (Figs. 4, 10). The EPR is the only genetic population

known to exchange migrants with the Santa Ana Mountains, and management actions which enhance gene flow between these areas are critical to SA's population viability. Gene flow between EPR and the adjacent SGSB genetic population appears limited. The degree of dispersal from Arizona, Nevada, and Mexico into EPR remains unknown (Gustafson et al. 2019). Connectivity between EPR and adjacent populations in Mexico and Arizona may be curtailed by physical barriers along the border and the damming and major channelization of the Colorado River. Immigration and emigration patterns of mountain lions in the eastern area of EPR have not been studied, and mountain lion density may be low in that area. Some gene flow may occur across the Colorado River from the Kofa National Wildlife Refuge into California, and one mountain lion has been documented moving between EPR and Mexico, suggesting genetic connection to Mexico may exist (Vickers et al. 2015; W. Vickers, unpublished data).

In summary, multiple genetic populations in the petitioned area are at risk from genetic factors associated with small, isolated populations. However, these genetic populations identified in Gustafson et al. (2019) are nested within two broader-scale genetic groups identified by Gustafson et al. (2022) that each contain more robust, but still less than ideal levels of genetic diversity. This suggests that if connectivity can be improved among the smaller, nested genetic populations and between CC, SC, and SN, low genetic variation in the at-risk populations can still be mitigated with intentional management.

5. Existing Management

5.1 Land Ownership within the Petitioned Southern California/Central Coast ESU

The area of the petitioned ESU is approximately 15,273,700 ha (37,742,134 acres) (Table 7). Approximately 52% of the area is public land and 48% is private. The Bureau of Land Management (BLM) manages the largest amount of land at 21%, followed by the U.S. Forest Service (9%), the National Park Service (6%), the Department of Defense (5%), and the California Department of Parks and Recreation (3%). Local (city or county) and nonprofit special districts combined represent 5% of the public land. Tribal lands total 167,700 ha (414,396 acres), which is 1% of the non-private land within the petitioned ESU (Table 7, Fig. 20).

Public (and private) lands are managed for many different purposes including recreation, extractive uses (timber harvest and mining), grazing, and wildlife habitat. Thus, while some specific projects on public lands may not benefit mountain lions, most public lands in California are managed for multiple uses including wildlife conservation and sustainability.

Table 7. Land ownership within the petitioned Southern California/Central Coast ESU, percentage of total ESU area by manager, and percentage of public land area by manager in the petitioned ESU.

Land Ownership within Petitioned Evolutionarily Significant Unit	Hectares	Acres	% of total land	% of public land
Total Public Land	7,905,421	19,534,644	51.8%	—
Total Private Land	7,368,327	18,207,458	48.2%	—
U.S. Bureau of Land Management	3,183,887	7,867,525	20.8%	40.3%
U.S. Forest Service	1,430,387	3,534,548	9.4%	18.1%
U.S. National Park Service	928,264	2,293,781	6.1%	11.7%
U.S. Department of Defense	781,100	1,930,132	5.1%	9.9%
California State Parks	435,636	1,076,476	2.9%	5.5%
Nonprofit, Special District, and Joint	383,076	946,597	2.5%	4.8%
Local (City or County)	231,070	570,984	1.5%	2.9%
Tribal Land	168,135	415,469	1.1%	2.1%
California Department of Fish and Wildlife	111,462	275,428	0.7%	1.4%
California State Lands Commission	97,683	241,379	0.6%	1.2%
U.S. Bureau of Reclamation	57,731	142,656	0.4%	0.7%
U.S. Fish and Wildlife Service	39,090	96,594	0.3%	0.5%
Other State	32,864	81,207	0.2%	0.4%
California Department of Water Resources	15,183	37,518	0.1%	0.2%
Other Federal	9,853	24,348	0.06%	0.1%

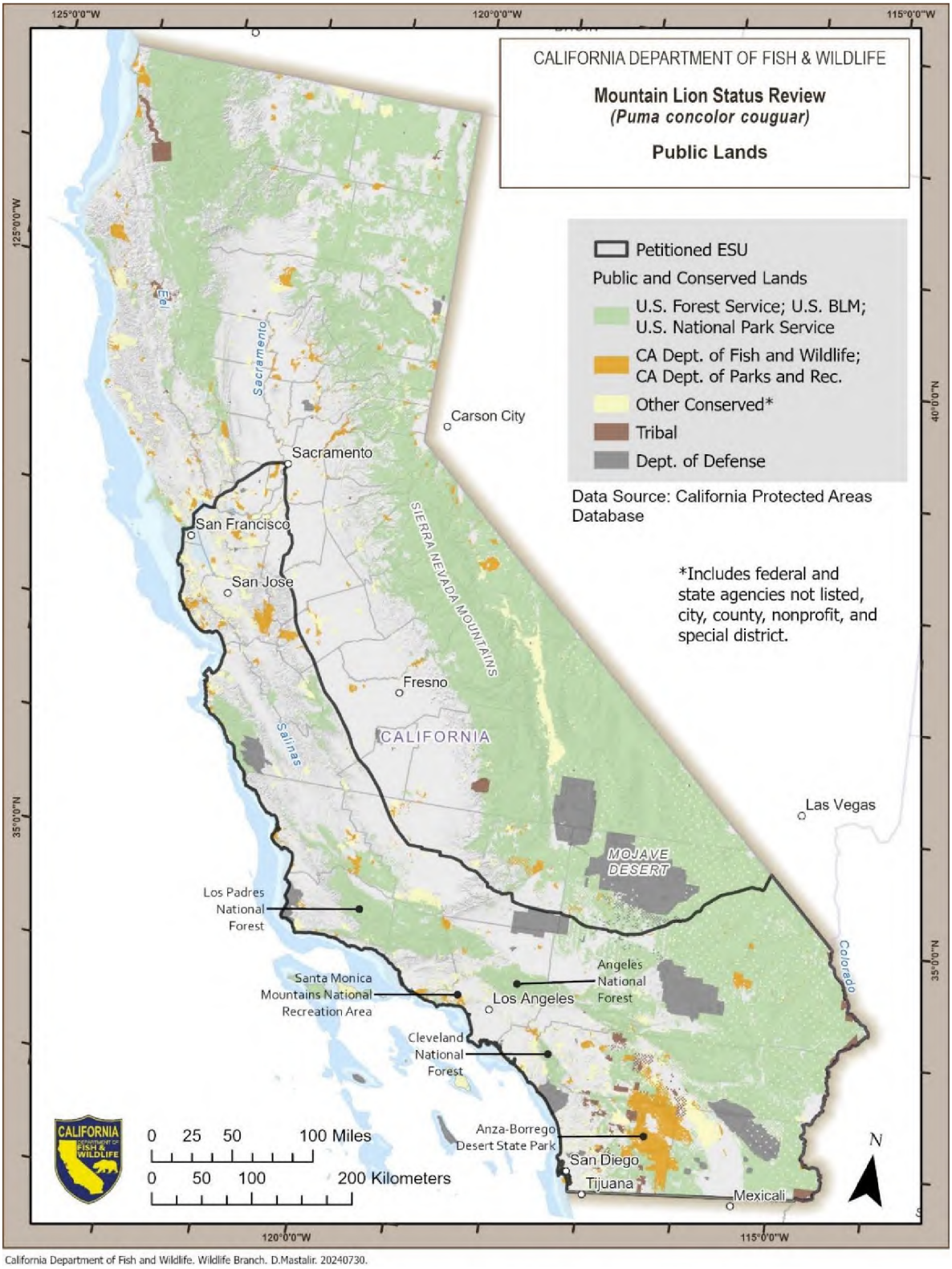


Figure 20. Public and tribal lands within the petitioned Southern California/Central Coast mountain lion ESU.

5.2 California Wildlife Protection Act

California voters through Proposition 117 adopted the California Wildlife Protection Act of 1990 (Act), codified in part as Fish and Game Code section 4800, et seq. Among other things, the Act specifically called out the loss of deer, mountain lion, and other wildlife habitat within California's mountain ranges and foothills, including the Simi Hills, and the Santa Lucia, Santa Susana, Santa Monica, San Gabriel, San Bernardino, San Jacinto, and Santa Ana Mountains in Southern California as well as the need to preserve habitat corridors to maintain the genetic integrity of California's wildlife. The Act, through the establishment of the Habitat Conservation Fund, included an ongoing annual appropriation of $14,500,000 for the acquisitions of deer and lion habitat in those areas. More generally, the Act emphasized the use of funds to acquire habitat needed to maintain connectivity between isolated or fragmented habitats to promote the genetic integrity of wildlife populations. To date, the Act's Habitat Conservation Fund has protected nearly 405,000 ha (1,000,000 ac.) of habitat across the state, including over 76,890 ha (190,000 ac.) of habitat within the petitioned ESU (California Wildlife Conservation Board unpublished data). The Act also designated mountain lions as specially protected mammals and prohibited their taking, injury, possession, or sale, except for instances where a lion represents an imminent threat to public safety or has damaged livestock or other property damage.

5.3 State and Federal Land Use Laws

The laws and regulations governing actions within the mountain lion's range vary by ownership. Several state and federal environmental laws apply to activities undertaken in California, and while they may not specifically address mountain lions, they may indirectly provide some level of protection for the species and its habitat. The primary environmental laws are summarized below.

5.3.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires state and local agencies to identify, analyze, and consider alternatives to, and to publicly disclose environmental impacts from, projects over which they have discretionary authority (Pub. Resources Code, § 21000 et seq.). CEQA requires an agency find that projects may have a significant adverse effect on the environment if they have the potential to substantially reduce the habitat, decrease the number, or restrict the range of any rare, threatened, or endangered species (Cal. Code Regs., tit. 14, §§ 15065(a)(1), 15380). CEQA establishes a duty for public agencies to avoid or minimize such potentially significant adverse effects where feasible (Cal. Code Regs., tit. 14, § 15021), and it differs substantially from the National Environmental Protection Act in requiring potentially significant adverse effects be mitigated to a less than significant level unless the lead agency adopts a statement of overriding considerations. In practice, implementation of CEQA by state and local governing bodies typically results in projects incorporating impact avoidance, minimization, and mitigation measures into project design and construction. A lead agency is not required to make a mandatory finding of significance conclusion for a project unless it determines on a project-specific basis that the project has the potential to: substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare or threatened species. Under CEQA, a lead agency should identify and evaluate potential impacts to mountain lions, and if the impacts are found to be significant, mitigate them under

the Biological Resources section of an environmental document prepared pursuant to CEQA or adopt a statement of overriding considerations.

Another important component of CEQA is the requirement that governing bodies disclose and consider project-related impacts that when considered alone may not be significant, but when viewed in concert with other past, present, and foreseeable related projects cumulatively result in a significant impact to the environment (i.e., cumulative impacts; Cal. Code Regs., tit. 14, § 15355). This requirement often results in the incorporation of wildlife movement corridors into local development and infrastructure projects (e.g., open space setbacks along stream corridors and property lines) which can provide opportunities for mountain lions to pass through urban and suburban landscape, although such corridors are not always wide enough or vegetated with adequate shrub and tree cover to encourage use by mountain lions.

Section 21080.5 of the Public Resources Code provides that a regulatory program of a state agency shall be certified by the Secretary for Resources as being exempt from the CEQA requirements for preparing EIRs, negative declarations, and initial studies if the Secretary finds that the program meets the same criteria as CEQA. A certified regulatory program (CRP) remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible. These CRPs include the regulation of timber harvest by CAL FIRE and the State Board of Forestry through the Forest Practice Act; the regulation of coastal development permits by the California Coastal Commission through the California Coastal Act of 1976, Division 20 (commencing with Section 30000) of the Public Resources Code and the preparation, approval, and certification of local coastal programs as provided in Sections 30500 through 30522 of the Public Resources Code; and the pesticide regulatory program administered by the Department of Pesticide Regulation and county Agricultural Commissioners. While these CRPs are exempt from some of the procedural requirements of CEQA, courts have consistently held that they remain subject to the broad policy goals and substantive standards of CEQA, including requirements to consider feasible alternatives and cumulative impacts and to recirculate environmental review documents in certain circumstances.

5.3.2 Z'Berg–Nejedley Forest Practice Act

The Z'Berg–Nejedley Forest Practice Act was originally enacted in 1973 to ensure that forest practices, including timber harvesting, are undertaken in a manner that will also preserve and protect California's fish, wildlife, forests, and streams. The Forest Practice Rules are regulations that implement the provisions of the Z'Berg–Nejedley Forest Practice Act in a manner consistent with other laws, including CEQA, Porter-Cologne, CESA, and the Timberland Productivity Act of 1982. CAL FIRE enforces these laws and regulations governing timber harvesting and other forest practices on state and private land. The only area within the petitioned ESU where commercial timber harvest commonly occurs is the redwood forest zone of Santa Cruz County and nearby minor areas of San Mateo and Santa Clara Counties (CDTFA 2021). The CC-N genetic population occurs in these areas.

5.3.3 Natural Community Conservation Plans and Habitat Conservation Plans

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) are federally and state authorized conservation plans that permit incidental take of species listed under the federal Endangered Species Act (ESA) or CESA, respectively. Take authorization may be applied to species not

currently listed but which may become listed as threatened or endangered over the term of the plan, which is typically 25–75 years. Non-federal entities can obtain authorization for take of federally threatened and endangered species incidental to otherwise lawful activities through development and implementation of an HCP pursuant to Section 10 of the ESA. California's companion law, the Natural Community Conservation Planning Act of 1991, takes a broader approach than either CESA or ESA. An NCCP identifies and provides for the protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. There are currently four HCPs in California that include mountain lions as a covered species; all four are also NCCPs, but only three of those NCCPs include mountain lion as a covered species.

The 1998 San Diego Multiple Species Conservation Program (MSCP) is a 50-year NCCP/HCP that covers 233,099 ha (576,000 acres) in the southwestern portion of San Diego County and includes mountain lion as a covered species. The Program includes coverage for mountain lions as 81% of the core areas (± 42,492 ha, ± 105,000 acres) that will be conserved contain lion habitat, and the core areas have multiple connections to help maintain ecosystem balance. While the MSCP generally notes linkage areas were designed to accommodate "large animal movement," it does not identify linkages designed for mountain lions or contain specific measures designed to protect them. While the MSCP addresses specific design criteria for linkages, and road crossings/under crossings are included in subarea plans, not all subarea plans are complete.

The San Diego Water Authority NCCP/HCP also includes mountain lion as a covered species. The Plan Area encompasses 401,448 ha (992,000 acres) in western San Diego and southwestern Riverside Counties. The plan includes general conditions to avoid and minimize impacts to habitat linkages and wildlife movement corridors and includes habitat-based mitigation for unavoidable impacts. The plan estimates that approximately 139 ha (344 acres) of potential mountain lion habitat could be impacted over the 55-year permit term with approximately 284 ha (702 acres) of potentially suitable habitat provided within the existing Preserve Area.

The Orange County Transportation Authority NCCP/HCP (OCTA Plan) lists the mountain lion as a covered species for purposes of the federal HCP, but not for purposes of the NCCP permit. The Plan covers all of Orange County (2,070 km^2; 800 $mi.^2$). The OCTA Plan contains four "Species Goals" intended to offset impacts to mountain lions, including: (1) acquiring 410 ha (1,013 acres) of suitable habitat; (2) realigning fencing near the Highway 241 toll road; (3) funding for the North Coal Canyon Restoration Project; and (4) a "wildlife crossing policy" requiring pre-construction surveys to ensure existing crossings "maintain or improve functionality" if modified by new freeway projects. However, the OCTA Plan does not require the construction of specific wildlife crossings.

The Western Riverside County Multiple Species HCP/NCCP, which covers approximately 510,227 ha (1,260,800 acres) in western Riverside County and proposes to set aside 202,343 ha (500,000 acres) for habitat, also lists the mountain lion as a covered species. Plan implementation is expected to result in the loss of 53,418 ha (132,000 acres) of suitable mountain lion habitat and includes three biological objectives to mitigate these impacts related to the Conservation Area, Conservation Area Linkages, and maintaining or improving dispersal route functionality.

5.4 Local Ordinances

There are three local ordinances within the petitioned ESU that are relevant to mountain lions.

5.4.1 Ventura County Habitat Connectivity and Wildlife Movement Ordinance

Ventura County's Wildlife Connectivity Ordinances were adopted by the Ventura County Board of Supervisors in 2019 to facilitate wildlife connectivity and minimize habitat fragmentation for mountain lions, mule deer, California gnatcatchers (*Polioptila californica*), bobcats, least Bell's vireos (*Vireo bellii pusillus*), California red-legged frogs (*Rana draytonii*), and other species. Two of the linkages targeted in the Connectivity Ordinances are the Santa Monica Mountains—Sierra Madre Mountains connection and the Sierra Madre Mountains—Castaic Connection, which together connect wildlife habitat in the Santa Monica Mountains, Santa Susana Mountains, Simi Hills, and Los Padres National Forest. While implementation of the Connectivity Ordinances should help wildlife to move more easily through private lands between core habitat areas, it would not address connectivity across major roads and highways, which is outside its jurisdiction (Country of Ventura Resource Management Agency 2024).

5.4.2 Los Angeles County Significant Ecological Areas Ordinance

The Los Angeles County Significant Ecological Areas Program recently updated its Significant Ecological Areas (SEAs) Ordinance. The ordinance is intended to protect biodiversity in SEAs from incompatible development and ensure that projects reduce habitat fragmentation and edge effects by providing technical review of impacts and requiring mitigation. Like Ventura County's Connectivity Ordinance, the SEAs designations can lead to compact development and allow wildlife to move across private lands more easily between core habitat areas. However, the SEA ordinance is not specifically designed to protect mountain lions (Los Angeles County Planning (LACP) 2023).

5.4.3 City of Los Angeles Draft Wildlife Ordinance

The City of Los Angeles Department of City Planning has developed draft regulations for the protection of wildlife within the city limits, including the promotion of wildlife movement corridors. One stated goal of the draft regulations is to improve wildlife mobility and connectivity opportunities along waterways, ridgelines, and natural open spaces. The Wildlife Pilot Study is intended to result in regulations that will help to preserve wildlife and promote habitat connectivity on small to medium size residential developments in a pilot study area in the Santa Monica Mountains between the 405 and 101 freeways (Los Angeles County Planning (LACP) 2024).

5.5 Management on Federal Lands

5.5.1 National Environmental Policy Act

Most federal land management actions must undergo National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. § 4321, et seq.) analysis. NEPA requires federal agencies to document, consider alternatives, and disclose to the public the impacts of major federal actions and decisions that may significantly impact the environment. The Department is not aware that the mountain lion is afforded any federal special status, and as such, impacts to the species are not required to be considered during NEPA analysis. The law directs federal agencies to adopt all practical means to minimize or mitigate adverse effects when selecting preferred alternatives or justify not doing so.

5.5.2 National Forest Service and Bureau of Land Management

The U.S. Department of Agriculture's Forest Service is responsible for developing forest management plans consistent with the National Forest Management Act requirements. These plans guide land use and development within national forests and grasslands in a way that balances use and protection of natural resources to support ecological, social, and economic sustainability. Within the petitioned Southern California/Central Coast ESU, the USFS has adopted Forest Management Plans for the Los Padres, Angeles, San Bernardino, and Cleveland National Forests. These plans identify conservation strategies for mountain lion related to land acquisition, preventing habitat fragmentation, monitoring, and fire management. The Forest Service also manages several Wilderness Areas in the major National Forests within the petitioned area. Wilderness Areas are the most protected public lands in the US. Extractive uses are prohibited, as well as building roads or structures. The Angeles National Forest has five Wilderness Areas, the Cleveland National Forest has four Wilderness Areas, the Los Padres National Forest has 10 Wilderness Areas, the San Bernardino NF has eight Wilderness Areas. National Forest Wilderness in the petitioned ESU area totals approximately 485,000 ha (1.2 million acres).

The U.S. Department of Interior's Bureau of Land Management prepares Resource Management Plans to provide broad-scale direction for managing public lands in accordance with the principles of multiple use and sustained yield, as mandated by the Federal Land Policy and Management Act. These plans establish goals, objectives, and decisions for air quality, biological resources, cultural resources, lands with wilderness characteristics, paleontological resources, visual resources, water resources, fire ecology and management, trail and travel management, lands and realty, land use authorizations, livestock grazing, minerals management, recreation and visitor services, and areas of critical environmental concern. Within the petitioned Southern California/Central Coast ESU, adopted BLM plans include the Southern Diablo Mountain Range RMP, the Central Coast of California RMP, the Carrizo Plain National Monument RMP, the Clear Creek RMP, the South Coast RMP, the West Mojave RMP, the Eastern San Diego County RMP, the Santa Rosa and San Jacinto Mountains National Monument RMP, the Northern and Eastern Colorado Desert Coordinated Management Plan, and the Desert Renewable Energy Conservation Plan. While these plans may not specifically address mountain lions, they generally provide some level of protection for wildlife habitat. The BLM manages several Wilderness Areas within the petitioned area totally approximately 117,000 ha (290,000 acres), especially in the desert regions between the San Bernardino Mountains and the Arizona border.

5.5.3 Military Bases

The Sikes Act was established in 1960 to ensure conservation and protection of natural resources used by certain federal agencies, including the Department of Defense. The U.S. Congress amended the Sikes Act in 1997 requiring the Department of Defense to develop and implement Integrated Natural Resources Management Plans. These plans outline how each military installation will manage its significant natural resources holistically while maintaining military readiness. Since these lands are often protected from access and use by the public, they may contain large tracts of undeveloped land and thus be an important tool for species conservation and habitat connectivity especially in the desert regions. Military bases within the petitioned Southern California/Central Coast ESU include Fort Hunter Liggett, Camp Roberts, Camp San Luis Obispo, Vandenberg Space Force Base, Marine Corps Base Camp

Pendleton, Naval Weapons Station Seal Beach, March Air Reserve Base, Marine Corps Air Station Miramar, Naval Air Facility El Centro, Chocolate Mountain Aerial Gunnery Range, and other installations.

5.5.4 National Parklands

The guiding principles for managing biological resources on the U.S. Department of the Interior's National Park Service lands include maintenance of animal populations native to park ecosystems (NPS 2006). The NPS also commits to work with other land managers on regional scientific and planning efforts. NPS management plans provide direction and guidance on a variety of issues including resource preservation, visitor use, development, and boundary management. These plans generally specify management objectives and may vary in the type of plan, ranging from a general management plan to wilderness plans to strategic facility investment plans. For example, the Santa Monica Mountains National Recreation Area General Management Plan (GMP) provides a framework for the area's management, administered by the National Park Service, California State Parks, and the Santa Monica Mountains Conservancy. The GMP includes mountain lions as a "park species of concern" and includes construction best management practices, facility siting, fire management, vegetation, and habitat connectivity strategies intended to mitigate project impacts. However, the GMP does not include specific actions for mountain lions. Extensive mountain lion research has been carried out by The Santa Monica Mountains National Recreation Area under the leadership of Dr. Seth Riley.

Other NPS lands within the petitioned areas, such as Carrizo Plains National Monument, Fort Ord National Monument, Pinnacles National Park, Mojave National Preserve, and Golden Gate National Recreational Area, provide habitat and important habitat corridors for mountain lions.

5.6 Management on State Lands

5.6.1 California Department of Fish and Wildlife

The Department is responsible for over 445,000 ha (1,100,000 acres) of fish and wildlife habitat, managed through 749 properties throughout the state, including 111,462 ha (275,428 acres) within the petitioned ESU. These properties provide habitat for a rich diversity of fish, wildlife, and plant species and include representatives of most major ecosystems in the state.

Most Department lands are classified as either Wildlife Areas or Ecological Reserves. Wildlife Areas are acquired for the conservation of wildlife and the habitats on which they depend, and to provide opportunities for recreational uses that are compatible with those conservation goals (Fish & G. Code, §§ 1525–1530, 1745). Ecological Reserves are acquired primarily for the purpose of protecting rare and endangered native species and specialized habitat types (Id., § 1580). Certain public uses, deemed compatible with those goals, are authorized for ecological reserves—typically this includes hiking on established trails to observe native plants and wildlife (Id., § 1584). The Department prepares land management plans for Wildlife Areas and Ecological Reserves which are subject to public review under CEQA prior to being finalized.

The 167 Department properties within the petitioned Southern California/Central Coast ESU range from a fishing access property of less than 1 acre to the 117,197-acre Santa Rosa Wildlife Area in Riverside County. Of particular interest are Department properties in the coastal mountains of San Diego County, including Rancho Jamul Ecological Reserve, Sycuan Peak, Crestridge Ecological Reserve, and Hollenbeck

Canyon Wildlife Area. Mountain lion densities appear to be high in these areas as indicated by the concentration of vehicle strikes (Fig. 11). The Santa Margarita River Ecological Reserve was rated as the best potential site for a wildlife crossing over I-15 to help link the Santa Ana Mountains to the Palomar Mountains in the Eastern Peninsular Range (Riley et al. 2018b). Other significant Department properties within the petitioned ESU include the Cottonwood Creek, Cañada de Los Osos and San Luis Reservoir Wildlife Areas in Merced and Santa Clara Counties; the Chorro Creek Ecological Reserve in San Luis Obispo County; the Burton Mesa Ecological Reserve in Santa Barbara County; and San Jacinto Wildlife Area in Riverside County.

5.6.2 California State Parks

California's State Park System encompasses more than 607,000 ha (1.5 million acres) in approximately 280 parks. These parks are managed for public use and enjoyment and species and habitat protection through an integrated program of planning, restoration projects and evaluation, ongoing maintenance, and long-term monitoring.

A state park must have an approved general plan before major park facilities can be developed. These general plans direct the long-term management of the park. Some parks may also develop a more specific resource management plan. Big Basin Redwoods State Park in Santa Cruz County designates mountain lions as a species of special management concern, and the Park's Management Guidelines call for the protection of known wildlife habitat linkages to permit movement of wildlife, increase species abundance and diversity, and monitor the functionality of core wildlife habitat areas and wildlife linkages (California State Parks (CSP) 2013). Big Basin Redwoods State Park and surrounding parks including The Forest of Nisene Marks, Año Nuevo, Henry Cowell Redwoods, Wilder Ranch, Portola Redwoods, and Castle Rock State Park encompass over 22,250 ha (55,000 acres) of the Santa Cruz Mountains in the CC-N. Anza-Borrego Desert State Park in the EPR is the largest park in the state system at over 240,000 ha (600,000 acres) and contains over 161,000 ha (400,000 acres) of land managed as wilderness. Park system-wide management goals include being proactive in biological conservation and managing for subspecies, evolutionary units, ecologically functional units, populations, or other levels of biological organization to conserve biodiversity; and management that encourages natural ecological process such as hydrologic processes, wildfire, and biotic community interactions to continue. Other wildlife-related goals and guidelines include species inventory and monitoring programs, protection of special status plants and animals, control of non-native plants and animals, and the protection of habitat buffers and movement corridors (CA Parks 2005). Other notable parks within the petitioned Southern California/Central Coast ESU boundary include Butano, Garapata, Andrew Molera, Julia Pfeifer Burns, Portola, Henry W. Coe, Henry Cowell, Castle Rock complex, Montaña de Oro, Point Mugu, Malibu Creek, Topanga, Chino Hills, Lake Perris, and Cuyamaca Rancho.

5.6.3 Management on County and City Lands

Although generally smaller in size than conserved state and federal land units, city and county owned and managed lands conserve many key linkage areas or expand and buffer adjacent conservation lands. For example, a series of properties owned by the City of Los Angeles—including Runyon Canyon Park, Franklin Canyon Park and Stone Canyon and Encino Reservoirs—conserve portions of the easternmost extent of the CC-S and provide partial linkage to Griffith Park (also owned by the City of Los Angeles).

And Ventura County's Happy Camp Canyon Regional Park conserves an important part of the southern Santa Susana Mountains that may serve as a key piece of future linkages between the Santa Monica Mountains/Simi Hills and the Santa Susanas. In the Santa Anas, parks and preserves owned and managed by Orange County serve as linkages and buffers to larger conserved areas in the Sana Ana Mountains. Important units include Whiting Ranch and Irvine Ranch Open Space Preserves and the Ronald Casper Wilderness Park. In the coastal EPR of San Diego County, the County's open space preserves in the Otay area and mitigation bank in Marron Valley complement the Department's Rancho Jamul Ecological Reserve and the BLM's Otay Wildlife Management Area to create a large block of contiguous conserved lands in the San Ysidro Mountains adjacent to the Mexican border.

5.7 Management in Neighboring States and Nations

5.7.1 Arizona

Mountain lions are found throughout Arizona in desert and forested mountain habitat. They are not considered endangered or threatened in Arizona and are classified as a big game species by the Arizona Game and Fish Department (AGFD), with regulated hunting zones throughout the state. The population was recently estimated at 1,166 to 1,175 (95% CI = 622-2,558) adults and subadults statewide exclusive of the 28% of the state that is tribal land (Howard et al. 2020). Mountain lions have recently expanded into previously unoccupied areas in western Arizona near the California border where they were previously thought to be transient including the Kofa, Castle Dome, New Water, Palomas, and Eagle Tail Mountains where no evidence of mountain lions was detected during 1987 surveys (Thompson et al. 2008; Naidu et al. 2011).

The AGFD collects age and sex information and genetic material from harvested mountain lions to monitor populations and to evaluate metapopulations, connectivity and dispersal. Mountain lions are regulated by several statutes and Arizona Game and Fish Commission Orders. It is unlawful to harvest a female lion with kittens or to harvest a spotted kitten in Arizona. AGFD has established several mountain lion management zones in the state with harvest thresholds that require closing the season when the threshold is reached. Five different zones exist on the western border of Arizona abutting the California boundary, with a total of eight separate harvest units within those zones. For the 2022–2023 harvest season, the threshold quota for each of these units ranged from 3–17 mountain lions. AGFD has analyzed harvest data and considers the mountain lion population to be stable to increasing in many parts of the state.

5.7.2 Nevada

Mountain lions are classified as a game mammal in Nevada and both sexes can be hunted under special regulations. Hunting is allowed statewide, except for on the Sheldon National Antelope Refuge and within specific hunt zones in the Las Vegas area. There was a limit of 247 mountain lions in 2023–2024. From 1987 to 2015 the estimated mean population size statewide was 3,000–4,000, with the population generally found to be stable (Mahoney and Benson 2021). Andreasen et al. (2012) found that mountain lion populations in western Nevada commonly interbreed with individuals in the Sierra Nevada of California, and those populations are somewhat isolated from other Nevada populations by inhospitable playas in the Lahontan Basin. The authors also found that the Sierra Nevada population appears to receive more mountain lions from central and eastern Nevada than it contributes in return. In contrast,

Gustafson et al. (2019) found evidence of more movement from the Sierra Nevada to Nevada than vice versa.

5.7.3 Mexico

Mountain lions are distributed throughout Mexico in many areas and habitats including mountains, deserts, sub-tropical and tropical forests, and deciduous dry, conifer, and oak forests (Valdez and Ortega-Santos 2019). Populations are found in most states except in urban areas with large human populations and areas of intensive agricultural production, including central Mexico and much of the Mexican Altiplano (Chávez and Ceballos 2014).

Threats to mountain lion survival in Mexico include habitat fragmentation, prey depletion, and illegal hunting (Valdez 1999; Rosas-Rosas et al. 2003; Rosas-Rosas et al. 2008). Additionally, widespread cattle ranching, agriculture expansion, and unlawful human settlement in protected natural areas threaten their survival in the long term (Galindo et al. 2016). Ranchers often resort to predator control without following a scientific management plan due to a lack of federal and state conservation intervention programs (Rosas-Rosas et al. 2003; Rosas-Rosas et al. 2008; Rosas-Rosas and Valdez 2010; Chávez and Ceballos 2014).

Despite the international border wall, some contemporary connectivity is known to exist between EPR and the contiguous Mexican lion populations where there is not a US Border fence (Vickers et al. 2015). While the 226 km (140 mi.) border is largely fenced, significant areas, primarily in more rugged mountainous terrain occupied by mountain lions, remain unfenced. In 2009, a radio collared male from EPR crossed into Mexico at an unfenced section (Fig. 21). However, it is unknown if he fathered cubs in Mexico, and genetic exchange between lion populations on either side of the border has not been examined in close detail. Genetic contributions from Mexico to EPR in the absence of concerted mountain lion conservation efforts in northern Mexico are not ensured, and cooperative international wildlife conservation efforts should be explored to ensure the persistence of this linkage.

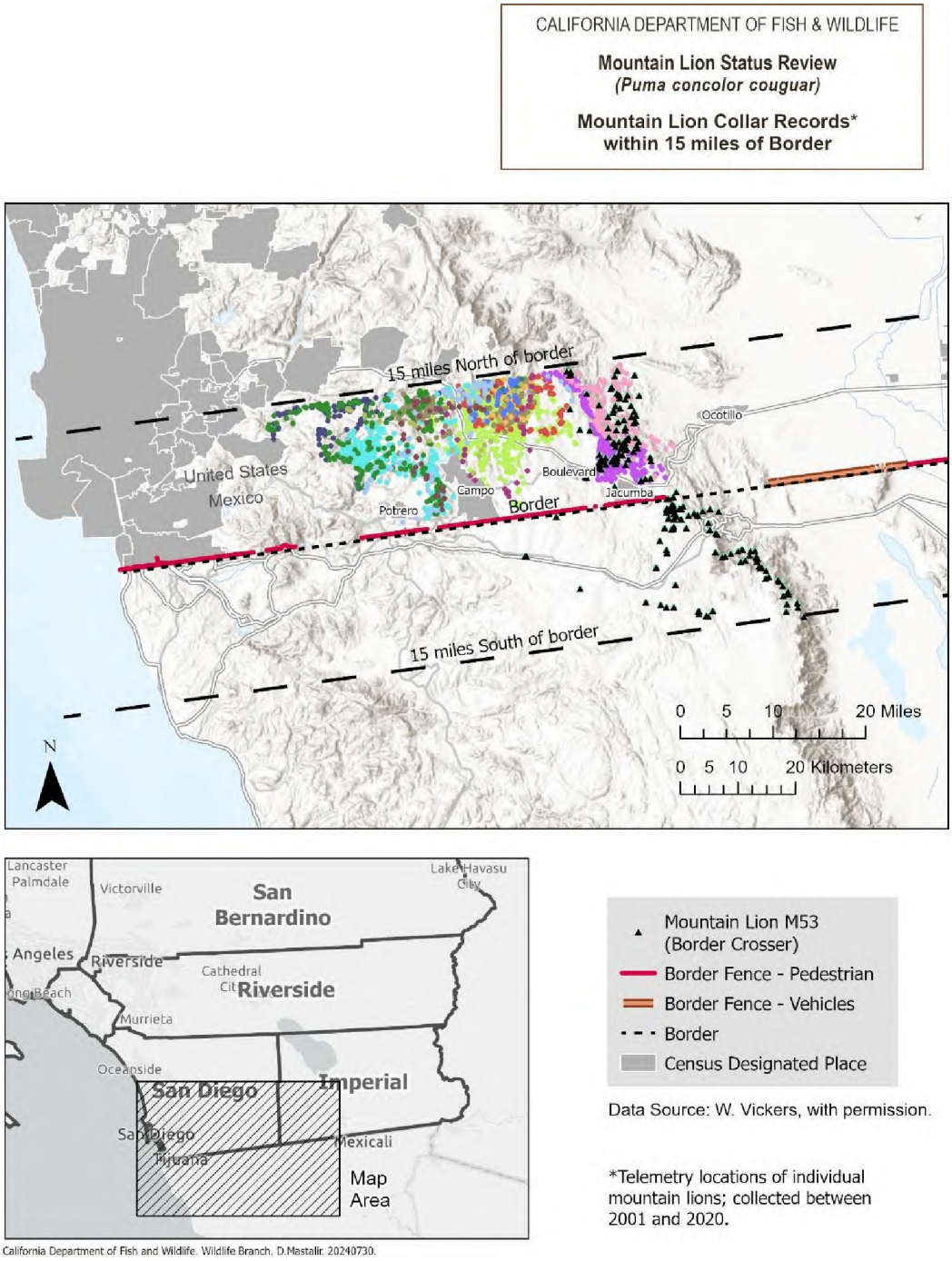


Figure 21. US/Mexico border showing locations of GPS-collared mountain lions within 15 miles of the border, including M53, the only tracked mountain lion to have crossed the border (W. Vickers data used with permission). Locations of border fences are also shown. The sections marked pedestrian are made of materials designed to stop the movement of people which would likely present a significant barrier to mountain lions. The vehicle fence likely does not create a significant barrier to mountain lions.

6. Assessment of Listable Groups

6.1 Assessment of Evolutionary Significant Units

The petitioners propose listing the petitioned area, which includes the approximate area occupied by six genetic populations, as a single ESU. Alternatively, they request the Commission consider whether any of the six genetic populations, individually or in combination, comprise one or more ESUs and meet the criteria for listing under CESA (see Fig. 1).

To determine whether a population could be considered an ESU under CESA, the Department has typically followed the general approach used by the federal government for the ESA (Waples 1991) which consists of two main criteria:

1) The population must be substantially reproductively isolated from other conspecific population units.
2) It must represent an important component in the evolutionary legacy of the species.

For criterion 1, isolation does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in the different population units. It must also be of substantial ecological/genetic importance to the species as a whole (criterion 2). To make the determination for criterion 2, the following questions are relevant:

a) Is the population genetically distinct from other conspecific populations?
b) Does the population occupy unusual or distinctive habitat?
c) Does the population show evidence of unusual or distinctive adaptation to its environment?

Waples (1991) highlights the following types of information as useful for answering the above questions[15]

1) Genetic traits. Examples include presumably neutral characters detected by protein electrophoresis or DNA analyses as well as other genetically based traits that are more difficult to quantify.
2) Phenotypic traits. Examples include morphological and meristic characters, occurrence of parasites, and disease and parasite resistance.
3) Life-history traits. Examples include time, size, and age at reproduction; reproductive behavior; fecundity; migration patterns; and timing of emergence and outmigration.
4) Habitat characteristics. This category includes such physical characteristics of habitat encountered during the entire life cycle.

Waples (1991) notes:

"The existence of substantial genetic differences from other conspecific populations based on protein electrophoresis or DNA analyses would strongly suggest that evolutionarily important, adaptive differences also exist. The failure to find such differences (or the absence of genetic

[15] Waples's examples are written to be specifically relevant to Pacific salmon, so the Department has altered the language to make them more applicable to terrestrial organisms.

data) would not rule out the possibility that such adaptive differences exist, but it would place a greater burden of proof on data for other characters. Data for habitat characteristics should be interpreted in a similar fashion: habitat differences suggest (but do not prove) the possibility of adaptive differences, whereas the inability to detect habitat differences constrains the scope of possible local adaptations but does not prove they do not exist. In evaluating data for phenotypic and life-history traits, every effort should be made to account for environmental effects that are manifested in periods shorter than one generation (and therefore do not reflect adaptations)."

When evaluating the petition, CDFW's first consideration was whether the petitioned ESU meets the criteria for being considered an ESU. The second consideration was whether any of the populations within the petitioned ESU area meet the definition of an ESU, singly or in combination.

It is important to understand the adaptive differences described in the ESU criteria are unlikely to develop when populations are isolated over short time scales (i.e., decades, or even hundreds of years). Mountain lions occupy much of California, except for heavily urbanized areas, intensively farmed areas of the Central Valley, and low elevation areas of the southern deserts. As noted earlier, when the landscape is permeable, they can disperse over long-distances (Sweanor et al. 2000; Hawley et al. 2016) and they inhabit all major mountain ranges in California (Dellinger et al. 2020b). This widespread distribution and dispersal potential suggest local adaptation is unlikely to develop, and there is little evidence of morphological, mitochondrial, or adaptive genomic differences between mountain lions within the petitioned ESU or any of the genetic populations and the broader statewide population to suggest the presence of distinct evolutionary lineages (Gustafson et al. 2022). While gene flow between the petitioned ESU and the NC and SN groups is limited, it does still occur (Gustafson et al. 2019; Gustafson et al. 2022). Several of the fine-scale genetic populations are small and somewhat isolated as connectivity to the statewide population has been drastically reduced in the last 50–100 years due to expanding human development. However, based on current scientific information there are no groups of mountain lions within the petitioned ESU boundary that have been isolated for much longer periods such that they represent important portions of the evolutionary legacy of the mountain lion species.

The Department used several lines of genetic and ecological evidence to evaluate the potential ESU, however, taken as a whole, the genetic evidence does not support applying the ESU concept to the overall petitioned area nor to any of the genetic populations individually, as a subspecies or ESU for the following reasons:

1) There is only one recognized subspecies of mountain lion in North America (*P. c. cougar*) based on mitochondrial DNA data (Culver et al. 2000; Caragiulo et al. 2014; Kitchener et al. 2017), suggesting a reduced potential for adaptive localized genetic variation among North American mountain lion populations.
2) Genetic investigations conducted by Gustafson et al. (2022) failed to detect local adaptation, suggesting that the identified California genetic populations do not represent an important component of the evolutionary legacy of the species.
3) Genetic data indicate habitat fragmentation and dispersal barriers have recently limited the ability of mountain lions to move freely between certain geographic areas and local populations in Southern California and the central coast area (Gustafson et al. 2019). However, this fragmentation has mostly occurred within the last 200 years and has not yet resulted in genetic

differentiation sufficient to represent an important component of the evolutionary legacy of the species. Gustafson et al. (2022) found no outlier loci, which, when present, suggest local adaptation (Ibid.). The same study used SNPs to characterize variation across more of the genome, which suggests many of these local genetic populations separated by barriers have considerable shared ancestry (Figs. 7, 8) and are more genetically similar than was suggested by the result of Gustafson et al. (2019).

While the Department concludes that the mountain lion populations within the petitioned area do not comprise one or more listable ESUs, the Department recognizes that several of those populations are imperiled due primarily to small population sizes and isolation. In the sections below the Department uses other criteria to further evaluate whether mountain lions within the petitioned area warrant potential listing under CESA.

6.2 Assessment of Distinct Population Segments

While the petition is focused on ESUs and the Department has recommended listing ESUs in the past, the Department has also previously recommended listing other sub-species entities, such as DPSs (e.g., Southern California steelhead) and clades (e.g., foothill yellow-legged frog). The U.S. Fish and Wildlife Service (USFWS) and NMFS (the Services) have also identified and listed DPSs pursuant to the ESA and have developed a policy for evaluating DPSs pursuant to the ESA (61 Fed Reg. 4722-4725 (February 7, 1996)). Per that policy, a DPS is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. DPSs have been used 137 times by USFWS to list imperiled populations rather than listing a species across its full range. Examples from California include the Southern Sierra Nevada fisher (85 Fed. Reg. 29532-29589 (May 15, 2020)), the Peninsular bighorn sheep (63 Fed. Reg. 13134-13150 (March 18, 1998)), and the Sierra Nevada bighorn sheep (64 Fed. Reg. 19300-19309 (April 20, 1999)). While the ESU designation and supporting policy has primarily been applied to fish populations, the DPS designation has been more widely applied to, and policy is more relevant for, terrestrial species.[16]

To guide its evaluation of whether a possible DPS might warrant listing as threatened or endangered, the Services first evaluate two elements to determine if the population segment should be considered a DPS:

1) Discreteness of the population segment in relation to the remainder of the species.
2) Significance of the population segment in relation to the remainder of the species.

If the population segment being considered is a DPS, then the Services then evaluate its conservation status (i.e., is the population segment, if treated as if it were a species, endangered or threatened?) (61 Fed. Reg. 4722-4725 (February 7, 1996)).

The elements are interpreted as follows:

Discreteness: A population segment may be considered discrete if it meets either of two conditions:

[16] The Department has previously found DPSs to be a helpful approach for assessing certain populations and concludes it is an appropriate approach to consider for mountain lion.

a) It is markedly separated from other populations of the same taxon because of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.
b) It is delimited by an international government boundary, and there are significant differences between the countries in control of exploitation, management of habitat, conservation status, or regulatory mechanisms.

Significance: If a population segment is found to be discrete under one or more of the above conditions, its biological and ecological significance will then be considered. This consideration may include, but is not limited to, the following:

a) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.
b) Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon.
c) Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range.
d) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Imperiled Status: If a population segment is found to be both Discrete and Significant, and if treated as a species, could it be found to be threatened or endangered based on the listing factors established in the ESA?

Adopting this approach, the Department evaluated the petitioned area to determine if it should be considered a DPS.

6.2.1 Boundary Assessment

Considering the petitioned area as a potential DPS is consistent with the Petitioners' interest in examining the status and viability of major genetic groupings of mountain lions in California and is also consistent with prior Department evaluations of portions of widely distributed species' ranges. The Department has previously recommended listing the Southern California steelhead DPS for listing, as well as several clades (groups descended from a common ancestor) of foothill yellow-legged frog (*Rana boylii*). As a first step in the DPS assessment, the Department considered the boundary of the petitioned ESU. The boundary must be supported by the best available science and be demarcated unambiguously. After consideration, the Department developed a potential DPS boundary that is modified from the ESU boundary proposed in the petition.

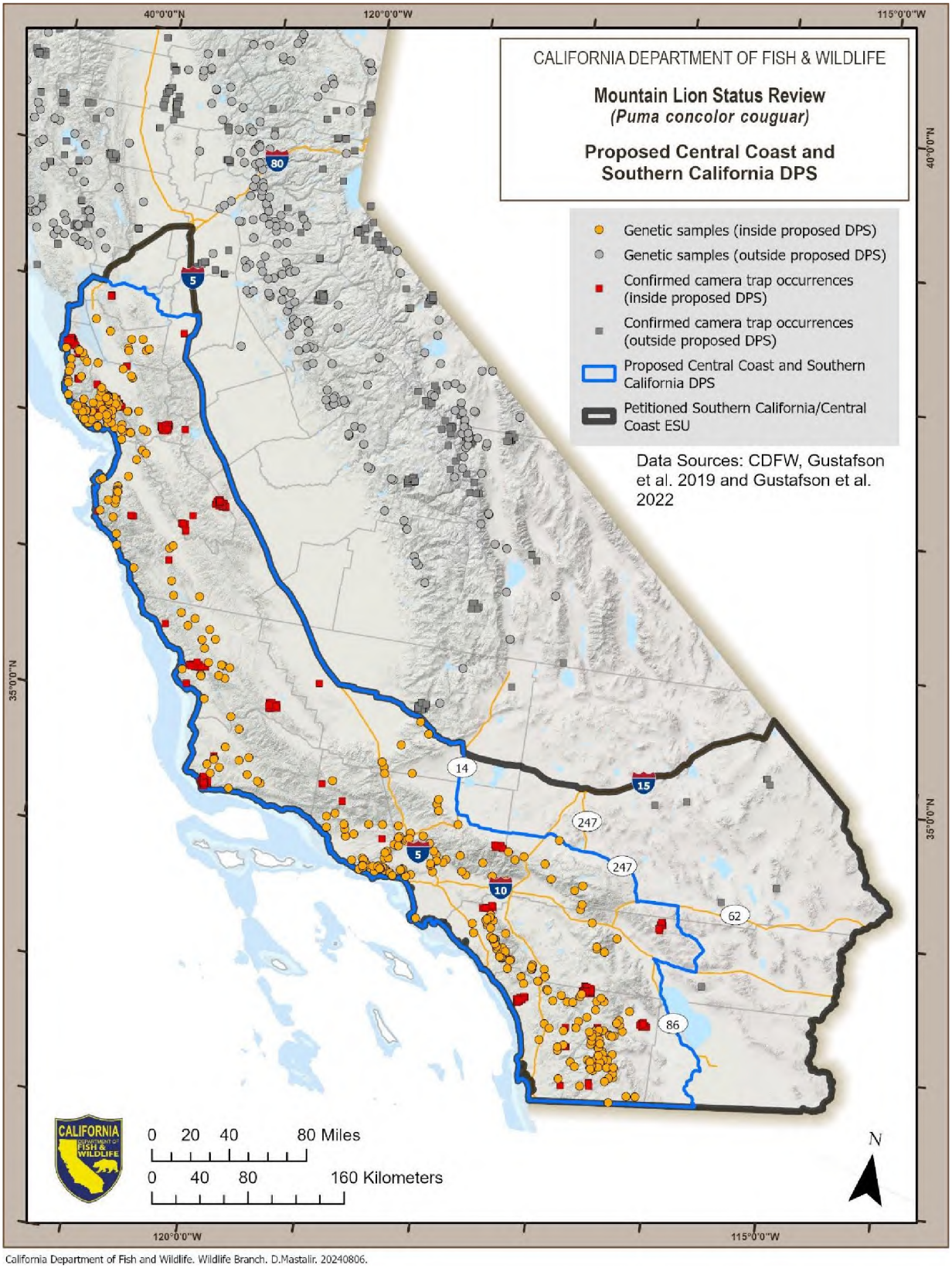
The petitioned ESU boundary includes extensive areas of California's southeastern deserts in eastern San Bernardino, Riverside, and Imperial Counties where mountain lion detections are few. Although Gustafson et al. (2019) and Gustafson et al. (2022) include this area in the EPR, the authors did not examine genetic material from mountain lions east of the Eastern Peninsular Mountains (see sample locations in Fig. 6). Mountain lions are known to occur in the desert regions of California and in Death Valley National Park (Lundgren et al. 2022), but camera trap data suggest they exist at low densities (Dellinger et al. 2019). Genetic material from the eastern deserts has not been systematically collected,

and, consequently, mountain lions in those areas have not been assigned to a genetic population nor has local gene flow been characterized.

The next nearest location from which genetic samples have been analyzed is the Mojave Desert region of southern Nevada (Andreasen et al. 2012). In a statewide genetic study of mountain lion population structure, Andreasen et al. (2012) found that animals from southern Nevada were genetically similar to individuals from the Great Basin and the Sierra Nevada region of California. However, the analysis did not include samples from the EPR or other genetic populations within the petitioned area, so it did not shed light on the genetic relationships between the mountain lions of EPR and Nevada. Another study compared samples from the coastal areas of the SC group (including EPR) and southwest Arizona (Naidu 2015). There was minimal evidence of gene flow between the mountain lions in the coastal area of the SC group and those along the border or in Arizona. In fact, the individuals sampled in south coastal California were found to be more genetically similar to those sampled from the North Rim of the Grand Canyon than those directly across the desert in southwest Arizona (Naidu 2015). However, the study had a small sample size, and did not include samples from the inland desert regions of California. Therefore, the results provide little information regarding the genetic assignment of mountain lions in the desert regions of California.

Due to this limited information, it is not currently possible to assign the mountain lions occupying the deserts of southeastern California to one of the genetic populations described by Gustafson et al. (2019). Since mountain lions in this region cannot be assigned to the petitioned genetic populations, the Petitioners' boundary which included the deserts east of the Peninsular Ranges would not meet the DPS criteria for discreteness as mountain lions in those deserts may belong to other genetic populations. The Department, therefore, does not find it appropriate to include large portions of the Mojave and Sonoran deserts within the area to be assessed as a DPS. When considering where to bound the proposed DPS, the Department also evaluated the distribution of suitable mountain lion habitat in the Mojave and Sonoran Deserts (Dellinger et al. 2020) as well as the distribution of verified mountain lion camera trap detections from recent Department monitoring projects related to drought impact monitoring and bobcat management. The petitioned ESU boundary extended from the Tehachapi Mountains east along I-15 to the Nevada border and then south along the Colorado River to Mexico, while our proposed Central Coast and Southern California DPS boundary instead runs south from the Tehachapi Mountains and then closely follows the eastern bases of the San Gabriel, San Bernardino, and Little San Bernardino Mountains before extending south along the western edge of the Salton Sea (Fig. 22).

The petitioned ESU boundary also includes an area of intensively farmed agricultural land in San Joaquin, Sacramento, and Solano Counties. This area contains little native vegetation and little cover for mountain lions, and while there are few contemporary records of mountain lions occurring there, they are likely transient individuals. Therefore, this area is not included in the proposed DPS (Fig. 22). For a more detailed description of the proposed Central Coast and Southern California DPS boundary see section 9 (Listing Recommendation).



California Department of Fish and Wildlife. Wildlife Branch. D.Mastalir. 20240806.

Figure 22. Proposed boundary of Central Coast and Southern California Distinct Population Segment.

6.2.2 Assessment of Proposed DPS Discreteness

The first test of whether a portion of a species' range constitutes a DPS is whether the population segment is discrete or markedly separate from the remainder of the species range. The Department concluded the proposed DPS is a discrete population based upon the evidence below.

Physical, physiological, ecological, or behavioral factors:

- Physical boundaries separating mountain lion populations within the evaluated DPS from other lion populations include the San Francisco Bay and Sacramento-San Joaquin Delta, the intensive agriculture in the Central Valley, large areas of unsuitable habitat in portions of the inland deserts in the east, high density urban areas, the wall along parts of the southern border with Mexico, and significant highways such as Interstates 5, 10, and 15. These are not absolute barriers but, in combination with existing geographic and habitat features, represent sufficient hindrance to gene flow that the mountain lions within the potential DPS represent two of the four broad-scale distinct genetic groups in California identified by Gustafson et al. (2022). These two broad-scale groups (SC and CC) are moderately genetically differentiated from the other broad-scale groups in California as measured by F_{ST} values (see section 2.4). This points to separation and isolation of the populations over time due to the barriers discussed above. There is evidence of historical gene flow between the genetic populations in the evaluated DPS and the Western Sierra Nevada (which is in turn connected with the Eastern Sierra Nevada and North Coast) in the ancestry assignment data using SNPs (see section 2.4). The Tehachapi Mountains and surrounding areas are considered the only area where contemporary gene flow is known to occur between the evaluated DPS and the other genetic populations in California (via the western Sierra Nevada Mountains; Fig. 10). Current substantial barriers to mountain lion movement in that area include I-5 and Highway 58, the latter of which is identified by the Department as an area of top priority for connectivity for mountain lions (Fig. 12, Vickers unpublished data).
- Connectivity between mountain lions in the EPR and those in Baja California, Mexico and Arizona is poorly understood. Although most of the 226 km (140 mi.) border with Mexico is fenced, portions in the rugged San Ysidro and Jacumba Mountains remain unfenced. Mountain lions have been observed on the California–Baja California border (J. Dellinger pers. comm.), and in 2009, one GPS-collared study animal was documented crossing the border multiple times in the vicinity of Jacumba, California, indicating the opportunity for the cross-border exchange of individuals still exists (Fig. 21, Vickers et al. 2015). In the Mojave and Sonoran deserts, sporadic detections of individuals suggest at least the potential for genetic exchange between mountain lions in the EPR and those living along the Colorado River in California and Arizona. However, such movement has not been studied or confirmed to date.

International Border: The assessment of discreteness in the federal DPS policy includes the criterion of the presence of an international border. However, the jurisdiction of CESA is the State of California, and considerations of differences in management or regulatory mechanisms across borders are not usually a major part of the listing decision process. In this case, however, the border between California and Mexico is relevant to the EPR genetic group. While portions of the international border are marked by walls and fences that attempt to manage human migration, significant sections of the border, including

a large section of the Eastern Peninsular Mountains, remain unfenced (Fig. 21). However, the status of the mountain lion population in Baja California, Mexico, and the frequency of lion movement across the border is unknown. One collared mountain lion is known to have crossed from the Eastern Peninsular Range into Mexico and back in 2009. While the frequency of genetic exchange between Californian and Mexican mountain lion populations is unstudied and unknown, it is likely that the border wall serves as a semi-permeable obstacle to lion movements. However, without more information about gene flow, California should not make assumptions about Mexican mountain lions' contribution to genetic diversity in the EPR and South Coast populations.

6.2.3 Assessment of Proposed DPS Significance

Having established that the proposed DPS is a discrete population, the Department next evaluated the biological and ecological significance of the segment in consideration using the following factors.

Unique Ecological Setting: While there are diverse environments including many unique plants and vegetation types within the proposed DPS, the relevance of these unique areas to the mountain lion—an adaptable, wide-ranging, habitat generalist—is unclear. The mountain lion's primary prey (deer) occurs across the many habitats of the potential DPS and there is little evidence that mountain lions have adapted their general behaviors or occupied different ecological niches to exploit specific habitat types. Mountain lions typically have large home ranges that may include many habitat types, and an individual lion may disperse and establish a home range dominated by a habitat type other than the one that dominated its home range when it was a juvenile. Mountain lions within the proposed DPS largely make use of habitats that are compositionally and structurally similar to habitats outside the evaluated DPS, and they tend to exhibit the same hunting, feeding, breeding, and denning behaviors both within and beyond the proposed DPS boundary, including making use of the interface between natural habitats and cities by occasionally occupying urban and suburban areas.

Gap in Range: The evaluated DPS represents 97,230 km^2 (37,541 mi^2), which is 23.7% of the state of California. The loss of the mountain lions from this area would be a significant overall loss in range in California and would further limit the statewide population's connectivity with populations in Mexico and Arizona. Within the petitioned area, mountain lions occur in many mountain ranges, valleys, deserts, parks, and Wilderness areas, and the loss of the largest carnivore from these areas would fundamentally change wildlife community dynamics across a large portion of the state.

Only Surviving Natural Occurrence: Mountain lions within the proposed DPS are not the only surviving natural occurrence of the species in the state.

Markedly Different Genetic Characteristics: The petitioned area consists of two of the four broad genetic groups identified in Gustafson et al. (2022), which are "moderately differentiated from each other based on F_{ST} estimates." Those two broad groups can be further divided into six smaller genetic populations. While there are multiple lines of evidence that these genetic groups have different characteristics from each other and from the groups outside of the petitioned area, to date there is no evidence that these discernible genetic differences are evidence of adaptations to local conditions (see section 2.4 Genetic Structure).

Conclusion: The mountain lions in the petitioned area are markedly separated from other populations in the state due to natural and human-created barriers. There are six distinct genetic populations in the

petitioned area that broadly nest into two broad-scale genetic groups that are discernible from those in the rest of the state. The mountain lion population within the petitioned area is significant due to its markedly different genetic characteristics, and the very large, geographically diverse area that it occupies, comprising nearly one quarter of California's land area. Therefore, the petitioned area meets the criteria to be considered a Distinct Population Segment and treated as a subspecies for CESA listing purposes.

6.2.4 Assessment of Whether Proposed DPS is Imperiled

The final test for determining if listing a population segment as a DPS is warranted is assessing whether the population segment, if treated as species, could be found to be threatened or endangered. The Department estimates the total population of the six genetic populations within the proposed DPS to be 947 mountain lions (95% CI: 777–1,123). Each of the genetic populations has some degree of isolation from, and limited genetic exchange with neighboring populations. Thus, mountain lions within the proposed DPS are not a single, well-mixed population. For long-term conservation planning, effective population size (N_e) is a better metric for evaluating the risks of isolation and inbreeding than census population size. The estimated total effective population size of these six genetic populations combined has been estimated in two studies: $N_e = 70.6$ (Gustafson et al. 2022), and $N_e = 128$ (Gustafson et al. 2019). However, the petitioned area is not a single intermixed population, instead it is a collection of smaller, somewhat isolated genetic populations which each have effective population sizes that are too low to prevent the risks of inbreeding over the long-term. This fact, coupled with the other threats to the genetic populations such as vehicle strikes, management killing, diseases, and the interrelated effects of fire and climate change has led the Department to conclude that the proposed DPS is imperiled.

See Section 7 for a more detailed discussion of threats.

6.3 Assessment of Significant Portion of Range

CESA provides that the Department and the Commission must consider whether a species is endangered or threatened "throughout all, or a significant portion, of its range." (Fish & G. Code, §§ 2062, 2067.) If the Commission ultimately determines a species is endangered or threatened throughout all of its range, the Commission need not analyze whether the species warrants listing throughout a significant portion of its range, an area subsumed within the entire range. For purposes of this analysis, the "range" to be assessed depends on the level at which listing is being analyzed by the Department and the Commission (i.e., the entire species, an ESU, a DPS, or another subspecies unit). Petitioners submitted a petition requesting the listing of one or more ESUs of mountain lions located in areas of the Southern California and the Central Coast. The Department has considered the petitioned unit(s) and determined that the correct subspecies unit for mountain lions in this area of California is a DPS, not an ESU. The Department recommends that the Commission list the entirety of the proposed DPS described in Sections 6 and 9 and shown in Figure 22. Therefore, an analysis of whether a significant portion of the species' range within the described DPS warrants listing is not required.

7. Summary of Listing Factors

CESA's implementing regulations identify key factors relevant to the Department's analysis and the Commission's decision on whether listing a species as threatened or endangered is warranted. A species will be listed as endangered or threatened if the Commission determines that the species' continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) present or threatened modification or destruction of its habitat; (2) overexploitation; (3) predation; (4) competition; (5) disease; or (6) other natural occurrences or human-related activities (Cal. Code Regs., tit. 14, § 670.1, subd. (i)).

This section provides summaries of information from the foregoing sections of this status review, arranged under each of the factors to be considered by the Commission in determining whether listing is warranted.

7.1 Present or Threatened Modification or Destruction of Habitat

The main threats affecting mountain lions in the proposed DPS are habitat loss and fragmentation from historical and ongoing transportation infrastructure development (including residential and commercial structures, intensive agriculture, highways and freeways, high-speed rail lines, canals, and reservoirs), and lack of sufficient connectivity between remaining habitat patches, which has resulted in isolated populations with reduced genetic exchange. The amount of suitable habitat available to mountain lion populations has been significantly reduced in and adjacent to areas such as the Central Valley, San Francisco Bay area, and the greater Los Angeles and San Diego urban areas. Over time significant barriers have developed which impede mountain lion movement and isolate populations, and ongoing residential and commercial development is projected to exacerbate isolation. The lack of sufficient gene flow between isolated populations has resulted in inbreeding in some smaller populations which may reduce survival and reproductive fitness, as evidenced by physical abnormalities in some mountain lions in the small and isolated Santa Ana and Santa Monica Mountains populations.

Long-term maintenance of genetic variation within the genetic populations in the proposed DPS is reliant on habitat conservation and connectivity. Maintenance and enhancement of gene flow between the proposed DPS and the larger, more genetically diverse mountain lion populations in the Sierra Nevada through the Tehachapi Mountains is required to maintain viable populations in the proposed DPS. Additionally, there needs to be increased connectivity between and within the fine-scale genetic populations in the proposed DPS to counteract or prevent the negative impacts of inbreeding.

As noted earlier in this report, some smaller genetic populations have well-documented significant risk factors at this time. In the most isolated habitat patches (e.g., Santa Monica Mountains, Santa Ana Mountains), it is estimated that there is a substantial probability of local extirpations within less than 50 years in the absence of efforts to improve habitat connectivity and remove barriers to movement. Developing broad wildlife crossing infrastructure will require adequate funding and concerted and sustained commitment by many parties to ensure proper design, placement, maintenance and monitoring of crossing structures for effectiveness.

7.2 Overexploitation

From the early 20th century until 1964, mountain lions were a bountied predator in California. During the bounty period approximately 12,580 mountain lions were killed across California. When California bounties ended in 1964, mountain lions were classified as a nuisance or vermin species and mountain lions could be killed year-round without a hunting license and with no limits, but there was no longer paid incentive for removal. Lions were classified as game and two legal hunting seasons were held in 1970 and 1971 before a legislative moratorium on hunting was enacted. In 1986, mountain lions were reinstated as a game species, but before a hunting season was held a ballot initiative (Proposition 117) approved by California voters classified mountain lions as a "specially protected mammal species" in 1991 (Fish & G. Code, § 4800). That classification continues today.

Poaching and other unpermitted take is rarely reported but has been observed in the CC-S, SA, and EPR as well as in the CC-N. 26 out of 199 mortalities from known causes in the years 1974–2020 were due to poaching, a 2%-3% annual rate of mortality. Overexploitation alone likely poses little threat to the statewide population or to any of the genetic populations, although additive mortality from poaching may exacerbate the inherent threats faced by small, isolated populations.

7.3 Predation

As large-bodied predators, adult mountain lions in California are subject to little predation pressure. Gray wolves sometimes kill both adult and juvenile mountain lions, and black bears are known to occasionally kill mountain lion kittens but rarely adults. However, predation by wolves and black bears is not known to be a significant cause of California mountain lion mortality nor is it known to threaten the persistence of lion populations. Therefore, and given the current absence of gray wolves within the proposed DPS, predation is not currently considered to present a significant threat to California mountain lion populations, although this topic may need to be revisited if wolf packs establish within the proposed DPS in the future.

7.4 Competition

Black bears and gray wolves are known to sometimes displace mountain lions from their kills, which potentially forces mountain lions to expend additional energy hunting to procure more prey. Given the current absence of wolves in the proposed DPS, wolf competition currently has no effect on central coast or Southern California lion populations. The potential impact of black bears in these areas remains unknown and warrants further study. Within the proposed DPS, intraspecific competition between mountain lions is likely the chief source of competition. In the Santa Monica Mountains within the CC-S, intraspecific conflict has been identified as the leading cause of mortality for the nearly isolated population. Statewide, there is a 3% risk of annual mortality attributable to intraspecific strife resulting from competition. Intraspecific aggression appears to be a significant mortality factor where individual mountain lions occupy small patches of suitable habitat within habitat-limited landscapes, and therefore, this form of competition should be considered a threat to lion populations in the Santa Monica and Santa Ana Mountains.

7.5 Disease

Mountain lions are susceptible to various viral, bacterial and parasitic pathogens. While there are documented lion mortalities and sickness from multiple pathogens, mortalities from disease alone are not likely to threaten the genetic populations in the proposed DPS. Diseases pose a less than 1% annual mortality risk to California mountain lions. The Department does not consider disease, in isolation, a significant threat to the species in California. However, pathogens may be harmful to individuals and small populations, and, when combined with other threats (e.g., habitat loss and fragmentation, climate change, wildfires, inbreeding and genetic drift, etc.), their impacts potentially further reduce the likelihood of long-term persistence for small, isolated mountain lion populations.

7.6 Other Natural Occurrences or Human-related Activities

7.6.1 Vehicle-Related Mortality

Vehicle-related mortality is the second most frequent cause of known death for mountain lions in California. It is difficult to accurately assess the actual magnitude of the problem due to lack of systematic data collection. One estimate is that 100 mountain lions are killed every year by vehicle strikes, while a more recent report puts that number at 70 per year during the period from 2015 to 2022. Between 2001-2013 vehicle strikes were the leading known cause of death for radio collared mountain lions in SA, and the second leading known cause of death in EPR. In the Bay Area (CC-N), vehicle strikes are also a significant source of mortality. California State Routes (SR)-12, SR-17, SR-1, and especially Interstate-280 have high numbers of mountain lion mortalities. The 20 mile stretch of I-280 northwest of San Jose was the deadliest highway in California for mountain lions from 2015-2022 with 20 reported deaths. Well-designed wildlife crossing structures in association with fencing to funnel animals to the crossing can reduce vehicle-related mortalities. While such structures are costly and require careful planning, an undercrossing on Highway 17 in the Santa Cruz Mountains (CC-N) has been completed, construction of the Wallis Annenberg Wildlife Crossing is underway in the CC-S, and several other structures are being planned in the EPR. If wildlife crossing structures and fencing become widespread within the proposed DPS, mortality from vehicle strikes may be substantially reduced.

7.6.2 Permitted Take

From 1974 to 2020, permitted take of mountain lions was the leading known cause of death for radio collared mountain lions statewide. Permitted take is primarily composed of lethal lion removals in response to depredation of livestock and pets, although lethal removals to protect endangered bighorn sheep populations and lethal removals for human safety are also included in the category. However, changes in 2017 and 2020 to the Department's approach to issuing mountain lion depredation permits have significantly reduced the number of animals killed statewide in recent years. Under current management, occasional lethal take of individual mountain lions due to repeated depredations on a single property or for public safety in the proposed DPS is foreseeable and may exacerbate the detrimental effects associated with habitat loss, small population size and limited genetic exchange, and other threats in isolated mountain lion populations such as the Santa Monica Mountains, SGSB and SA.

7.6.3 Toxicants

Mountain lions throughout California are exposed to toxic chemicals in their environment which can be lethal, debilitating, or have no clinical effect, depending on the quantities ingested. Lions with toxicant-impaired functions may be more susceptible to other forms of mortality such as starvation and vehicle strikes. Lions can encounter ARs used to control vertebrate pests throughout the state, including remote locations where legally prohibited rodenticides are used to protect illicit cannabis plantations. Necropsies have verified that nearly all tested mountain lions in California have been exposed to ARs. While toxicants are not known to directly cause significant mortality statewide, their effects may be additive to other sources of mortality. In the relatively small population in the Santa Monica Mountains National Recreation Area, AR toxicosis was the third leading cause of death after vehicles strikes and intraspecific strife.

7.6.4 Wildland Fire and Fire Management

The effect of wildfire on mountain lions is complex. Fire is a regular ecological process in many California vegetation types, and many native plants display adaptations to fire such as thick fire-resistant bark, post-fire crown-sprouting, and smoke-induced seed germination. Many native plants grow vigorously after wildfires, which can improve forage for deer, the main prey of mountain lions. Mountain lion response to recently burned areas appears variable with one study showing use of burned landscapes more frequently than expected based on availability during the first nine years following a wildfire, and others showing less use during the first few years post fire, then more use as vegetation recovers over time. Wildfires can also cause mountain lion injury and direct mortality, which is likely additive to other sources of mortality. Fires are projected to become more frequent and severe as the climate changes, potentially resulting in the conversion of some preferred mountain lion woodland and shrubland habitat to grasslands, which are documented to be largely avoided by lions. The impact of wildfire on the statewide mountain lion population or on individual genetic populations is difficult to predict; however, small lion populations in some relatively small mountain ranges (e.g., the Santa Monica and Santa Ana Mountains) may be vulnerable to large, severe fires (e.g., the Woolsey Fire Los Angeles and Ventura Counties in 2018) that could substantially modify large areas of extant lion habitat rapidly, and large fires in key connectivity zones such as the Tehachapi Mountains may temporarily reduce the probability of genetic exchange between populations.

7.6.5 Climate Change

Projections indicate the California climate will continue to warm, and precipitation events will become less predictable and droughts more frequent. These changes will influence the condition and distribution of vegetation types and the animal communities that depend upon them. For example, warming temperatures and/or changing precipitation patterns could affect the quality and density of forage plants relied on by deer in certain areas, thereby potentially affecting mountain lion density. However, the Department is not aware of any bioclimatic modeling studies investigating projected changes in the geographic range of the mountain lion nor their main prey species (mule deer) based on climate variables. As large-bodied mammals, it may be that both mountain lions and mule deer are sufficiently large enough not to be adversely affected directly by moderate increases or decreases in environmental temperature, which more drastically affect small-bodied mammals with higher surface

area to volume ratios. The generally nocturnal habits of mountain lions and their prey also help alleviate impacts from warmer environments. Mountain lions are known to occur across a wide variety of ecoregions ranging from deserts to temperate and coastal rainforests in California demonstrating their ability to tolerate a wide range of climates. The mountain lion's body size, foraging habits, and climatic breadth suggests the direct effects of climate change are unlikely to lead to near-term shifts in distribution of the species or population declines.

7.6.6 Risks to Small, Isolated Populations

Small, isolated populations are inherently vulnerable to extinction due to demographic stochasticity, inbreeding depression, and genetic drift. In small populations, these factors, individually or collectively, can result in a loss of genetic variability and a reduced genetic capacity for the population to adapt to changes in the environment. A lack of immigration can also prevent isolated populations from recovering from stochastic extinctions or population declines, independent of genetic effects. In wildlife populations, genetic variation has been shown to be strongly correlated with high survival and reproduction rates, as well as decreased extinction risk. Genetic effects can amplify the impact of the other identified threats and random environmental effects to further reduce population sizes and accelerate populations towards extirpation in what has been termed an extinction vortex.

There are an estimated 947 mountain lions (95% CI: 777–1,123) in the proposed DPS area, with some of the areas like the CC-C and EPR estimated to contain hundreds of mountain lions. However, the smaller and more isolated areas like CC-S, SA, and SGSB each have estimated populations of fewer than 75 individuals each. These genetic populations have effective population sizes less than 50 and may already be adversely affected by inbreeding. In contrast CC-C, and EPR genetic populations show little evidence of inbreeding. Enhancing gene flow between the genetic populations in the proposed DPS and the Sierra Nevada broad-scale group would enhance the potential of long-term persistence of mountain lions throughout the proposed DPS, but until connectivity is significantly improved, the risks associated with small populations will threaten the long-term persistence of mountain lions in the proposed DPS.

8. Protection Afforded by Listing

It is the policy of California to conserve, protect, restore, and enhance any endangered or threatened species and its habitat (Fish & G. Code, § 2052). If the Commission votes to list mountain lion populations as threatened or endangered under CESA, the act would prohibit take[17] except under certain circumstances where both CESA and Fish and Game Code section 4800, et seq. allow CDFW to authorize take.

Additional protection of mountain lions following listing would also occur during required state and local agency environmental review under the California Environmental Quality Act (CEQA). CEQA requires affected public agencies to avoid or substantially reduce project related environmental effects and contains specific requirements for analyzing and mitigating impacts to listed species. Where significant impacts are identified under CEQA, the Department expects the required avoidance, minimization, and

[17] "Take" is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86).

mitigation measures included in approved projects will afford additional protections that would be absent if mountain lions are not listed.

CESA listing may also result in increased priority for limited conservation funds such as those administered by the Wildlife Conservation Board, Local Assistance, and State Wildlife Grants, along with land acquisition assistance from non-governmental organizations (NGOs) such as The Nature Conservancy.

9. Listing Recommendation

CESA directs the Department to prepare this report regarding the status of the mountain lion in the petitioned Southern California/Central Coast ESU based upon the best scientific information available (Fish & G. Code, § 2074.6). CESA also directs the Department, based on its analysis, to indicate in the status report whether the petitioned action (i.e., listing as threatened) is warranted (Id., § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)).

Under CESA, an endangered species is defined as "a native species or subspecies…which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (Fish & G. Code, § 2062). A threatened species is defined as "a native species or subspecies…that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]" (Id., § 2067).

The Legislature left to the Department and the Commission, which are responsible for providing the best scientific information and for making listing decisions, respectively, the interpretation of what constitutes a "species or subspecies" under CESA (*Cal. Forestry Assn. v. Cal. Fish and G. Com.* (2007) 156 Cal.App.4th 1535, 1548-49; *Central Coast Forest Assn. v. Fish & G. Com.* (2018) 18 Cal. App. 5th 1191, 1198-99). The Commission's authority to list necessarily includes discretion to determine what constitutes a species or subspecies (Id. at p. 1237).

The Department has determined, based upon the best available scientific evidence, that there is currently insufficient evidence that the mountain lions within the petitioned area and the genetic populations within the petitioned area boundary meet the criteria to be considered ESUs. The petitioned ESU, or any combination of its genetic populations, cannot be considered ESUs because they are not both substantially isolated from other populations *and* important components of the evolutionary legacy of the mountain lion species. Although movement of individuals beyond the petitioned area is increasingly restricted, there has been some gene flow between the petitioned ESU and other mountain lion populations, and neither the petitioned ESU nor the genetic populations within it are totally reproductively isolated. Nor are the mountain lions within the petitioned area sufficiently genetically or morphologically differentiated from the larger California population to suggest the presence of distinct evolutionary lineages or evolutionarily important differences. Therefore, the Department concludes there is insufficient scientific evidence to classify the portions of the California mountain lion population petitioned for listing as one or several ESUs.

The Department also examined the petitioned ESU area and population through the lens of federal DPS policy. While the Department did not find the petitioned area to meet the federal criteria to be considered a DPS, the best available scientific evidence shows that a separate but similar area is discrete and biologically significant and meets the criteria to be considered a DPS. Furthermore, evidence indicates that mountain lions in the proposed DPS will become imperiled if management actions do not conserve habitat and restore connectivity between the genetic populations within the DPS as well as with the larger statewide population. Therefore, the Department recommends that the Central Coast and Southern California DPS of mountain lions, as delineated below, be listed as threatened under California law.

The Department's proposed DPS boundary (Fig. 22) would deviate from the petitioned ESU boundary near Mojave California where the petitioned ESU boundary runs east along Highway 58 to Interstate 15 to the California-Nevada border. Instead, the Department proposes a boundary that extends south from Mojave along Highway 14 to its intersection with Highway 138, then east to the intersection with Highway 18, along Highway 18 (which briefly becomes 7th Street in Victorville) to its intersection with Highway 247 in Lucerne Valley, then along Highway 247 to Highway 62, east along Highway 62 to Utah Trail/Park Boulevard/Pinto Basin Road south through Joshua Tree National Park to Interstate 10, then west along I-10 to Highway 86, and south along Highway 86 to the Westside Main Canal of the Imperial Irrigation District near Brawley, then south along the Westside Main Canal to its intersection with the All American Canal; from that intersection due south to the Mexico border and then west to the Pacific coast.

The Department also recommends deviating from the boundary at Interstate 5 near Stockton and using Highway 4 to the west as the DPS boundary until it intersects with Highway 160, then north along 160 to the Contra Costa County line, and from there along the Contra Costa and San Francisco County lines (which are in the middle of San Pablo and San Franciso bays) to the Pacific Coast.

The Department recommends including parts of the Tehachapi Mountains south of Highway 58 in the proposed threatened DPS (as was proposed as the boundary for the petitioned ESU). The genetic characteristics of mountain lions in this and adjacent areas show evidence of connectivity between the primary genetic populations within the DPS and the Western Sierra Nevada genetic population. Therefore, the Department concludes the area is critical for maintaining connection between the proposed DPS and the rest of the state. Highway 58 has been identified as a major barrier to movement of mountain lions (CDFW 2022c), and recent GPS collar location data indicated most lions with home ranges adjacent to or near the highway do not cross it (Vickers unpublished data). Therefore, Highway 58 appears to be the functional boundary between the large Western Sierra Nevada genetic population and smaller genetic populations of the central and south coast of California, and as such, the area south of the highway should be considered part of the proposed threatened DPS.

10. Management and Recovery Action Recommendations

California's statewide mountain lion population is complex and diverse. Large areas of the state appear to have robust, genetically diverse, and well-connected lion populations (e.g., NC and SN groups) while other populations show evidence of inbreeding depression and genetic isolation (e.g., SA, Santa Monica Mountains of the CC-S Genetic investigations have demonstrated the importance of the Sierra Nevada

region as a reservoir of genetic variation and a source of migrants into other regions of California (Ernest et al. 2003; Gustafson et al. 2019). The overarching goals of mountain lion management in the state should be:

- Maintaining and enhancing landscape connectivity between robust core populations and the smaller, more isolated populations within the proposed threatened Central Coast and Southern California DPS
- Protecting important patches of remaining habitat within the DPS from development and enhancing degraded habitats where feasible
- Reducing human-related mortality rates within the populations of the DPS

Increased connectivity would help offset the risks to small populations that result from demographic and genetic factors. Benson et al. (2019) found that sustaining mountain lion populations in isolated mountain ranges in greater Los Angeles (Santa Monica and Santa Ana Mountains) is feasible with relatively modest increases in landscape connectivity.

One area critical to restoring and maintaining genetic exchange between genetic populations is the Tehachapi Mountains which serve as the link between the relatively robust Western Sierra Nevada genetic population and the more tenuous Transverse Range populations in the CC-S and SGSB. Mitigating the barriers of Highway 58 and Interstate 5 to allow safer and easier dispersal across those roads should be considered high priorities, as well as the conservation of suitable habitat in the Sierra Pelona, Topatopa, and San Emigdio Mountains. Another critical area is the connection between EPR and SA. The EPR is the only genetic population known to exchange migrants with the SA population, and management actions which enhance gene flow between these areas will be critical to the sustainability and recovery of mountain lions in SA. Dispersal into and out of EPR is limited and the degree of dispersal across the border between the U.S. and Mexico remains unknown (Gustafson et al. 2019). While self-sustaining connectivity through a network of corridors, highway wildlife crossings, and habitat patches with functional ecosystem processes would be ideal for long term sustainability, assisted gene flow between populations through targeted translocations should be considered as a short-term management action to augment the genetic variation of the most isolated small populations.

The specific recommendations below are compiled from sources including the Petitioners, mountain lion researchers, Gustafson et al. (2022), the Department, and others, and are designed to facilitate the above goals.

10.1 Connectivity

- Identify the most strategic locations for wildlife crossing structures at existing roads and highways to improve wildlife connectivity and permeability, and design and build those structures while also protecting adjacent habitat to ensure perpetual wildlife access to the crossing structures and connections (South Coast Wildlands 2008). Crossing infrastructure should include, but is not limited to, overcrossings, underpasses, culverts, and exclusionary fencing that guides animals to safer crossing areas (Vickers et al. 2015). The following crossing locations have been identified by mountain lion experts and should be among the top priorities for the implementation of crossing infrastructure:
    1) Highway 58 near the town of Tehachapi

2) I-5 between the Grapevine and Gorman
3) I-15 Freeway at Temecula Creek Bridge to enhance the Palomar Linkage and connect the Santa Ana and Eastern Peninsular Range (Ernest et al. 2014; Gustafson et al. 2017; Zeller et al. 2017; Riley et al. 2018b)
4) I-280 between San Bruno and Cupertino, which is the "deadliest highway for mountain lions in California" according to Shilling et al. (2023)
5) Highway 101 in the Coyote Valley south of San Jose and at the recently conserved Rocks Ranch in Monterey and San Benito Counties
6) Highway 152 at Pacheco Pass
7) I-15 Freeway at the Santa Margarita Ecological Reserve near Temecula.

- In recognition of the importance of the Sierra Nevada region as a reservoir of genetic variation and significant source of migrants into other regions of California (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022), acquire, maintain, and enhance corridors and patches of suitable habitat linking the SN, CC-S, and SGSB, as well as corridors that connect the SA and EPR populations to one another and to SGSB. Emphasize the retention and expansion of protected habitat in the Tehachapi, Sierra Pelona, San Emigdio, Santa Ana, Santa Monica, and San Gabriel Mountains.
- Encourage land use and planning agencies at federal, state, county, and local levels of government to identify important corridors within their area of concern, to develop management plans, and to analyze connectivity impacts from projects, especially in the Tehachapi and Sierra Pelona Mountains (Gustafson et al. 2019) and between the SA and EPR (Vickers et al. 2015).
- Explore conservation translocations of outbred animals (i.e., genetic rescues) to quickly increase genetic variation in small, isolated mountain lion populations such as the Santa Monica Mountains (CC-S) and SA (Johnson et al. 2010). Translocations should only be used as a short-term strategy to help rescue declining populations from the adverse genetic effects of isolation and small population size (e.g., inbreeding). Translocations should not be considered a substitute for actions needed to support self-sustaining viable, genetically diverse populations over the long term, such as removing barriers and increasing landscape connectivity.
- Fund monitoring programs to evaluate the success of wildlife crossing structures, including monitoring the genetic variation and movements of mountain lion populations on either side.
- Dedicate sufficient funding from the Wildlife Conservation Board, Habitat Conservation Fund, and other state funding sources towards acquiring key mountain lion and wildlife habitat and for establishment of highway crossing infrastructure.
- Encourage the maintenance and restoration of riparian vegetation and habitats in the DPS to provide prey habitat, resting and feeding cover, and viable movement corridors between remaining patches of mountain lion habitat. This could include limiting water diversions in these areas if such diversions adversely affect riparian vegetation and wildlife communities.

10.2 Research and Monitoring

While the recommendations below apply statewide, priority should be given to projects that enhance understanding of mountain lion populations and behaviors in the proposed DPS.

- Periodically replicate genetic analyses similar to Gustafson et al.'s (2019 and 2022) work to monitor genetic variation within the genetic populations and signals of mountain lion immigration and emigration.
- Investigate whether heritable local adaptations are present within any of the identified broad-scale and/or fine-scale mountain lion genetic populations.
- Determine mountain lion distribution, abundance, resource selection at multiple spatial scales, movements and dispersal patterns, foraging ecology, and landscape genetics in the Sonoran and Mojave deserts, including the lower Colorado River region. Work collaboratively with tribes, adjacent states, Baja California, universities, other government entities (e.g., Caltrans, BLM, NPS, State Parks, USGS, Military), IUCN and IUCN Species Survival Commission Cat Specialist Group, and other NGOs.
- Develop rigorous population estimates for the individual genetic populations using available demographic data and/or population modeling techniques.
- Monitor wildfire responses to assess how mountain lions, other carnivores, and their prey will be affected by changes in fire frequency and severity.
- Evaluate trans-highway movements, resource selection, home range placement, and vehicle-related mortality of adult and subadult mountain lions (Cougar Management Guidelines Working Group 2005; McKinney 2011). Focus primarily on interstates in the South Coast Group (i.e., I-5, I-10, I-15, 101, 405).
- Investigate the influence of variation in black bear seasonal density on mountain lion kill rates and prey selection, habitat use, and kitten and adult survival. Also investigate areas where bears and mountain lions overlap with gray wolves to understand interactions.
- Design and fund collaborative surveillance programs to rapidly detect, diagnose, and determine the significance of disease outbreaks and emerging diseases such as avian influenza.
- Continue AR screening of livers from mountain lion carcasses to further study the locations and effects of AR exposure on mountain lion health and mortality. Continued monitoring should also measure the effectiveness of regulatory changes intended to reduce exposure of non-target wildlife to rodenticides (Rudd et al. 2018).
- Investigate potential correlations between habitat, genetics, and prevalence of health and disease issues.
- Refine understanding of the conditions associated with human-mountain lion conflict hotspots.
- Assess efficacy of non-lethal measures for mitigating/deterring mountain lions from depredating domestic animals.

10.3 Regulations and Policy

- Work with the California Department of Pesticide Regulation to improve the regulation of, and foster improved management of, second-generation ARs such as brodifacoum, bromadiolone, difenacoum, and difethialone to reduce mountain lion exposure, with an emphasis on Southern California and central coast mountain lion habitat areas and linkages and explore outreach efforts on this issue.
- Improve law enforcement for areas where second-generation AR use is restricted to ensure compliance with the state's regulations.

10.4 Partnerships and Coordination

- Continue to collaborate with Caltrans and others to analyze how projects in the State Highway Operation Protection Program and State Transportation Improvement Program can be designed to facilitate wildlife connectivity through wildlife passage features such as culverts, under crossings, overcrossings, bridges, directional fencing, scuppers, barrier breaks, roadside animal detection systems, signage, etc.
- Continue to collaborate with Caltrans and the Road Ecology Center at UC Davis to help collect and analyze roadkill data to identify hotspots where mountain lions, deer, and other animals are killed. Investigate funding channels for creating an open access statewide roadkill database for data download and analysis as needed by multiple interested parties.
- Encourage local governments to place conditions on new developments to minimize negative impacts on riparian systems and native vegetation by buffering the riparian areas to allow use by mountain lions and their prey. Conditions and measures should include provisions for the long-term management of such areas to maintain their viability as wildlife corridors and minimize wildfire threat and human disturbances. Promote efforts to restore riparian ecosystems and protected lands in the vicinity of wildlife crossing structures.

10.5 Public Education

- Continue to promote awareness and education regarding mountain lions, human safety, pet and livestock conflict prevention, pesticide exposure, and conservation messaging throughout the central coast and Southern California.
- Develop and implement outreach and education activities to promote use of predator-resistant enclosures for domestic animals (Vickers et al. 2015).

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Appendix A – Acronyms, Abbreviations, and Definitions

Caltrans – California Department of Transportation

CAL FIRE – California Department of Forestry and Fire Protection

CDFW – California Department of Fish and Wildlife

CEQA – California Environmental Quality Act

CESA – California Endangered Species Act

Commission – Fish and Game Commission

Department – California Department of Fish and Wildlife

Distinct Population Segment (DPS) – A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species.

Effective Population Size (Ne) – The number of individuals in a population that effectively participate in producing the next generation.

Evolutionary Significant Unit (ESU) – A term related to the federal Endangered Species Act originally applied to anadromous fish populations that designates a population that is substantially reproductively isolated from conspecific populations *and* represents an important component of the evolutionary legacy of the species.

F_{ST} – Fixation index. A statistic that measures population differentiation based on genetic structure.

Fine-Scale Genetic Populations – Populations of conspecifics whose growth rate depends predominantly on local births and deaths rather than immigration. Genetic populations discussed in this report include:

Central Coast North (CC-N) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes mountain lions in the Santa Cruz Mountains and east bay hills, extending south to approximately the Monterey County line.

Central Coast Central (CC-C) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which generally includes the mountain lions in the coastal mountain ranges from southern Monterey Bay to Ventura County.

Central Coast South (CC-S) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills.

Eastern Peninsular Range (EPR) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in eastern San Diego County to the Colorado River and the border with Arizona and is bounded on the south by the border with Mexico.

Eastern Sierra Nevada (ESN) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in the mountains of San Diego County,

extending east possibly as far as the Colorado River and the Arizona border, and bounded on the south by the border with Mexico.

Nevada (NV) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which encompasses mountain lions in most of the state of Nevada.

San Gabriel and San Bernardino Mountains (SGSB) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses and includes mountain lions in the San Gabriel and San Bernardino mountain ranges.

Santa Ana Mountains (SA) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that encompasses mountain lions in the Santa Ana Mountains.

Western Sierra Nevada (WSN) – The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that includes mountain lions from the Oregon border through the Cascades and Sierra Nevada Mountains to the Tehachapi Mountains and includes the Sierra Nevada foothills and much of the Central Valley.

Genetic Groups / Broad-Scale Genetic Groups – The four genetic groups for which Gustafson et al. (2022) found the strongest support through SNP analysis. These groups include:

Central Coast Group – Mountain lions from the San Francisco Bay and Sacramento-San Joaquin Delta south through the Santa Monica Mountains inclusive of Gustafson et al.'s (2019) Central Coast-North, Central Coast-Central, and Central Coast-South genetic populations.

North Coast Group – Mountain lions north of San Francisco Bay through the Coast Ranges to border with Oregon. Largely coincident with Gustafson et al.'s (2019) North Coast genetic population.

Sierra Nevada Group – Mountain lions from the Klamath, Cascades, and Sierra Nevada mountains from the Oregon border south through the Tehachapi Mountains inclusive of Gustafson et al.'s (2019) Western Sierra Nevada and Eastern Sierra Nevada genetic populations.

Southern Coast Group – Mountain lions in the San Gabriel and San Bernardino, Santa Ana, and Eastern Peninsular mountains inclusive of Gustafson et al.'s (2019) San Gabriel-San Bernardino, Santa Ana, and Eastern Peninsular Range genetic populations.

Microsatellite Markers – Repetitive segments of DNA scattered throughout the genome in noncoding regions between genes or within genes.

NMFS – National Marine Fisheries Service

NPS – National Park Service

Principal Component Analysis (PCA) – A statistical multivariate technique which transforms a large number of correlated variables into few uncorrelated variables which represents the whole data set.

Single Nucleotide Polymorphism (SNP) – a variation in nucleotides at a single position in a DNA sequence among individuals.

State Wildlife Action Plan – California's comprehensive plan for examining the health of wildlife populations and prescribing actions to conserve wildlife and vital habitat before they become more rare and more costly to protect.

USFS – U.S.D.A. Forest Service

USFWS – United States Fish and Wildlife Service

WDFW – Washington Department of Fish and Wildlife

APPENDIX B – Solicitation of information and comments received

Tribal Notification and Information Solicitation

Pursuant to Fish and Game Code section 2074.4, the California Department of Fish and Wildlife (Department) and the California Fish and Game Commission (Commission) notified affected and interested parties and solicited data and comments on the petitioned action to list mountain lions in central and southern California as one or more threatened or endangered evolutionarily significant units (ESU) under the California Endangered Species Act (CESA).

Tribal notifications were distributed by letter and email to tribes identified by the Native American Heritage Commission as having a cultural or traditional affiliation within the geographic area of the mountain lion. The tribal notice for the status review was dated May 13, 2020, and is provided at the end of this Appendix.

The Department received six comments in response to tribal notifications.

Summary of Tribal Comments Received

All six tribal responses came via email, and four tribes were supportive of protecting mountain lions, while the San Manuel Band of Mission Indians (SMBMI) stated they did not need to consult with the Department, and the Yocha Dehe tribe indicated a cultural interest in the mountain lion and the petitioned ESU. A brief summary of the tribal input is provided below.

San Manuel Band of Mission Indians (SMBMI) - stated "the SMBMI does not elect to consult with CA DFW on the status review of mountain lions in California".

Pala Band of Mission Indians - Pala agrees the mountain lions need protections...and Pala actively works to protect their lands and have cooperated with researchers such as Dr. Vickers, and they hope no undue burdens will be placed on their management on Tribal lands and that their sovereignty is respected in all decisions on this ESU.

Dunlap Band of Mono Indians - Dirk Charley (Tribal Secretary) spoke via telephone with Department staff on June 10, 2020, with an elder tribal member listening in. Notes from the conversation were recorded for the record by the Department at Mr. Charley's request. Summary of Mr. Charley's comments:

We admire and respect mountain lions; a creature of beauty; we know where they live and we don't disturb their caves and dens; we don't see them as a threat; humans have always lived with them; they should not be bountied, there are too few of them; we leave them alone; they have remained in the same number. He added that he worked as a firefighter for the USFS in the past and was able to see a mountain lion in the San Gabriel mountains while flying over the area in a helicopter in 1979-1980.

Rincon Band of Luiseño Indians - In their July 16, 2020 letter to the Department, the tribe asked to be notified and updated throughout the review process. They support listing of the mountain lion as an endangered species and consulted with the Department on June 24, 2020.

Yocha Dehe Cultural Resources - "The Cultural Resources Department has reviewed the [Mountain Lion ESU Review Policy] policy and concluded that it applies to areas within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed policy and would like to receive updates on the policy".

Santa Ynez Band of Chumash Indians - "The Chumash people have a special relationship with Mountain Lions and support this continued CESA listing". Their ancestral land is near the highway 101 Wallis-Annenberg overcrossing that is now under construction. They attached a large report depicting connectivity maps from the Santa Monica Mountains to points north toward the Simi Hills, Los Padres National Forest, and the Santa Clara River (State of the Linkage Report: East Branch of the Santa Monica-Sierra Madre Mountains Connection, dated January 2021).

All communications are on file with the Department and can be provided on request by emailing wildlifemgt@wildlife.ca.gov.

Public Solicitation

Pursuant to Fish and Game Code section 2074.4, the Department and Commission notified affected and interested parties and solicited data and comments on the petitioned action to list mountain lions in central and southern California as one or more threatened or endangered ESUs under CESA.

Requests for information were distributed by several methods:

On May 1, 2020, the Commission published a Notice of Findings regarding the candidacy and status review of the petitioned mountain lion ESU in the California Regulatory Notice Register (Cal. Reg. Notice Register 2000, No. 18-Z, p. 692).

On May 21, 2020, at the request of the Department, Fish and Game Commission staff utilized their confidential CESA Interested Parties list to notify interested parties of the initiation of the status review and to solicit data and comments on the petitioned action from interested and affected parties. Comments were directed to the Department contact.

Notifications were sent to the Petitioners (Center for Biological Diversity and Mountain Lion Foundation), and researchers studying mountain lions in California.

Notifications were sent to California Assemblyman Frank Bigelow, California Senator Henry Stern, California Cattlemen's Association, California Building Industry Association, California Association of Winegrape Growers, California Farm Bureau Federation, and California Woolgrowers Association.

Notifications were sent to 27 county-level Fish and Game Commissions and 32 county Board of Supervisors offices in California from counties within and adjacent to the petitioned area.

State of California departments notified included Caltrans, Pesticide Regulation, Parks and Recreation, and Food and Agriculture.

Federal agencies notified included select military bases, U.S. Forest Service, National Park Service, and the Bureau of Land Management. Additionally, the U.S. Geological Survey and the U.S. Fish and Wildlife Service (USFWS) in southern California was notified. The USFWS then forwarded the notice to the southern California Tri-County Connectivity Group via email.

Environmental entities notified included Defenders of Wildlife, National Wildlife Foundation, and the Sierra Club. Multiple county and city land managers, land trusts and conservancies were also notified. The Coachella Valley Association of Governments was also notified.

The public notification can be found at the end of this Appendix.

Summary of Public Comments Received

The Department received 253 letters or emails in total, including 226 form letters in support of listing from the public, some of whom were affiliated with Born Free USA, or In Defense of Animals. The Humane Society of the United States sent a letter in support of listing. Six letters were from state or local governments, though some were only acknowledgement of receipt of notice. Caltrans commented that they would like to work in partnership with the Department to minimize mountain lion mortality from vehicle strikes and to cooperate on building safe crossing structures for mountain lions. California State Park biologists provided information on lion distribution on State Parks lands. Mountain lion researchers in California provided reports of their work, publications, roadkill information, and various maps, for example, home ranges and dispersal paths of mountain lions. Dr. Fraser Shilling at UC Davis Road Ecology Center provided lion roadkill locations.

The Center for Biological Diversity sent two supplemental comment letters after their initial response to the public notice and provided e-copies of the literature they cited. Tanya Diamond with Pathways for Wildlife sent reports and roadkill data for the San Francisco Bay Area. One respondent needed assistance in engaging with the method to communicate with the Commission and provide comments on the petition. Six of the responses were from the public with no affiliation noted and were in support of listing. Other letters or emails supported research and connectivity efforts for mountain lions in the petitioned ESU but did not directly advocate for listing.

Two respondents sent similar emails in opposition to the ESU petition for listing of mountain lions in regard to the significant impact mountain lions can have on deer, bighorn sheep, and pronghorn antelope populations, along with livestock and pets.

The Department also received two substantive comments as follows:

The Tulare County Board of Supervisors sent a letter to register their opposition to the mountain lion ESU petition. Their concerns included the potential for impacting new development and limiting construction, along with changing how state and local agencies plan and build infrastructure which in turn could lead to higher costs and bigger roadblocks to development. They also voiced concern that listing could threaten local government's ability to thrive in a changing economy.

The Colusa County Fish & Game Advisory Commission requested that the petition to list the evolutionary significant unit (ESU) of mountain lions be denied. Their email stated that mountain lions are already protected in the State of California, and additional protections will only be detrimental to the other species, such as deer that have been negatively impacted by the lion population in the State.

All communications are on file with the Department and can be provided on request by emailing wildlifemgt@wildlife.ca.gov.

APPENDIX C – External Peer Review Comments

Pursuant to Fish and Game Code section 2074.6, the review process included independent peer review of the draft status review by persons in the scientific/academic community acknowledged to be experts on mountain lions and related topics and possessing the knowledge and expertise to critique the scientific validity of the status review contents. Appendix C contains the version of the status review sent to external reviewers, specific input provided to the Department by the individual peer reviewers, and the Department's written response to the input (Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2)). Independent experts that reviewed the Status Review are listed below (Table C1).

Table C1. Status Review peer reviewers.

Name	Affiliation
Seth Riley	National Park Service
Winston Vickers	University of California Davis
Chris Wilmers	University of California Santa Cruz
Holly Ernest	University of California Davis University of Wyoming
Paul Beier	Northern Arizona University

Comments by external reviewers are below, along with responses from the Department. Line numbers refer to the lines in the version of the status review sent to external reviewers (available at the end of the Appendix).

GENERAL COMMENT (Riley): Overall, the draft status review is an impressive document, covering a great deal of different topics about science and conservation related to mountain lions in the state, and in the coastal areas in particular. We appreciate the large amount of work that many folks in the Department have put into producing it. I enjoyed reading it and thinking about all of these important issues. I have many comments about the document, which I hope are helpful as you work to finalize it. Most of my comments, and all of the more substantive ones, I have put into the excel spreadsheet that you provided. There are also some comments or suggestions that are more minor, such as grammatical suggestions, typos that I noticed, or references that need more information. If those would also be useful, we could figure out a way to communicate those, just let me know. Although I have more than 180 comments overall, I will note that there is some repetition, since a particular comment is relevant in multiple places in the document (for example, mentioning that we have directly documented cases of close inbreeding in our study population). I will note also that in places where I suggest referencing or including mention of work that we have been involved with or results that we have found, it is because I think doing so would add clarity and value to the document, not to increase our citations or draw further attention to our work. Overall, in reference to the specifics of the California Endangered Species Act and its implementing regulations that you reference in your letter of November 2, 2023, I would agree with the conclusion that for mountain lions in parts of the petitioned area, including in the South Coast DPS that is proposed on p.102 of the document, they are in serious danger of becoming extinct due to the causes of loss of habitat and especially the continued fragmentation of their remaining habitat, which represents a "human-related activity."

Relative to the approach of evaluating Distinct Population Segments, I agree that this approach makes

sense, and I definitely think it was valuable to evaluate smaller units that just the entire petitioned area. We do have thoughts on the boundaries of a potential South Coast DPS, as we provide below.

I would say the most significant comment that we have overall is that we believe that another management unit would be valuable to consider for listing as a distinct population segment, or rather as part of the proposed South Coast DPS. And that based on the current criteria, along with some other criteria that we believe are worthy of consideration, we believe that such a management unit may also qualify for listing in the same way that the current document proposes to list the Southern Coast DPS (p.100-103, map p.102). Specifically, we would propose extending the northern border of the proposed South Coast DPS to the west from where Highway 14 crosses the Santa Clara River, across the 5 Freeway and along the Santa Clara River and Highway 126 through Lake Piru, Fillmore, and Santa Paula to Ventura. This would mean that the South Coast DPS would include the Santa Monica Mountains, where we have been studying the species intensively for the last almost 22 years, and where the population is largely isolated from other areas of suitable habitat and faces multiple current challenges. Importantly, the DPS would also include the two areas of habitat to the north of the Santa Monica Mountains, the Simi Hills, which are north of the 101 Freeway but south of Highway 118, and the Santa Susana Mountains, which are north of Highway 118 and south of Highway 126 and the Santa Clara River. The Simi Hills and the Santa Susana Mountains both have mountain lions and mountain lion habitat currently, and they are critical areas for maintaining and improving connectivity between the Santa Monica Mountains and all other areas throughout the state. We would further propose that the Management Unit, and therefore the listed DPS, also include a 10 km wide buffer north of Highway 126, since it is critical that connectivity be maintained across this highway as well.

This management unit could be called something like "Santa Monicas to Los Padres" since the focus is on the Santa Monica Mountains, but in order to preserve mountain lions in them, the Simi Hills, the Santa Susana Mountains, and indeed the area along Highway 126 and the Santa Clara River, are all critical to connect the Santa Monicas and Los Padres National Forest.

We believe that this Santa Monicas to Los Padres management unit would potentially warrant being listed as part of the South Coast group, based on the criteria presently in the draft status review. However, we also propose that some other criteria for "significance" are worthy of consideration, along with the ones currently listed on p. 79. In terms of the criteria currently in the document, we believe the Santa Monica Mountains population clearly represents a discrete population, based on physical, genetic, and behavioral criteria. Physically, it is separated from all other areas to the north by the 101 Freeway, one of the largest and most heavily trafficked freeways in the state, and indeed in the country. Behaviorally and ecologically, we have documented very low levels of successful dispersal between the Santa Monica Mountains and other natural areas to the north. And we have documented strong genetic differentiation and low genetic diversity in the Santa Monicas. In terms of significance, we believe that the Santa Monica Mountains and the surrounding areas represent a "unique and unusual ecological setting," as indicated in criterion a), because they represent a case of mountain lions in Los Angeles, a megacity of more than 10 million people. This is the only case in the state, or across their range, where mountain lions occupy such a setting, and there is only one other megacity in the world, Mumbai, India, that is occupied by a large felid (leopards). Wildlife in urban landscapes face unique challenges for survival and coexistence in the face of so many people and the human infrastructure, including things like freeways, that accompanies them. Though mountain lions persist on the edges of some other urban areas, such as Seattle, WA or Denver, CO, nowhere is the metropolitan area as large and fragmented, and the challenge as great, as in Los Angeles.

Aside from this criterion of a unique and unusual ecological setting for the taxon, we think there are three other criteria that it would be valuable to also consider for "significance", both for our proposed Santa

Monicas to Los Padres MU and for other proposed MUs as well. The first is a criterion related to ecological role. Mountain lions represent the only apex carnivore that regularly preys on the largest herbivores in the system, generally adult mule deer, in many parts of California. While it is the mandate of the National Park Service to protect all species in the parks, and we believe that they are all important for a fully functional ecosystem, mountain lions are the only species that fills its role. Predators can affect their prey both by directly killing and eating them, but also through behavioral effects that can be widespread and profound. Although we may not fully understand all of the ways that mountain lions affect their prey populations, including their main prey, mule deer, losing them from an ecosystem removes this important role. We propose that mountain lion populations are of significance wherever they are filling that role of primary predator on the largest ungulate prey. Their loss would be significant blow to the ecology of any place in California where they disappeared, with the exception perhaps of far northern parts of the state where wolves are reestablishing themselves. This would mean that in MUs such as the Central Coast North, including the Santa Cruz Mountains, where mountain lions are markedly separate and imperiled (based on Table 7 in the draft document), they would potentially also be deemed "significant" based on this ecological role.

Another biological criterion that we think is worthy of consideration is whether the MU serves a critical role in connecting to other populations in the state. Perhaps this is similar enough to criterion b), about loss of the MU representing a significant gap in the range of the taxon, that it could be incorporated into this criterion, but we think for mountain lions in California, explicitly mentioning the importance of connectivity between populations is important. Based on this criterion, the Central Coast South MU (depending on where it is considered to be located exactly, see comment below about defining MUs) would be significant, because it represents connection between the entire Central Coast and the Tehachapi Mountains, and therefore the whole rest of the northern part of the state, including the Sierras (WSN and ESN) and the North Coast. A potential Santa Monicas to Los Padres MU would also be significant from a connectivity point of view, because it would represent the only place for connection between the Central Coast broadly and the San Gabriels-San Bernardinos MU, and therefore to the rest of the South Coast Group (including the Santa Anas and the Eastern Peninsular Ranges).

Finally, the last criterion that we think is worthy of consideration is not biological, but we think is also relevant for conservation, and that is whether the population is of significance culturally to the people of the area. We would argue that the mountain lion population of the Los Angeles area is extremely important to those living in Southern California, and that it would be a great loss to them, and indeed to the people of the State of California more broadly, if the species disappeared from the Santa Monica Mountains and the Los Angeles area. This significance was specifically manifested by the outpouring of grief and concern about the fate and eventual death of mountain lion P-22, who we tracked for more than 10 years in Griffith Park, including the filling of the Greek Theater above Hollywood for his celebration of life. But the care and concern is not just for this individual lion, but for the species in the area more broadly. This is manifested by the success of the SaveLACougars Campaign to help fund the Wallis Annenberg Wildlife Crossing, and by the huge interest from the public and from the media in the Los Angeles Area and far beyond, in the mountain lions of the Santa Monica Mountains and surrounding areas. It is an amazing fact that mountain lions persist in the megacity of Los Angeles, and it represents not just a unique ecological setting, but also a part of our wild heritage that many might have thought was lost in a place like Los Angeles, but wonderfully is not. The successful coexistence of humans and a large felid in Los Angeles also shows us what is possible for wildlife and people. If mountain lions can survive in Los Angeles, then perhaps we can make it work for wildlife populations overlapping with human populations anywhere. Along with the other criteria, we believe that the mountain lions of the Santa Monicas are significant based on a potential cultural criterion.

One other general comment, which comes up also multiple times in my specific comments, is that we think it is important to clearly delineate where the management units in the document are located. Genetic populations can, and do, have potentially fuzzy boundaries, which can depend on factors like how intensive the sampling is in particular areas or whether an individual animal might be a disperser from another population or how strong the differentiation is for particular genetic markers. However, while it may make sense to generally base management units on genetic data, in the end it needs to be clear where a management unit, if it is to serve a management purpose, begins and ends. Currently the document does not draw these boundaries, that I have seen, but I think it is important to make them clear. This is especially important for example for the boundary between Central Coast South and Central Coast Central, or between the San Gabriels-San Bernardinos and the Eastern Peninsular Ranges. The boundaries can certainly be reevaluated and changed over time, but if we are to evaluate the management units and whether they are discrete, and how they relate to each other, we need to know where they are.

RESPONSE: Many of these comments are addressed individually and in more detail later in this document. Given the comments received as a whole from external reviewers, the Department reworked the status review. Major changes relevant to the broad comments here are that we no longer use the Management Unit framework, and the expansion of the area the Department recommends that should be listed to include CC-S including the Santa Monica Mountains.

GENERAL COMMENT (Beier): The writing is clear. Words are used appropriately. Well cited. The authors explained how the concept of Evolutionary Significant Unit works poorly for wide-ranging mammals under CESA. The authors could have used this to simply walk away from the task, but instead of taking that cowardly exit, they used the conceptual framework of Distinct Populations Segment. I greatly respect the thoughtful hard work that the authors put into this difficult assignment.

The main difficulty with the MU/DPS approach is that all these DPS's have arisen in the last century – a flash of time – and this part of California continues to experience such rapid changes in land use that the map could be dramatically different in 25 years. By the time these areas qualify as DPS, the better-off units may be endangered and some endangered units may be extinct... I wish we had a conceptual framework that does not have the 20-30 year time lag of the DPS framework. Populations in the Santa Anas, Santa Monicas, San Gabriels, and San Bernardinos have not been separated enough to qualify as DPS, and by the time they do qualify (in 20-30 years when genetic data lets us recognize them as DPS's), it may be too late to save them. Your report acknowledges this problem, e.g., Section 7.1 states "In the most isolated habitat patches (e.g., Santa Monica Mountains, Santa Ana Mountains), it is conceivable that local extirpations may occur in the absence of efforts to improve habitat connectivity and remove barriers to movement. Management intervention to develop a broad wildlife crossing infrastructure, including the protection and enhancement of large blocks of suitable habitat on each side of crossing facilities, to link MUs would increase connectivity and potentially alleviate the genetic and stochastic risks associated with small populations. Such an effort will require adequate funding and concerted and sustained commitment by many parties to ensure proper design, placement, maintenance, and monitoring for effectiveness." Translation: "Santa Monicas and Santa Anas do not qualify as DPS, so somehow without waiting for DPS status, "many parties" (CalTrans, County land-use planners, P&Z Commissions, City Councils) must "do something."

Your charge was to determine if any of the petitioned populations qualify as ESU or DPS, and not to tell these "many parties" what to do today (before these popns qualify as DPS). But please do tell these Many Parties that the main things they must do is control land development and mitigate barrier effects of roads, canals, high-speed rail, etc. If Many Parties don't take such steps, in another 20 years, we will be going through this same process all over again. CDFW is not obliged to prevent urbanization,

freeways, railroads, and intensive agriculture from causing future endangerment. But without a doubt, increasing connectivity among all MU's is the best action, and local land use planners and CalTrans are the key parties that can prevent DPS's from emerging.

RESPONSE: Due to this and other feedback, the Department reworked the status review and the areas mentioned are now included in the area recommended for listing, and there is a section on connectivity in the management and Recovery Action Recommendations section 10.1.

GENERAL COMMENT (Ernest): The staff and biologists at the California Department of Fish and Wildlife (CDFW) are to be commended for their work to compile and summarize information they gathered related to mountain lion ecology and research in California, in a report dated August 2023 in response to the 2019 "ESU Petition" for listing threatened populations. The CDFW report lists some of the many converging threats to coastal California mountain lions, threats which are acting in multiple and additive ways to degrade population viability throughout the California Central Coast and South Coast habitats. However, there are critical deficiencies in the CDFW proposal for mountain lions. The best scientific evidence and the projections for land use changes, and human-caused factors including climate change in California provide strong evidence that the geographic areas and mountain lion populations in the 2019 ESU Petition are appropriate for threatened listing protection. All of these regions have unique biota including endemic plant and animal species with which mountain lions have evolved.

The Southern Coast populations and the Central Coast populations are now effectively cut off from natural genetic interchange from other mountain lion populations. The Pacific Ocean bounds the west, the Central Valley and Mojave and Sonoran Deserts bound most of the east with effectively no, San Francisco Bay and Delta, major urban and industrial regions, and the border with Mexico bound the north and south.

One of the last vestiges of a critical migration corridor, necessary for genetic interchange with the Sierra Nevada - the Tehachapi Mountains - is rapidly closing due to massive housing developments in progress. The Central Coast habitats are now an island habitat, as are the South Coast Ranges. Declines and loss of mountain lions, a keystone species, in these areas would be a devastating loss in biodiversity and cultural history.

Therefore, not only the South Coast populations (Santa Ana Mountains and Eastern Peninsular Ranges) and the populations in the Transverse Ranges, but also the Central Coast Populations (those in the Santa Monica Mountains, the intervening Central Coast population, and north to the Santa Cruz population) warrant ESU status (substantially reproductively isolated from other conspecific population and represent an important component in the evolutionary legacy of the species) and/or DPS threatened listing per findings of "discreteness", "significance", and "conservation status".

In summary, the CDFW proposal is insufficient to protect mountain lions in the Central Coast Ranges, Transverse Ranges, and the South Coast Ranges. These populations are suffering "cuts by a thousand knives" from the threats outlined in the CDFW report, in the comments laid out here, and I'm sure, by other reviewers' comments. It is vitally important to recognize is importance of the very tenuous Tehachapi Mountains corridor to both the Central Coast Populations and those of the Transverse Ranges (including San Gabriel and San Bernardino Mountains), and South Coast Ranges (Santa Ana and Peninsular Ranges). Designation of Management Units alone as proposed by CDFW, without state threatened listing, is insufficient to prevent further degradation of intact populations for this keystone animal and its habitats. Listing protection is warranted for all mountain lion populations listed in the 2019 Petition. These populations fulfill requirements for an ESU for each of the Central Coast and the South Coast: substantially reproductively isolated from other conspecific population and represent an important component in the evolutionary legacy of the species). Each of the Central Coast and the South

Coast also fulfill the requirements for a DPS for each (per findings of "discreteness", "significance", and "conservation status".

RESPONSE: Many of these comments are addressed individually and in more detail later in this document. Given the comments received as a whole from external reviewers, the Department reworked the status review. Major changes relevant to the broad comments here are the inclusion of the Tehachapis in the area recommended for listing, and we are no longer using the Management Unit framework. The Department's conclusion as to whether the petitioned area qualifies as an ESU remains the same, and the argument can be found in section 6.1.

GENERAL COMMENT (Vickers): The California Department of Fish and Wildlife (hereafter the Department) personnel who undertook this review were faced with a monumental task, and I commend them for doing so. I am sure there were many people involved who undertook it with care and professionalism and they have my personal appreciation. Most of my comments either address methodological issues, choices of data, or conclusions based on their guidelines wherein I felt that other information should have also been given weight in the decision making. Though the genetic divisions in Gustafson 2019 and 2022 are a sensible organizing principle in evaluation of the risk to these six petitioned populations (collectively the ESU or individual ESU's in the petition but converted to Management Units in the Department's evaluation), it is wise to not lose sight of the fact that these genetic divisions exist predominantly because of manmade infrastructure on the landscape. This includes both highways and development of all sorts, much of which has been governed in its placement over time by very local land use decisions notwithstanding broader implications for this particular species, Puma concolor, or the mountain lion. The petition maintains that unless some modifications of current and future infrastructure decision-making occurs, and further fragmentation of the populations is prevented - especially in and between key connecting and source populations - that genetic deterioration will continue. That view is hard to dispute. The question at hand for reviewers is whether the conclusions the Department comes to when examining the question of additional legal protections for any or all of the six subpopulations is scientifically as sound as possible using current information. At several points in the report there is phraseology emphasizing the evidence of genetic exchange in the past suggesting that it will occur into the future, yet if that exchange had been happening at adequate levels up to now most of the current genetic divisions would not be there, and the Department would not be going through this exercise. . Current and expected changes in the state's development patterns and infrastructure should also be taken into account, though they are not a part of the formal decision making. Where I felt it appropriate I have pointed out expected impacts that I am aware of. Throughout the report, statements are made about census populations of the MU's that are being addressed - those population estimates are consistently based on one paper's estimates of Ne when not only is that regarded by geneticists as a misuse of that statistic, but it is suspect due to dramatically different values that are derived using Ne's from other analyses. I suggest that population estimates based on the Department's own research should be presented as well with information on strengths and weaknesses of all techniques since those estimates will be a part of how success or failure to prevent decline in these populations in the future is judged. Though population estimates did not enter directly into the decision matrix relating to Threatened listing determinations, population size is obviously a critical metric in the smaller populations, and one that needs to be monitored over time. The danger of an extinction vortex occurring with any of the smaller populations is always going to be present unless more substantial connectivity and in some cases lowered mortality rates are accomplished. In my opinion, use of MU's versus ESU's should be explained in more detail in the document. At numerous points in the report the comment is made that loss of one population or another would not significantly reduce the range of the species, however, both the central coast and south coast groups, and the ESU as a whole, seem to represent significant portions of the overall statewide mountain lion habitat in acreage terms, however

some terms like "significant" are not well defined when used at this and some other junctures. Given that the inherent meaning of the California Endangered Species Act is to prevent extirpation of wildlife populations, including subpopulations, it is odd that in this case the most at risk individual MU's are not being recommended in the report to be given extra protections. Obviously, the source populations for those smaller MU's are also both at risk and similarly isolated genetically, and dynamic increases in the built landscape that are inevitable in California make it more likely that they could become more so. A final broad concern is that in the final analysis matrix for the decisions regarding Threatened listing for any given MU, some of the most pertinent factors that go into population viability analyses (PVA's) such as survival rates, genetic factors such as inbreeding coefficients, heterozygosity, allelic richness, etc. were not included in the decision matrix at all. In my opinion, these factors are important in making the listing decision because they inform the likely trajectory of populations under current conditions absent further protections. Finally one challenging aspect of the evaluation of the CC-C and CC-S MU's was the question of where the Tehachapi Range fell within the MU structures. That range was noted multiple times in the report as an absolutely critical linkage for all six MU's that within the proposed ESU, but it didn't seem to be factored into the evaluations of either the CC-C or CC-S MU's as regards their importance as "gap" or "Significant" populations, which in turn was important in the decisions relating to being designated as Threatened. Other specific comments follow below.

RESPONSE: Many of these comments are addressed individually and in more detail later in this document. Given the comments received as a whole from external reviewers, the Department reworked the status review. Major changes relevant to the broad comments here are that we no longer use the Management Unit framework, the inclusion of the Department's most recent estimates of population size, and the expansion of the area the Department recommends that should be listed to include CC-C, CC-S, and the Tehachapis.

GENERAL COMMENT (Vickers): A final comment is that it seems to be acknowledged that these populations are as genetically restricted and isolated as they are from "business as usual". Thus an expectation that things will improve without intervention seems unreasonable. Perhaps, what may apply broadly to these populations in colloquial terms is the saying that "if you are in a hole, first stop digging".

RESPONSE: Noted

Line 84 (Ernest): The CDFW proposal also omitted sufficient protection for the increasingly bottlenecked migration corridor in the Tehachapi Ranges and Transverse Ranges, that comprise the last significant link of genetic interchange with the Sierra Nevada to the central and south coast populations. This will leave the Central Coast and South Coast Populations as fragmented habitat islands now, cut off from historic linkages for mountain lions that now lie heavily impacted Central Valley, San Francisco Bay and Delta regions, Los Angeles, San Diego, and adjacent urban, industrial, and agricultural areas. Without listing protection as geographically outlined by the ESU petition (which included alternate options in addition to a single ESU), these populations will continue on their population declines.

RESPONSE: Based on these and many other comments, the Department reevaluated the criteria for the recommendation and the area recommended for listing now includes the Tehachapis.

Line 293 (Vickers): Add the word "mountain" before "lion" and do so throughout the manuscript where it has been left out.

RESPONSE: Done

Lines 362-363 (Riley): This description of the Central Coast South population does not make sense, to include the Sierra Pelona Mountains, since these are on the other side of Highway 5, north of Highway

14. Highway 5 is a major barrier to mountain lion movement and gene flow, based on the work that we did on regional mountain lion genetics, in Riley et al. 2014, and in the Gustafson et al. papers, with animals in the San Gabriels and San Bernardinos being clearly differentiated from the Central Coast populations. Does the petition propose that the Sierra Pelona Mountains are part of Central Coast South? Either way, this does not make sense to include with the Santa Monicas, Simi Hills, and Santa Susanas. I'm wondering if the intent was to have the Sierra Madre Mountains, which are the next range north of the Santa Susanas, in the southern part of Los Padres National Forest, be included in the Central Coast South population? That would make much more sense. Either way, that would be the way to characterize it in this document generally, I think. The green areas in Figure 1, representing CC-S, definitely go up north of Highway 126 and the Santa Clara River into the Sierra Madre Mountains and Los Padres. Based on the genetic figures for southern California, figures 17 and 18, the Sierra Pelona samples would belong more with the Tehachapis and southern Sierra Nevada, it looks like.

RESPONSE: These descriptions of the geographic areas for the genetic populations are rough and meant to orient the reader, not to provide firm boundaries. Due to other comments from reviewers the Department reworked the status review, and the boundary of CC-S is less relevant.

Line 374-375 (Riley): Somewhere, the specific boundaries of the different Management Units that you are considering need to be made clear. They are not clear, in Figure 1, which is just the map from Gustafson et al. 2019. And the colors in the map are only as good as the coverage of genetic samples in the study, which though it was a huge number of samples and a great study overall, was certainly far from total coverage across the areas where mountain lions are present in the state. And so that limits exactly where these populations can be defined. But for management units, there need to be actual boundaries, it certainly seems to me. So I think it's important for those to be clear, somewhere in this document, at least once the Management Units are introduced on P. 75, which is not currently the case, I don't think. Incidentally, the Management Unit that we are proposing to be considered, the Santa Susana Mountains, the Simi Hills, and the Santa Monica Mountains, is very clearly delineated by major roads.

RESPONSE: Due to reviewer comments the Department reworked the status review and no longer uses the Management Unit framework. The genetic populations from Gustafson et al. 2019 and 2022 are discussed, but establishing firm boundaries is not necessary for the recommendation.

Line 445 (Riley): Does this "intraspecific predation" refer specifically to the killing and eating of kittens? If so, it would be good to make that clear. There is also intraspecific conflict between adult males and other animals, especially subadults, which is mentioned later in the document, and has been an important source of mortality in the Santa Monicas, especially early in the study (Riley et al. 2014, Benson et al. 2020). We have also documented predation on kittens by adult males, as I presume you mean that here.

RESPONSE: Text changed to “Adult males are also known to kill kittens, yearlings, subadults, and occasionally other adults (Logan and Sweanor 2010; Riley et al. 2014; Benson et al. 2020).”

Line 447 (Riley): It would be good to cite this statement about lower survivorship in dispersing animals, I think. It is definitely something that we have seen in our population, lower survival in subadults than in other age classes (Benson et al. 2016, Benson et al. 2020).

RESPONSE: Text changed to “Survivorship of dispersing mountain lions is low relative to adults with established home ranges (Benson et al. 2016; Benson et al. 2020), and dispersing young are more likely than resident mountain lions to be involved in depredation incidents or other conflicts with humans as they try to find prey without the advantage of an established home range (Torres et al. 1996).”

Line 465 (Riley): What does "numerous" mean here? It would be good to give the actual number, I think.

RESPONSE: "Numerous" is a direct quote from the paper, exact numbers aren't provided.

Line 477 (Riley): Riley et al. 2021 is not currently in the Lit Cited, so it needs to be added. Our averages, as given in this reference, are actually a bit higher than this, 370 km2 for adult males, and 135 km2 for adult females. Also, it would probably be valuable to add some other references from CA here, for home range size, such as a Wilmers and a Vickers reference. Home range sizes are similar, but not the same, in different areas; for example they are on average a bit smaller in Chris' study in the Santa Cruz Mountains. And Melissa's paper (Grigione et al.) is from 20 or so years ago, so it would be missing these more recent long-term studies. Finally, as regards this statement about home range size varying with prey density, it may be true, although I don't know how well documented it is. It would be worth citing, if possible (maybe Grigione et al. say that?). I think it's likely to be much more true of female home ranges, whereas males are generally more focused on having large home ranges to overlap as many females as possible, is the thought.

RESPONSE: Text changed to "Average home range size in California varies substantially depending on sex, season, and area of the state. The average male home range size is larger than the average female home range size. Home ranges change size depending on season and tend to be larger in the Sierra Nevada compared to the Coastal Ranges. In the Santa Ana Mountains and the Eastern Peninsular Range, Zeller et al. (2017) found that home range size varied from 41–497 km^2 (16–192 $mi.^2$; mean = 231 km^2; female mean = 188 km^2; male mean = 316 km^2). In the Santa Monica Mountains and surrounding areas, Riley et al. (2021) found the average home range size was 134 km^2 (52 $mi.^2$) for females and 372 km^2 (144 $mi.^2$) for males. In contrast, in the Sierra Nevada mountains the average home range size for females in summer was 541 km^2 (209 $mi.^2$) and 349 km^2 (135 $mi.^2$) in winter (Grigione et al. 2002). For males it was 723 km^2 (279 $mi.^2$) in summer and 469 km^2 (181 $mi.^2$) in winter. While male home ranges can overlap spatially, male mountain lions are territorial, making temporal overlap between males rare (Logan and Sweanor 2001). However, males attempt to overlap their home ranges with multiple female home ranges to enhance breeding opportunities (Logan and Sweanor 2010)."

Line 485-489 (Riley): Ken Logan has a recent paper in JWM (2019, vo. 83:1652), that looks comprehensively at what regulates mountain lion populations. It would definitely be valuable to look at and cite this paper, I think, for both of these last two sentences.

RESPONSE: text changed to "Given the importance of females to population growth, and because one male can breed with multiple females, mountain lion populations can be primarily limited by prey availability (Pierce et al. 2000; Logan and Sweanor 2001; Logan 2019)."

Line 482 (Riley): Somewhere in this section, probably in this paragraph, I think it's important to mention that in general for mountain lions all young males, and 1/2 of young females, disperse. This is a really important fact about mountain lions, both in general and specifically relative to connectivity and conservation, that I find that I often mention. I generally cite Logan and Sweanor 2010, from the Cougar book (Hornocker and Negri) for that.

RESPONSE: Text changed to "Mountain lions are known to move long distances while dispersing. One subadult male was documenting moving 2,450 km (1,522 mi.) from South Dakota to Connecticut (Hawley et al. 2016). Vickers et al. (2015) documented numerous southern California study animals dispersing > 80 km (50 mi.), and one young male moved approximately 150 km (93 mi.) from California south into Baja California, Mexico and back. Most long-distance dispersers are thought to be young males in search of available mates (Hawley et al. 2016). "

Line 501 (Riley): The Riley et al. 2014 reference here should be replaced by Blakey et al. 2022, which is the paper that talks about the fire and the mortality associated with it.

RESPONSE: Due to this and other feedback, this section has been extensively re-written.

Line 502 (Riley): We have documented many more cases of deaths from rodenticide poisoning since the 2007 paper. The best citation might be Benson et al. 2020 (in Biol Conserv, which would need to be added to the Lit Cited), which mentions 5 cases. You could also cite our reports to CDFW, specifically the ones covering 2018-2019 and 2019-2021. We have documented 7 total cases so far, 6 among collared animals and one uncollared.

RESPONSE: Due to this and other feedback, this section has been extensively re-written. Benson et al. 2020 has been added.

Line 502-504 (Riley): A few things about this sentence. First, and most importantly, it's not very useful in general to talk about raw numbers of mortalities from different causes, such as that 24% of deaths were from unknown causes. The raw numbers are misleading, and when you have data on how long he animals are tracked, computing rates of mortality, as was done in the paper, is a much more accurate and unbiased way to discuss the results. Second the specific statement here is not correct - it says 24% of tracked animals died of unknown causes, when in fact it was 24% of total deaths (64/263) - whereas it would be 11% of tracked animals (64/590, though that is even less useful to report). But also, I'm not sure what the point of this statement is, about the percentage of unknown mortalities being much larger than that for any other specific causes. That is true in just about any study of wildlife survival and mortality causes, for a number of reasons; it is often hard to determine what the cause of mortality is, despite intense vigilance and effort. The work that is included in the Dellinger et al. 2021b report and updated and made more rigorous in the Benson et al. paper is an amazing compilation of data on survival and mortality causes, unlike any that I know of for this species, for sure, and for many others as well. Since there are many different specific causes of mortality, and "unknown" is a broad category that is going to necessarily include many different things, it is not surprising that it would be large. If you did want to look at raw numbers of mortalities, I think perhaps one of the most striking things is that management killing alone, at 23%, makes up essentially the same percentage as the unknown category (24%). But as I said at the beginning, it is much more valuable to look at rates than numbers, and I'm also not sure what the point of this sentence is, so I would recommend deleting it.

RESPONSE: Due to this and other feedback, this section has been extensively re-written

Line After 504 or 521 (Vickers): Also note the effect on mountain lion survival that was exerted by patterns of voting on environmental issues as documented in Benson et al. 2023. Should Table 2 be based on Benson et al. 2023, or values from that analysis also included?

RESPONSE: Due to this and other feedback, this section has been extensively re-written

Line 505-511 (Riley): A few things about this paragraph. Most importantly, these are the same data that were analyzed in much more detail and more comprehensively, i.e. with a more complete dataset, in the paper on survival rates and mortality causes, Benson et al. 2023, and that paper should really be cited here. For example, just from our study alone, I know there were some animals that we followed that didn't make it into the analyses for the Dellinger 2021b report, but that did for the PNAS paper. I have spoken with both Justin, who is the senior author on the paper (by the way, many authors, including Justin, are currently left off of the citation in the Lit Cited), and John about this, and they would be happy to discuss it as well, if that would be helpful. The paper is also peer-reviewed, published in a very highly regarded journal, and more accessible to readers than the report, which are also good reasons to cite it. Also, the Dellinger et al. reference here is the wrong one, it should be 2021b, not 2021a (same thing for line 516). The 2021a reference is the report about depredation, not the one that includes survival rates. That is also leading to some confusion about the years included. The depredation report, 2021a, does go back to 1972 and 1973 apparently, but the survival data, both for the Dellinger et

al. 2021b report and for the Benson et al. paper, goes back to 1974 - so the survival analyses in the report are not "expanded" relative to the paper, and in fact, as I said, the paper includes more animals and mortalities than the report (e.g., the paper includes 263 deaths, while the report, as cited on line 507, includes just 246). Finally, just a comment about the organization of the section: it seems like this paragraph should go at the beginning of the section, as opposed to at the end, since it is presenting important overall information about survival of the species for the state.

RESPONSE: Due to this and other feedback, this section has been extensively re-written.

Line 513 (Riley): Again, it would be important to cite the detailed analyses of these same, but actually more complete and updated, data in Benson et al. 2023 here, along with the Dellinger et al. report.

RESPONSE: Due to this and other feedback, this section has been extensively re-written

Line 541 (Riley): I think we would say that mountain lions need sufficient tree or shrub cover to help them stalk and hunt deer, more than because those are areas that are favored by deer. Deer certainly use them too, although deer are often more abundant in areas with more open structure, such as grasslands, or at least a mix. We are working currently to learn more about what deer use and prefer in our region.

RESPONSE: Have added the text "and promotes cover for stalking"

Line 559 (Riley): I'm guessing that you mean "non-breeding" here, instead of "breeding"? Also, somewhat of a preference and stylistic thing, but my understanding is that in formal writing, "and/or" is discouraged at this point. In this case, I think you can definitely use "or." One thing that's interesting to think about in terms of "non-breeding" animals. In some cases, they may be capable of breeding, but just don't have any opportunities to do so. This is currently true of any animals that disperse out into the Midwest, east of Nebraska, or to the East Coast. There just aren't conspecifics out there for them to mate with. This was also true for P22, in Griffith Park. We tracked him there for 10 years, but we're confident that there were never any other lions there, including any females, and so he just didn't have any breeding opportunities. Same thing is likely true for a male lion that has been documented many times over the last few years in the eastern Santa Monicas, between 405 and the Hollywood Freeway (101, as it heads to downtown LA).

RESPONSE: Text changed to "may include non breeding or dispersing individual"

Line 563 (Riley): Justin's paper in JWM (Dellinger et al. 2020a), and so I presume what was in the 2021b reference as well, presented habitat selection patterns, not habitat use patterns, which are not the same thing. Selection involves examining use vs. availability, whereas use is the information on what the animals actually used. Selection analyses are very common and certainly valuable. Although personally I think it would be great if habitat use data was more regularly reported as well. For example, in the Burdett et al. paper (cited in this document), they found that chaparral was not selected for, since it's use was similar to its availability, but since it was the most common vegetation type, clearly it was important to the species.

RESPONSE: The quote comes from the 2021 conservation assessment, have added a definition of habitat selection in the footnotes.

Line 581 (Riley): It might be worth citing our recent habitat use and selection paper here, Riley et al. 2021 (which is currently cited elsewhere, but still needs to be added to the Lit Cited), since we directly addressed the use of selection of these scrub habitats, including both coastal sage scrub and chaparral in particular. We did not separate out chaparral into different ages, but chaparral was consistently both the most used and most strongly selected vegetation type for all age and sex classes. So we certainly did

not see evidence that there was chaparral that they were avoiding. As you say here, this statement from Burdett et al was speculation. We did also find that they avoided open parts of the landscape such as grasslands and landscaped areas such as golf courses or cemeteries (what we call "altered open" areas). We found that they were very rarely actually in urban areas, and in fact were often far from them, but we did find that from a distance-based perspective, they were closer to urban areas than expected, perhaps because deer are often in or close to developed areas such as low density residential areas.

RESPONSE: Have included suggested reference. Text now reads "Riley et al. (2021) found that mountain lions in the Santa Monica Mountains and surrounding areas selected "chaparral, riparian woodland, and coastal sage scrub. The two features of the landscape that they consistently avoided were grasslands and altered open areas, which were also the most open portions of the landscape. These results are consistent with previous work showing that mountain lions select areas with dense stalking cover and avoid open areas to facilitate hunting success." However, Burdett et al. (2010) speculated that dense, mature late seral chaparral may be avoided because mule deer prey cannot easily move through such stands and thus may select against them."

Line 603 (Riley): One point that I want to make clear about the genetics of mountain lions in the Santa Monica Mountains and the surrounding area, and the two state-wide Gustafson et al. papers that we participated in. In our 2014 paper (Riley et al. 2014), we found clear differentiation between mountain lions north and south of the 101 Freeway, before male P12 crossed the freeway in early 2009. After P12 crossed, survived, and began regularly mating in the Santa Monicas, that differentiation was not as strong, since he was clearly genetically assigned to the population north of the freeway. The Gustafson et al. papers used samples up through 2015 for our population (see Methods in Gustafson et al. 2022), so this was at the height of the influence of P12. It was also the case, for various reasons, that a number of the earliest samples from the Santa Monica Mountains were not included in the Gustafson et al papers. So it is potentially not surprising that the Santa Monica Mountains came out, in those statewide analyses, as part of the Central Coast South Cluster. Those papers gave a picture at a certain point in time, as of 2015. But as I've said multiple times in other comments, we then documented repeated cases of P12 mating with his daughters, close inbreeding events which would both reduce genetic diversity and increase the genetic similarity of animals in the Santa Monicas. And effective genetic dispersal in and out of the Santa Monicas has continued to be very rare. So doing the analyses with samples from a few years earlier, say 2010, or a few years later, say 2020, might give different results about genetic differentiation between the Santa Monicas and areas north. The genomic work happening at UC Santa Cruz, as well as work we are doing currently with UC Davis, will shed further light on the current situation, genetically. Regardless, we know from dispersal and tracking data that mountain lions in the Santa Monicas are a very small population isolated by a massive and busy freeway (Riley et al. 2014), that we have seen physical evidence of potential inbreeding depression (Huffmeyer et al. 2022), and that the population is in significant danger of going extinct, based just on demography, and especially if inbreeding depression worsens (Benson et al. 2016).

RESPONSE: CC-S is now included in the area recommended to be listed, which makes the details of genetic isolation of the Santa Monicas less relevant to the listing recommendation as a whole. The Department has included more details of the evidence of inbreeding in the Santa Monica Mountains later in the status review.

Line 603 (Riley): I think the Ernest et al. 2014 and Riley et al. 2014 papers might also be worth citing here. They aren't about the entire state, the way the Ernest et al. 2003 and the Gustafson et al ones are, but they are definitely about gene flow between different areas of the state, and in fact between different areas that are very relevant to the petitioned area.

RESPONSE: References added.

Line 608-635 (Vickers): The blanket statement that microsatellites operate on a scale of 100s of years and SNPs on 1,000s-to-10,000s of years is not accurate. Microsatellites mutate more quickly and have other characteristics that can inform contemporary population assessments, but because of interpretation differences between labs and other deficiencies, the information those analyses produce may or may not be as pertinent to the questions at hand as SNP analyses - though they too are subject to variation based on a number of other factors.

RESPONSE: Due to this and other feedback, the references of the time scales have been removed.

Line 610-614 (Vickers): The sentence "Though these populations show significant genetic differentiation, they are not fully isolated (Fig. 3)." is true but "full" isolation is not necessary for populations to continue to decline in heterogeneity and inbreeding levels, and be at risk of extirpation secondary to inbreeding depression and other factors. Benson et al. 2019 shows that though the populations in the Santa Ana and Santa Monica Mountains have some low level of current connectivity, that they will continue to decline in genetic diversity and be at significant risk of extirpation if current levels of genetic introduction are not improved. If the gene flow between the populations were as vigorous as the next sentence seems to suggest, the populations would not have become differentiated / separated genetically and as at risk of decline as they now are. Though some genetic exchange has occurred in the recent past and may be continuing, levels of gene flow have not been adequate to prevent the current genetic structural isolation from developing in the first place. In my opinion, it is safe to assume that absent improvements in current rates of gene flow that further genetic differentiation and deterioration will occur not only in the SA MU and SMM/CSU MU as predicted in Benson et al. 2019, but also in the other petitioned populations.

RESPONSE: This section has been rewritten and this sentence is no longer in the document.

Line 616 (Beier): A staggering amount of information, clearly displayed. Thank you, Gustafson et al. (2019)!

DOES NOT REQUIRE A RESPONSE

Line 631(Riley): So, the two Gustafson et al. papers that we did, are obviously two papers that used different genetic markers. But I think it's a bit misleading to say that they are two entirely different studies. They used the same overall sample of animals, it's just that the 2022 paper used a smaller number of them, less than 1/2. So it is not like the two papers and analyses were on different animals, or from different places in the state. I think it's important to make that clear somewhere. At the moment, the impression is that they are two entirely independent studies, which is not the case.

RESPONSE: The first sentence of the methods section of Gustafson et al. 2022 states "We obtained 354 tissue samples collected by the California Department of Fish and Wildlife between 2011–2017 from pumas which had never been used in any previous genetic survey. Therefore the majority of samples were novel. A smaller proportion of samples from Gustafson 2019 were reused in the 2022 study. These were limited to "the Los Angeles region of southern California"

Line 635-637 (Vickers): The following blanket statement "SNPs are known to resolve population genetic structure with higher resolution and greater statistical power than the microsatellites that were used in the 2019 study (Narum et al. 2013, Vendrami et al. 2017, Hohenlohe et al. 2018)." may or may not be true dependent on numerous factors including the wildlife population, qualities and quantifies of each set of SNPs or Msats, genetic diversity in the populations, genetic bottleneck demography, and more. Thus the statement should be reworded as with the statement about timescales noted above (lines 608-635).

RESPONSE: This section has been rewritten and no longer includes this sentence.

Line 661 (Vickers): From the report line 661 "the CC-S genetic population is of critical importance to sustaining statewide gene flow because of the intersection of dispersal corridors connecting the SN, CC, and SC broad scale genetic populations." thus it seems incongruous not to regard it as a critical "gap" later in the same document (lines 2586-2608) , especially given that the Santa Monica Mountains at-risk population is contained within it.

RESPONSE: This section has been rewritten, and this sentence has been removed.

Line 662 (Riley): I totally agree about the importance of the CC-S group for connectivity for the state overall, both for connections of the coast to the Sierras, and therefore to the North Coast, and for connections to the San Gabriels and thereby to the rest of the South Coast Group. As we say later, we think the CC-S area overall may be important enough to consider for listing because of this importance for connectivity.

RESPONSE: Due to this and other feedback, CC-S is now in the area proposed for listing

Line 663 (Riley): This statement indicates the value of the SNP data, along with the microsat data, for evaluating relatively recent land use changes, such as anthropogenic development, and their effects on connectivity and landscape genetics. I mention this here because later there is a statement about SNP data not being useful for these kinds of changes, which I disagree with, and which I have discussed with other population genetics researchers, who also don't feel that it is true.

RESPONSE: Have reworked this section and references to the time scale that can be illuminated by SNP and microsatellites data.

Line 667 (Riley): What is the relevance and meaning of this "horseshoe"? It's not clear to me why this matters, and what it means that the South Coast Group and the Santa Monica Mountains are not part of it, as mentioned at the end of the paragraph.

RESPONSE: Have reworked section to remove mention of a horseshoe.

Line 678 (Riley): As I also say in other places, it is reasonable to use genetic data to guide the determination of management units, but somewhere the actual boundaries of these management units need to in fact be delineated. Genetic clusters can, and do, have somewhat nebulous boundaries, based on exactly how intensive the sampling is in particular areas, and any particular sampled mountain lion can also potentially be a disperser from somewhere else. So the boundaries of genetic clusters can be fuzzy. But the boundaries of a management unit need to be real and understood, I would argue, if management may vary between them. Right now, nowhere in this document are the boundaries of the MUs made clear, that I know of. This is especially important for the boundaries between the various MUs in the petitioned area, such as between CC-N and CC-C, between CC-C and CC-S, between CC-S and SG-SB, and between SG-SB and EPR.

RESPONSE: Due to feedback on our previous lack of consideration of the whole petitioned area as a DPS, the Department evaluates the petitioned area as a whole and the Management Unit framework is no longer necessary to the assessment of what areas to potentially list. This section has been deleted.

Line 669 (Vickers): This line has an example of a tendency within the whole report to mix descriptions of the CC-S MU between referring to it as CC-S MU and referring to it as the Santa Monica Mountains (SMM) population, even though the CC-S MU extends substantially to the north of the SMM. This leads to some confusion later since the small SMM population is treated as its own entity in some of the report, but is generally characterized as a part of the rest of the CC-S MU. By evaluating the SMM population's justification for listing as Threatened only if the CC-S MU as a whole is listed ignores the Benson et al. 2019 work and makes the assumption that the Wallis Annenberg wildlife bridge under

construction over US 101 assures adequate connectivity to remove the risk to the SMM population segment. That assumption is unproven at this point and that should be noted. Also see my comments later in the report regarding the CC-S MU.

RESPONSE: There is increased specificity about when the document is referring to the animals within in CC-S genetic population, the broad area of CC-S, or specifically the Santa Monica Mountains. The recommendation for listing now includes CC-S.

Line 670 (Vickers): In Gustafson et al. 2019, allelic richness for all six populations proposed for listing as threatened was significantly below the values found for the ESN, WSN, and NC MU's . In the Gustafson et al. 2022 paper, allelic richness corrected for sample size was similarly significantly lower for all 6 petitioned populations than the ESN and WSN populations, though this is a less valuable parameter in SNP analyses than in microsatellites. Allelic richness is important for assessing population stability and risk of decline but is not mentioned at all in this report. Other genetic parameters such as heterozygosity, inbreeding coefficients, etc. that vary between the populations are discussed, but values are not factored ultimately into the population assessments used to make the determination about Threatened status. I suggest that this should be corrected and that genetic factors other than connectivity be included in evaluation of each MU in order to present the most complete picture possible of the risks to the various petitioned MU's. This can also inform expectations of population trajectories in the absence of the extra protections afforded by the Threatened listing - i.e. a "steady as she goes" situation.

RESPONSE: The Department uses effective population size estimates as one factor in evaluating risk. Other measures of genetic diversity mentioned in the comment do not have general 'rules of thumb' regarding how low levels can be before there is risk. Therefore discussing additional metrics of genetic diversity would be more descriptive rather than helpful in assessing risk and informing the recommendation.

Line 672-717 (Vickers): This comment refers to the section on Management Units, which is no longer included in the status review. The Department considers the justification for using the DPS criteria as outlined in section 6.2 to be sufficient.

Line 692 (Riley): All of these factors are especially challenging for the population in the Santa Monicas: habitat loss and fragmentation, vehicle mortality, wildfire impacts, and mortality from rodenticides. The one exception is depredation mortality.

RESPONSE: Noted, and the impacts of these threats on the Santa Monicas are mentioned in Section 4 Factors affecting the ability to survive and reproduce.

Line 700 (Riley): The lack of dispersal into or out of the Santa Monicas is another important way in which they are discrete from other areas to the north. As we mention first in Riley et al. 2014 but have also continued to document since then, there is very little successful dispersal in or out of the Santa Monicas. As we discuss in more detail later, we suggest considering the Santa Monicas as an MU as well, or more specifically the Santa Monicas, Simi Hills, and Santa Susana Mountains, since the latter two areas are critical for persistence of the Santa Monicas, as an MU called "Santa Monicas to Los Padres."

RESPONSE: The area mentioned is included in our updated recommendation for listing, which removes the relevance of defining the boundaries of this particular management unit.

Line 710 (Riley): So based on this measure, since none of the 6 MUs have at least 10% migration between them, it seems like they should all be determined to be "discrete," in the Table later in the document, Table 7 on page 81. Why would this criterion not be used, or at least discussed and included, in that assessment?

RESPONSE: Based on feedback from external reviewers, The Department no longer uses the Management Unit framework, nor do we evaluate whether the individual genetic populations meet the criteria of being a DPS, and have removed the mentioned table.

Lines 714-717 (Vickers): The text suggests that the SNP data from Gustafson et al. 2022 is less suitable than the data from Gustafson et al. 2019 for defining MU's for evaluation in the rest of the report. The report also eschews use of the Gustafson et al. 2022 for certain aspects of the evaluation because it is more informative of more ancient genetic structure, yet many samples used in the 2022 analysis were quite contemporary. Also, despite the statement in the report that the Gustafson et al. 2022 analysis is less suitable for individual MU evaluations, later in the report the Department chooses to group MU's into Central and South Coast Groups based on the Gustafson et al. 2022 data.

RESPONSE: Based on feedback from external reviewers, the Management Unit framework is no longer used.

Line 745-747 (Riley): What were these estimates, of 600 mountain lions and 2,400 mountain lions based on? I think at least some indication of where they come from would be valuable.

RESPONSE: Text amended to read "McLean (1954) presented bounty numbers from 1907-1950 and estimated there were 600 mountain lions in California at the time. Over a decade after the end of the bounty period, Sitton (1977) estimated that there were approximately 2,400 mountain lions in California."

Line 752 (Riley): I don't think Paul and Winston would refer to the Santa Anas as rural, would they? There are certainly places there that would feel more rural, but in general, Paul's study of lions in the Santa Anas in the early 90's is considered to be the first ever study of mountain lions in a more urban landscape! And that is certainly how Winston has portrayed work there as well, and I know he and his colleagues have followed animals going close to and even into developed areas.

RESPONSE: This section has been deleted.

Line 755 (Riley): The better reference for survival rates in our study would be Benson et al. 2020 (Biol Conserv. 2020 241:108294), which is where we directly measured and report survival rates for the first 18 years of our study and for 58 tracked animals.

RESPONSE: This section has been deleted.

Line 757-760 (Vickers): Benson et al. 2023 actually found that the SA MU population survival rate fell within cluster 1 in his statewide survival analysis. Cluster 1 is the cluster with the greatest human presence and a higher survival rate than cluster 2, which included the EPR MU - one that exists in an area of more rural development overall. Definition of what constitutes a population "sink" might be useful here if either MU is being characterized that way. This should also apply to discussions of the other MU's.

RESPONSE: This section has been deleted.

Line 760 (Riley): The Benson et al. 2023 paper also provides survival rates from areas across the state, in the most comprehensive analysis of mountain lion survival in CA to date. So it seems like that could be valuable to discuss more in this section if it is addressing survival.

RESPONSE: The sections on survival and mortality have been reworked to focus on Benson et al. 2023.

Lines 762-798 (Vickers): The Department relies strictly on extrapolation from Ne to arrive at approximate population census numbers for the MU's in the document. Though the Department cites its use in the case of the Florida panther as justification, it is my understanding that Ne is not in fact

regarded by most geneticists as an appropriate way to arrive at those population numbers. My comments regarding Ne and its most appropriate use for this overall evaluation may be seen elsewhere in the review. The Department's own current and former scientists in concert with most of the mountain lion researchers in the state have calculated population density values for the populations in the geographic regions covered by the proposed ESU. The Department utilizes one of the outputs from that modeling when it lists the statewide population as 3,242. That population estimate is derived from two of the three models that were developed in that effort. A breakdown of estimated population levels in each of the petitioned population segments as a function of all three models, alongside values derived from the Ne's in both Gustafson papers, would be most informative to readers and the most complete presentation of information known at this time.

RESPONSE: Due to this and other feedback this section has been extensively reworked. The Department uses an estimate based on fecal DNA data only because it is the method in which there is the most confidence. Adding telemetry data to the model would potentially bias the estimates high. The Department has a contract with UC Berkeley to better figure out how to incorporate telemetry data into the population estimates. The Department's estimate has not yet peer reviewed and may receive feedback and change before publication in a peer reviewed journal. Included are populations level estimates based on SCR modelling and removed were estimates of population size based on effective population size. While it would be possible to present multiple population estimates with a discussion of the strengths and weakness of each method, that sort of technical discussion is more appropriate in the peer reviewed literature and would not change the end outcome, that there are multiple small populations that are isolated and face a variety of threats.

Line 766 (Vickers): The models utilized to date in the Department's statewide population estimate are pending peer review and result in a range of values for the statewide estimate depending on the model. These should be included in the discussion here with ranges and comparisons to the Ne-based population values derived from different Ne values in various analyses.

RESPONSE: Due to this and other feedback this section has been extensively reworked. The Department uses an estimate based on fecal DNA data only because it is the method in which there is the most confidence. Adding telemetry data to the model would potentially bias the estimates high. The Department has a contract with UC Berkeley to better figure out how to incorporate telemetry data into the population estimates. The Department's estimate has not yet peer reviewed and may receive feedback and change before publication in a peer reviewed journal. Included are populations level estimates based on SCR modelling and removed were estimates of population size based on effective population size. While it would be possible to present multiple population estimates with a discussion of the strengths and weakness of each method, that sort of technical discussion is more appropriate in the peer reviewed literature and would not change the end outcome, that there are multiple small populations that are isolated and face a variety of threats.

Line 770 (Vickers): This statement is not accurate that populations could not be estimated for each of the petitioned populations. The fecal DNA study that the Department cites to state a statewide population estimate was conducted in such a way as to provide the ability to estimate density of the lion populations in each of the six petitioned population segment areas or MU's as the Department is defining them. As an example, density estimates from that study averaged from 1.5-1.84 animals per 100 sq km, resulting in a population estimate of 30 - 37 animals in the SA MU. This is consistent with other studies that have been done in the range (Beier et al. 1993, Vickers et al. 2022). It is possible to calculate these values for each petitioned area and I would recommend that those values be included in the report for comparison with the values derived from Ne that are presented.

RESPONSE: Due to this and other feedback this section has been reworked. The estimate based on fecal

DNA data is the method in which the Department has the most confidence. Included are populations level estimates based on SCR modelling and removed are estimates of population size based on estimated population size.

Line 774 (Vickers): The following statement "Effective population size essentially estimates the number of breeding adults in a population that successfully pass their genes on to future generations, recognizing that only a portion of adult animals in a population breed (see section 4.9.3 for more information on Ne)." is not accurate. The wording may be from literature that is commonly misinterpreted, and if used to predict population census size tends to be inaccurate due to the variation in factors that influence Ne. Presenting the values simplistically as a direct way to predict population census is not appropriate. As can be seen from comparisons of the multiple estimates of Ne from the two Gustafson papers that the resulting population census statewide or in any of the genetic clusters would vary widely. From Waple 2022, "Few doubt that effective population size (Ne) is one of the most important parameters in evolutionary biology, but how many can say they really understand the concept? Ne is the evolutionary analog of the number of individuals (or adults) in the population, N. Whereas ecological consequences of population size depend on N, evolutionary consequences (rates of loss of genetic diversity and increase in inbreeding; relative effectiveness of selection) depend on Ne. Formal definitions typically relate effective size to a key population genetic parameter, such as loss of heterozygosity or variance in allele frequency. However, for practical application to real populations, it is more useful to define Ne in terms of 3 demographic parameters: number of potential parents (adult N), and mean and variance in offspring number. Defined this way, Ne determines the rate of random genetic drift across the entire genome in the offspring generation. Other evolutionary forces (mutation, migration, selection)-together with factors such as variation in recombination rate-can also affect genetic variation, and this leads to heterogeneity across the genome in observed rates of genetic change. For some, it has been convenient to interpret this heterogeneity in terms of heterogeneity in Ne, but unfortunately, this has muddled the concepts of genetic drift and effective population size. A commonly repeated misconception is that Ne is the number of parents that actually contribute genes to the next generation (NP). In reality, NP can be smaller or larger than Ne, and the NP/Ne ratio depends on the sex ratio, the mean and variance in offspring number, and whether inbreeding or variance Ne is of interest."

RESPONSE: Due to this and other feedback this section has been reworked and no longer uses Ne to estimate population size. The discussion of effective population size has been moved to section 4.10.3 Loss of Genetic Variation. The definition now reads "Ne is the size of an ideal population that would result in the same level of inbreeding or genetic drift as that of the population under study (Palstra and Ruzzante 2008). Though Ne is determined by several factors, it is generally significantly less than the census population (i.e., the number of animals actually breeding in a population is usually significantly fewer than the total number of animals in the population; Palstra and Ruzzante 2008, Table 6). "

Line 778 (Ernest): Effective Population Size, Ne, should not be used to infer or in any way calculate census size, N – Table 3 – this table and all references to such calculations of N from Ne in the report should be deleted from use in the CDFW proposal. See Waples 2022. Ne is an index calculated on genetic data in this case (or demographic data in other cases) but has too many generalizing assumptions that mountain lions do not meet, to in anyway infer the number of lions in a population.

RESPONSE: Thanks to this and other feedback this section has been reworked and no longer uses Ne to estimate population size.

Line 779 (Vickers): As noted above, the population estimates in Table 3 are not calculated using a well-supported technique. The assumption in the report that the breeding structure of the Florida panther at a time in the past is identical to the current breeding structure in each of the California populations is

inappropriate. Each population estimate has major assumptions built in. I suggest that the report should list (in tables) Ne estimates from both Gustafson et al. analyses (2019 and 2022) and possibly those based on earlier work (Ernest et al. 2014, Benson et al. 2019) along with explanations of the deficiencies and cautions related to use of Ne when applied to population census estimation. Substantial variation in values can arise from differences in algorithms, sample selection, microsatellite selection, SNP selection, and level of inbreeding present, as well as other factors. As an example relating to Ne, the population estimates based on the two Gustafson analyses vary substantially for many of the subpopulations being assessed. An example is the SA MU population, where the 2019 value of 15.6 for the SA Ne results in an estimated adult population of 31-62, whereas the Ne calculated in the 2022 paper for the SA population of 3.5 results in an adult population estimate of 7- 14. Because populations lose heterozygosity at the rate of -1/(2Ne), SNP estimates put that rate at 1/7 whereas microsatellites put it at 1/40ish. Because Gustafson et al. 2019 and 2022 used the LDNe metric means based on linkage disequilibrium, SNP's would provide more information for that estimate. This suggests that the Ne of 3.5 in Gustafson et al. 2022 is likely more accurate, though the resulting population estimate is lower than suggested by recent total population estimates derived from non-invasive sampling and telemetry studies in the SA MU (Vickers et al. 2022, Vickers and Dellinger unpublished data). The two analyses may be substantially different because the Gustafson et al. 2019 analysis used fewer microsatellites that are not closely linked, the usual goal of a microsatellite project. Also, many contemporary samples were used in the 2022 SNP analysis, which included many of the offspring of M86, a male who produced eleven offspring that were in the sample set (Gustafson et al. 2018). This would have reduced Ne due to the 1:1 breeding ratio. Population estimates for the six petitioned MU's that result from density estimates developed by present and former Department personnel and statewide researchers should also be presented in the Table with the acknowledgement that these estimates are not just adult animals, but they do give a comparison point and likely a more accurate overall picture of the populations in the petitioned ESU's/MU's.

RESPONSE: Due to this and other feedback this section has been reworked and no longer uses Ne to estimate population size. The discussion of effective population size has been moved to section 4.10.3 Loss of Genetic Variation. The definition now reads "Ne is the size of an ideal population that would result in the same level of inbreeding or genetic drift as that of the population under study (Palstra and Ruzzante 2008). Though Ne is determined by several factors, it is generally significantly less than the census population (i.e., the number of animals actually breeding in a population is usually significantly fewer than the total number of animals in the population; Palstra and Ruzzante 2008, Table 6). "

Line 791: The estimate of 12-24 adult mountain lions in the Santa Anas based on the Ne of 6 in Benson et al (derived from telemetry studies and calculations based on available habitat) is substantially below the adult population estimate of 31-62 in Table 3. More recently in 2021 and 2022, spatial mark-recapture based density estimates from non-invasive sampling (hair and scat) resulted in estimates of approximately 30 to 40 individuals (not all adults) (Vickers et al 2022, Vickers and Dellinger unpublished data). Scat based individual ID's lack age information, so it is presumed that those numbers are representing all animals above young kittens, thus the adult population would be expected to be substantially lower, and unlikely to be within the range of 31-62 adults in Table 3. Calculations of the likely territorial adult population based on habitat availability and territory sizes in the SA MU (Benson et al. 2019), also are substantially lower than the values in Table 3.

RESPONSE: Based on these and other comments, there are no longer estimate population size based on effective population size. Instead estimates are derived from a statewide model, presented in Table 3.

Line 798 (Vickers): Add Gustafson et al. 2022 to the references there.

RESPONSE: Done

Line 815 (Riley): What is the "South Coast Province"? Where does that include? This is not a term that I'm familiar with.

RESPONSE: Have modified text to read "Development impacts have been extensive in the greater San Francisco Bay area, Sacramento, and San Joaquin valleys (water diversions, agricultural development, and residential development), and the Los Angeles Basin and adjacent mountain ranges south to San Diego (residential, commercial, agricultural, and industrial uses). "

Line 827 (Riley): I think you need a reference, or 2 or 3, here that are actually focused on fragmentation, instead of referencing the Wildlife Action Plan which, though it may mention it, is not a publication that is addressing fragmentation. There are probably some references in there that could work. Same thing with the next sentence.

RESPONSE: The information in this section is relatively broad, and the SWAP is the most up to date statewide resource for these issues.

Line 838-840 (Riley): What are you defining as "southern California" and the area where there are 24 million people? I think this needs to be clear.

RESPONSE: Added reference to Wikipedia's page on Southern California which lists population from the 2020 census and the 10 counties in the area.

Line: 857 (Vickers): Add Burdett et al. 2010 after "2030" at the end of the sentence

RESPONSE: Done

Line 863 (Riley): I would add "across the 5 Freeway" or something like that, after "CC and WSN MUs", since you're mentioning I-15. Also, the Huffmeyer et al. reference is for the SAs, as well as for CC-S. It might also be worth adding something to the end of the paragraph about isolation in the Santa Monicas, like: "In the Santa Monica Mountains and Santa Susana Mountains of CC-S, there is evidence of restricted movement and gene flow from the 5, 101, and 405 Freeways."

RESPONSE: Text altered to "Similar connectivity challenges occur due to Interstate 5 between the CC and WSN MUs. Recently published information on reproductive and morphological abnormalities in mountain lions indicate inbreeding in the CC-S, SA, and EPR (Huffmeyer et al. 2022). "

Line 872 (Vickers): Add "to" after "projected"

RESPONSE: Done

Line 880 (Riley): Yes, and along with the potential for increased intraspecific aggression, we have also documented many cases of very close inbreeding between fathers and daughters, which although it may occur occasionally in other populations, seems much more common in our small, isolated one. It was documented in Riley et al. 2014, but also in our report to CDFW covering the mountain lion study from 2013-2016.

RESPONSE: This section has been reworked. The information about inbreeding is mentioned in section 4.10.4 Genetic Impacts on the Populations Within the Petitioned ESU.

Line 910 (Vickers): Add "of" after "proportion"

RESPONSE: Done

Line 912 (Riley): How many home ranges was this based on? Is there a reference for this? Is it also the Meinke reference? This reference is incomplete in the Lit Cited (as are a number of other references; they all need to be double-checked), it is unclear what it is - a thesis? A report?, Nor is there any information about how readers can acquire it.

RESPONSE: Meinke reference issue fixed. Text altered to "A study of nine mountain lion home ranges in the redwood forest of northwest California found mountain lions used forest areas with a greater proportion of fragmentation and edge more frequently than areas of more contiguous forest; however, lions generally avoided areas of active timber harvest operations (Meinke 2004)."

Line 927 (Riley): We should make sure that you all have all of our vehicle mortality records. We worked with Esther and others to provide them, but based on the map in Figure 6, it looks like some are missing. Also, we had a really bad year for lion mortality in general, and from vehicles in particular, from early 2022 through early 2023. 15 lions died, 9 collared ones, and most of those were from vehicles. It says here that it is just through 2021, so maybe you aren't including those, but we can certainly provide them if it is useful.

RESPONSE: Map updated.

Line 939-940 (Vickers): The SA MU does not "include the greater Los Angeles metropolitan area" - it is considered to be a portion of that area, as are the CCS and SGSB MU's. In contrast it is probably correct to state that the greater San Diego Metropolitan area is included within the EPR MU, since in contrast to the SA MU (Santa Ana Mountains only) the EPR MU encompasses multiple mountain ranges both surrounding and far from the San Diego metropolitan area.

RESPONSE: The Department is no longer using the Management Unit framework. Text changed to "From 1981 to 2013, reported vehicle strikes accounted for 53% (50/94) of known mountain lion deaths in the SA genetic group (which includes parts of the greater Los Angeles metropolitan area) and 30% (46/154) in the EPR genetic group (which includes the greater San Diego metropolitan area) (Vickers et al. 2015)."

Line 940 (Riley): This gets again to the question of what the boundaries of the MUs are. I definitely wouldn't think that the SA MU includes the Los Angeles Area broadly, and certainly not the north and west parts of LA which are in the Santa Monica Mountains and adjacent to the Santa Susana Mountains. Vehicles have also become the major source of morality in the Santa Monica Mountains and surroundings. This could be mentioned maybe at the end of the paragraph. If a Santa Monica Mountains MU is considered, then maybe something like: "Vehicles have also become the largest source of mortality in the Santa Monicas to Los Padres MU (Benson et al. 2020, NPS Report 2024)." In our next report which we will be providing soon, we will document the large amount of mortality, especially from vehicles, that we have seen since early 2022.

RESPONSE: The Department is no longer using the Management Unit framework. Text changed to "From 1981 to 2013, reported vehicle strikes accounted for 53% (50/94) of known mountain lion deaths in the SA genetic group (which includes parts of the greater Los Angeles metropolitan area) and 30% (46/154) in the EPR genetic group (which includes the greater San Diego metropolitan area) (Vickers et al. 2015)."

Line 942 (Vickers): Replace "tertiary" with "secondary"

RESPONSE: Done

Line 945-955 (Riley): So, a few things about this paragraph. Overall, it feels pretty confusing, because there are many different numbers given from different areas, with different, but often overlapping years. So it is pretty hard to tell what's going on. Also, Shilling and Vickers 2023 is cited, but this is not in the references, so not sure if this should be Shilling et al. 2023, or if there is a reference missing.

RESPONSE: This paragraph has been reworked and reference has been updated.

Line 963 (Vickers): This phenomenon also occurred in the SA MU in February of 2021 when an adult female was killed by a car on a surface street in south Orange County, and her two approximately six month old offspring were subsequently captured. One of the offspring was also struck and sustained

bony injuries that required surgery. The uninjured individual was GPS collared and released by CDFW after a period of months in isolation at a rehabilitation facility. The individual that had surgery ultimately was kept in captivity rather than being released due to acclimation to humans.

RESPONSE: Noted

Line 963 (Riley): It might be valuable to also mention a story from the Santa Susana Mountains that we documented, at the end of this paragraph. In the Rocky Peak area of the 118 Freeway, between Simi Valley and the San Fernando Valley, adult female P39 was hit and killed in early December 2016. We had marked a litter of her kittens the previous summer, P50, P51, and P52, so they were about 5 months old. A couple of weeks after P39 died, P52 was killed in the same stretch of 118, and then a few weeks after that, P51 was killed in the same area. There is a good crossing in the area, specifically a hiker and equestrian tunnel at Corriganville Park, but they did not use it. We are currently doing a study with Caltrans to better understand connectivity in this area, and we are hoping to improve the fencing in this stretch, to keep animals off the freeway and funnel them towards crossings. This story was documented in our report to CDFW covering 2016-2018, which could be cited for reference.

RESPONSE: Noted, but this is a bit more detail than is useful for this document.

Line 967 (Vickers): Sentence beginning "Dr. Winston Vickers" could be changed to "Dr. Winston Vickers has observed that the data from numerous GPS collared mountain lions in the SA MU has indicated that they have encountered three regional freeways that surround the SA MU (I-5, I-15, SR 91) on multiple occasions, and ranged up and down along them before turning back. This has occurred with mountain lions going east and approaching Interstate 15, north approaching SR 91, and west approaching Interstate 5. Only three GPS-collared mountain lions have crossed I-15, the critical barrier between the SA MU and the EPR MU genetic groups during the 19 years that the UC Davis researchers have studied mountain lions in the SA MU . All three crossed west to east (from the SA MU into the EPR MU), and all three were dispersal age animals (two males and one female). Of the three, one was killed on a depredation permit in the EPR MU within 3 weeks, the other two returned to the SA MU after a short period and did not cross the freeway again before their collars dropped off as scheduled. Two uncollared mountain lions have been recorded crossing I-15 on cameras monitoring crossing structures at Temecula Creek and culverts south of that location. Those individuals crossed I-15 west to east, but no mountain lions have been recorded crossing east to west despite numerous photos of mountain lions being captured alongside the east side of the freeway. Gustafson et al. (2019) detailed genetic evidence of three mountain lions whose genetic origins were in the EPR MU. Evidence of offspring production was only detected for one of the three (UC Davis M86). That animal appeared to have produced eleven offspring and enhanced the genetic diversity of the population (Gustafson et al. 2019). Though one GPS collared mountain lion has crossed SR 91 from the main body of the Santa Ana Range into the Chino Hills and back several times, the Chino Hills are completely surrounded by development and do not provide a pathway to the SGSB MU to the north. A few GPS collared mountain lions have crossed under I-5 toward the ocean from the body of the Santa Ana Range, but have only been able to access small areas of coastal scrub between the freeway and the ocean, with no ability to connect from there to any other populations. (W. Vickers unpublished data)"

RESPONSE: Have added some of the text, now reads "For example, GPS data from collared mountain lions in the Santa Ana Mountains have revealed that on multiple occasions lions approached one of the three regional freeways that surround the mountains (I-5, I-15, SR-91), only to range back and forth along them before turning back (W. Vickers unpublished data). Only three GPS-collared mountain lions have crossed I-15, the critical barrier between the SA and the EPR genetic populations, during the 19 years that UC Davis researchers have studied mountain lions in the Santa Anas. All three crossed west to east (from SA into the EPR), and all three were dispersal age animals (two males and one female).

However, crossing a major barrier like a road does not guarantee the individual will stay or breed in the new area. Of the three who crossed I-15, one was killed on a depredation permit in the EPR within 3 weeks, while the other two returned to the SA after a short period and did not cross the freeway again before their collars dropped off as scheduled (W. Vickers unpublished data). Two uncollared mountain lions have been recorded crossing I-15 on cameras monitoring crossing structures at Temecula Creek and culverts south of that location. Those individuals also crossed I-15 west to east, but no mountain lions have been recorded crossing east to west despite numerous photos of mountain lions being captured along the east side of the freeway (W. Vickers unpublished data). Though one GPS-collared mountain lion has crossed SR-91 from the main body of the Santa Ana Mountains into the Chino Hills and back several times, the Chino Hills are completely surrounded by development and do not provide a pathway to the San Gabriel Mountains to the north. "

Line 970 (Riley): We have definitely seen this same thing repeatedly with young lions in the Santa Monicas, where they are "bouncing off" the freeway and the development along it, in what looks like "frustrated dispersal." You could cite Riley et al. 2014 for that, or some of our reports to CDFW, or S. P. D. Riley personal communication.

RESPONSE: Reworked this section and deleted this sentence.

Line 978-985 (Riley): A few things for this paragraph: the South Coast Missing Linkages Project was for the Southern California region, not for the state, though there was also a Missing Linkages Report from 2000 for the whole state. It would be good to cite the report on line 980, which would be South Coast Wildlands 2008 (let me know if you need help finding it). Also, in reference to Ventura County, I think it would be worth saying a bit more here: "Specifically, Ventura County has passed an ordinance that mandates the consideration of impacts to wildlife movement for projects within the linkage areas." And on line 985, when you say "the corridor", I don't think it's clear what you mean exactly. Maybe you could cite Figure 7, and put a circle or something around the area that you mean?

RESPONSE: Altered text to read "In 2008, the South Coast Missing Linkages Project identified areas in the coastal areas of southern California where linkages are needed (Fig. 7)." reference to South Coast Wildlands 2008 reference added.

Line 990 (Riley): What does "make the crossing more natural and acceptable to wildlife" mean? This isn't clear. It is definitely important to preserve natural habitat on both sides of crossing sites whenever possible, as that it makes it more likely to be used. It is also valuable to make the crossing itself feel as natural as possible, by vegetating it, if possible. Not sure if one, or both of these meanings are intended.

RESPONSE: Altered text to " However, funding to implement wildlife crossing projects, including land acquisition to preserve natural habitat on both sides to make the crossing more acceptable to wildlife, has been limited to date. "

Line 991 (Vickers): Suggest adding "with appropriate fencing, and lack of fencing near existing crossing structures" after "crossings"

RESPONSE: Done

Line 993 (Ernest): The CDFW proposal makes an unsupported assumption that the future Wallis-Annenberg Wildlife Crossing will largely mitigate road kills and lack of gene flow caused by heavy traffic on busy multi-lane highways. There is no guarantee that mountain lions will use it and avoid all other local highway crossings; there is no guarantee that it will greatly lower mountain lion road mortalities; there is no guarantee that this crossing alone with solve gene flow problems. The single Wildlife Crossing is a necessary start, but it is in no way sufficient to stop degradation of Santa Monica population viability.

RESPONSE: Altered text to "Together, these crossings should help facilitate the movement of mountain lions between the Santa Cruz Mountains in CC-N and the Gabilan Mountains in CC-C"

Line 993 (Riley): I would add after "vehicle strikes" here something like: "and especially to the barrier effects on movement and gene flow." As mentioned in other comments later, for major, busy freeways, animals are less likely to attempt to cross them, and so while they can certainly result in some mortality if animals do try, their major effects are more as barriers than sources of mortality. Often smaller highways and major secondary roads are more important for mortality - that is what we have found in terms of number of moralities in our area (see also another comment, which includes numbers).

Line 995 (Riley): After "2022" here, you could add an update if you want: "The structure over the freeway is due to be finished at the end of 2024 and the full crossing, including the approaches and the crossing over adjacent Agoura Road, at the end of 2025."

RESPONSE: Text changed to "The crossing, including the approaches and the crossing over adjacent Agoura Road, is expected to be completed in late 2026"

Line 996 (Riley): It would be more accurate to say "...facilitate genetic exchange throughout the CC-S MU and between CC-S and CC-C, and ideally between CC-S and SN."

RESPONSE: Text changed to "The overpass will help facilitate mountain lion movement between the Santa Monica Mountains and the Simi Hills and could ultimately contribute to genetic exchange throughout the CC-S genetic population, between CC-S and CC-C, and ideally between CC-S and WSN"

Line 997 (Riley): I think this sentence about minimizing vehicle mortality needs to be modified. Reducing vehicle mortality is really not the main goal of this crossing, though it certainly can be for some crossings, and may be for the Highway 17 crossing, for example. Though lions, and other wildlife, are occasionally hit on 101 and other large freeways, it is smaller highways and secondary roads that are more often the sources of vehicle mortality, as animals are reluctant to even try to cross these major freeways. It will certainly be the case that in the vicinity of the crossing, we hope to minimize, and ideally even eliminate, animals coming on to the freeway and being killed. But animals, including mountain lions, will continue to be killed by vehicles in the Santa Monicas and Simi Hills, especially on smaller roads, which is where more of them occur already. This will not mean that the crossing is in some way a failure - the main goal of this crossing is to provide connectivity between the Santa Monicas and the Simi Hills, and thereby to other areas, for mountain lions and for all other species, as you state well in the previous sentence. We do hope that there is some reduction in mortality for subadult mountain lions, from vehicles and potentially from other sources such as intraspecific strife, once they are better able to disperse out of the Santa Monica Mountains, and therefore aren't trying to disperse in other areas, including sometimes across 101 or other roads.

RESPONSE: Altered text to "It may also minimize some local vehicle-related mortality on Highway 101"

Line 1001 (Vickers): Suggest adding "In addition, initial design and environmental studies are being completed for a new crossing structure across I-15 south of Temecula, and improvements to the Temecula Creek passageway that is currently in existence in that critical corridor area but is currently heavily impacted by humans. Other connectivity studies are being initiated along I-10 in the area that is critical to mountain lion movement between the EPR MU and SGSB MU in order to guide potential improvements to connectivity across that freeway. (Vickers personal communication"

RESPONSE: Done

Line 1045 (Riley): Where does this definition come from? I think it would be good to give a citation if possible. Also, when you say "negative impacts to one or more species," are humans considered to be

one of the "species"? Clearly negative effects on humans are a critical part of this conflict, so I think that needs to be clear.

RESPONSE: Have changed text to CDFW's definition. Text now reads "Human-wildlife conflicts "occurs when humans and wild animals interact in an unwanted or unsafe way" (CDFW 2024). "

Line 1051 (Riley): What does it mean for a mountain lion to be "taken non-lethally"? I think that needs to be made clear, as that will not be intuitive for many readers.

RESPONSE: Added this text " Nonlethal methods involve modifying the natural behavior of the animal, for example through hazing with hounds or an air horn."

Line 1060 (Vickers): Suggest adding "Benson et al. (2023) determined that lethal take secondary to depredation permits was the number one cause of death for GPS collared mountain lions in California, and that human-associated mortality was additive versus compensatory".

RESPONSE: This sentence "From 1972 to 2020, at least 3,694 mountain lions were removed in depredation incidents (Dellinger et al. 2021b), and it was the leading cause of attributable mortality of collared mountain lions (Benson et al. 2023)" was added three paragraphs later.

Line 1064 (Riley): Does this mean that more than one animal could be taken on a single depredation permit in the past? That wasn't clear, I don't think.

RESPONSE: Modified text to read "The most noteworthy change in management action reflected in this approach was specifying that instead of multiple, only one mountain lion could be taken under a single depredation permit"

Line 1079 (Riley): Is there a period of time that must elapse between the first or second depredation events and the implementation of non-lethal measured, before a lethal permit can be issued because of another depredation event? If so, it would be good to mention what that is, and if not, I think that would be important to mention as well.

RESPONSE: This section has been deleted.

Line 1082 (Riley): How many of these 3,637 were determined to be related to public safety? I assume it is some subset of the 1,327 that were classified as "potential human conflict"? How is "potential human conflict" defined? It think it is important to be clear here, especially about public safety incidents. I'm also wondering what "general nuisance" means.

RESPONSE: The data are self-reported by the public and not vetted. Therefore reporting the incidence numbers would be potentially misleading. Information about reporting categories was added to a footnote. Added more detail about human conflict in section 4.4.3 about public safety including text "Specifically, a threat to public safety is when a mountain lion "exhibits one or more aggressive behaviors directed toward a person that is not reasonably believed to be due to the presence of responders." (Fish & G. Code, § 4801.5, subd. (b).) From 1986 to April 2024 there were 25 reported mountain lion attacks on humans in California, 4 of them fatal (CDFW 2024c). The Department has records of 10 mountain lions being euthanized following attacks on humans in California between 2000 and 2024 (reliable records prior to 2000 are unavailable)."

Line 1092 (Riley): What percentage of permits resulted in lethal removals in the state overall? If it was 8.6% within the proposed ESU area, is this very different from what was happening generally?

RESPONSE: The section has been rewritten and the relevant sentence has been removed. See response above for new text.

Line 1094 (Riley): How many lions have been lethally removed for public safety reasons?

RESPONSE: Added the text "Since 2000, 10 mountain lions have been euthanized following attacks on humans in California."

Line 1098 (Riley): This seems pretty speculative, that depredations have increased for these reasons. It certainly seems reasonable, but is it based on anything? If so, it would be worth saying, or giving a citation.

RESPONSE: This part of the sentence has been deleted.

Line 1108 (Riley): I think you need to be a bit careful with a couple of things here. I think you want to use he past tense here, since the 2019 report is 5 years old and the data would have been older than that. What is this based on, to say that "approximately 33% of them were dispersers", from Steve's paper (Torres et al.)? Really the only way to know if they were dispersing is to have followed them from when they were born, or at least when they were with their mothers, which I'm sure is essentially never happening in these cases. They could potentially be said to be "of dispersal age" or something like that.

RESPONSE: Have reworked, text now says "For example, from 1981 to 2013 in the Santa Ana Mountains and the Eastern Peninsular Range, 3.4 times as many males were taken for depredation than females (Vickers et al. 2015). Because males are more likely to disperse than females, depredation removal may thus further inhibit adequate gene flow between mountain lion populations in southern California by removing the animals most likely to move between genetic populations (Vickers et al. 2017)."

Line 1113 (Riley): OK, this is fair enough that many of the "primary gene dispersers" are lost if many of the depredation cases are dispersing males. However, as I also mentioned elsewhere, young females disperse too. This is something that we have documented, and the thought is that generally 1/2 of young females disperse, along with all of the young males. As I said, we generally cite Logan and Sweanor 2010 (from the Cougar book) for that. So young females can be gene dispersers. We have one female that dispersed from the Santa Monica Mountains all the way up to Los Padres National Forest (P33).

RESPONSE: Have reworked, now says “Because males are more likely to disperse than females, depredation removal may thus further inhibit adequate gene flow between mountain lion populations in southern California by removing the animals most likely to move between genetic populations (Vickers et al. 2017)."

Line 1115-1123 (Riley): A few things about this paragraph. At the beginning, what does "most" were sheep and goats mean? I would just give the numbers. Also, I think the language in this paragraph should really be past tense. Even though it was pretty recent, Dellinger et al. 2021a is still covering data through 2019, so we know what happened with that data, but we can't assume it is still the case. Also, in terms of subadults taking over and creating conflicts, I think it's worth also citing the Weilgus work from Washington for this idea. He became a controversial guy, but it doesn't mean he didn't produce valuable work with important conclusions and implications. Finally, though it may often indeed be subadults involved with depredations, we have definitely documented adult males taking livestock when available as well, including sometimes repeatedly, when domestic animals continued to be unprotected (e.g., P45).

RESPONSE: Based on this and other feedback, section has been altered to read "Interestingly, researchers have noted that at the county level, mountain lion depredation rates increased by 9% for every lion removed through a depredation permit the prior year (Dellinger et al. 2021a). This general pattern of increased depredations in an area the year after mountain lion removal was also seen in Washington state, though removals were done via sport hunting and therefore less targeted to individual mountain lions that may have been involved in depredations (Peebles et al. 2013). Dellinger et

al. (2021a) suggested this pattern could be a result of subadults moving to territories vacated when resident adults were removed. Research shows subadults can be more likely to use areas closer to people (Kertson et al. 2013), but evidence that subadults mountain lions have less well-developed hunting skills and are more likely to target easily killed domestic animals is not conclusive (Linnell et al. 1999; Peebles et al. 2013). "

Line 1148-1152 (Riley): I think the first part of this paragraph is a bit misleading. While it is true that the management mortality rate was roughly equal to all natural mortality causes, that seems to be a bit selective of the results. Management killing was the number one cause of mortality, and all human-caused mortality was twice that of natural mortality, which was affecting population-level survival. Though population modeling is needed to fully understand the impacts of different kinds of mortality, human-caused mortality generally, of which management killing was the most important element, was additive. Though the North Coast and Sierra Nevada populations are likely generally doing well, I think it's important to acknowledge the human-caused mortality could reduce the ability of these large populations to continue to serve as sources for the smaller fragmented populations. Especially if management killing is preferentially killing dispersing males, as you mention earlier in the section. Also, there is an "of" missing in the first sentence.

RESPONSE: We deal with management killing in this paragraph, but we expanded our discussion of Benson et al. (2023)'s results in section 3.1.1. on sources of mortality to include a mention of how human caused mortality in general is additive. Management killings in the North Coast and Sierra Nevada may reduce gene flow to the petitioned area but management killing has decreased in recent years (see newly added Figure 14), and therefore the impact of management killings on dispersal may be greatly reduced. Without specific data it is hard to say either way. Editing suggestion was completed.

Line 1163-1165 (Beier): These lines have pale gray highlighting.

RESPONSE: Fixed

Line 1168 (Riley): The "until recently" should be dropped here. There is still no population of bears in the Santa Monicas. We did have one bear, BB12, that was in the Santa Monicas for a while, but he then crossed 101, visited the Santa Susanas (where he likely came from), was headed back south, and sadly was hit by a car.

RESPONSE: Done

Line 1169 (Riley): It think it's important to put the word "can" between "wolves" and "affect" here. These studies come from one particular area, wolves and mountain lions certainly coexisted for a long, long time throughout North America and continue to do so in many places, and in the abundance model in Elbroch et al. 2020, wolf abundance was important, but human hunting also mattered, which does not occur in CA. Also, the mountain lion harvest numbers for the intermountain west states where wolves have reestablished have actually remained steady or increased since wolves have arrived. This would not be possible if wolves were having a consistent and significant negative effect on mountain lion populations. Also, the Elbroch et al. 2015 paper is about bears, as opposed to wolves, so it wouldn't be cited here.

RESPONSE: Done, and replaced Elbroch et al 2015 with the other Elbroch et al 2015 paper about wolves.

Line 1176 (Riley): Yes, I think coyotes scavenging lion kills is unlikely to have much impact on what the lions are getting from them, depending on when they start feeding from them. And in fact, trying to feed from lion kills is dangerous for the coyotes. We have documented a number of cases where coyotes were also killed by lions at deer kill sites, and in eastern Oregon (Rupprecht et al. 2021) they documented quite a bit of coyote mortality from cougars, similar to what they mention in this WY study.

If a coyote is killed while attempting to scavenge from a lion kill, that could actually add to the resources for the lion in that case! Although in Rupprecht et al. they did document quite a lot of scavenging by the coyotes, but it was unclear how much it was affecting resources for the cougars.

RESPONSE: Noted.

Line 1180 (Riley): As I mentioned elsewhere, this should be modified a bit, since more recently, vehicles and toxicants have caught up to intraspecific aggression in terms of importance as mortality sources in our area, and even more recently vehicles have overtaken both. You could just say "was" instead of "has been" here, , and then at the end of the sentence, add: ", although more recently, vehicles and toxicants have reached similar levels as mortality causes (Benson et al. 2020)."

RESPONSE: Done

Line 1187 (Riley): It would be good to cite Benson et al. 2020 here too, since the years given here are 2002-2018, but the Riley et al. 2014 reference didn't cover that whole time period.

RESPONSE: Done

Line 1233 (Riley): Again, I think it would be better to use the past tense here, as in "Second-generation ARs were more commonly detected..."

RESPONSE: Done

Line 1236 (Riley): Why is the percentage with three or more compounds given here, as opposed to four, or five, or six? I think the most relevant measure to give Is just the percentage of animals that were exposed to more than one compound, because that means they were exposed more than once. And that number is even more impressive, at 86% (213/247). I'm not sure how much more meaning there is from showing two vs. three compounds, but there is a lot of meaning gained from 0 or 1 to 2, I think.

RESPONSE: The data has been updated through the year 2022 and text adjusted to present proportion for mountain lions with 2 or more ARs detected. Text now reads " The Department's Wildlife Health Lab detected AR exposure in 94.2% (343/364) of tested mountain lion livers submitted between 2016 and 2022 (Fig.15; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data). Second-generation ARs were more commonly detected than first-generation ARs, despite a 2014 California regulatory change restricting second-generation AR use to certified pesticide applicators (Rudd et al. 2018; Rudd and Rogers 2021). Eighty-five percent of the mountain lion livers (306/364) tested had two or more different ARs present at the time of death, with 52.2% (190/364) of individuals testing positive for three or four different ARs, which indicates multiple exposure events are common (Fig. 16; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data) " Figure 16 also updated

Line 1237 (Riley): There was some work evaluating rodenticide exposure in mountain lions across the state that covered earlier years, specifically from 2003 to 2015, which I think would be worth mentioning at the end of this paragraph, or rather right before the last sentence. This was also work led by Bob Poppenga at the toxicology lab at CAHFS, the senior (last) author on the Rudd et al. 2018 publication, and also involving CDFW folks, specifically Stella McMillin. If you included it, it could say something like this:

"This 96% exposure level was actually higher than the 82% (103/125) exposure found in an earlier sample of mountain lion livers from across the state from 2003 to 2015 (Poppenga et al. unpublished data). Sixty-seven percent (84/125) of livers tested i this earlier sample had multiple different ARs present."

RESPONSE: The 2003-2015 data set was received from the reviewer, re-examined to calculate AR exposure metrics, and compared to the 2016-2022 dataset. The text was revised accordingly to: The 94.2% (343/364) total exposure prevalence recorded between 2016 and 2022 is higher ($X2 = 14.8$, $p < 0.001$) than the 82.4% (103/125) exposure prevalence found in mountain lion livers analyzed from across the state between 2003 and 2015 (Poppenga et al. unpublished data). In samples from 2003–2015, 67.2% (84/125) of livers indicated exposure to multiple AR compounds, which was lower than the exposure prevalence rate in livers tested between 2016 and 2022 ($X2 = 15.4$, $p < 0.001$).

Line 1237 (Riley): I think the end of the paragraph should be modified to say something like "To date, there was not a consistent observable pathological condition associated solely with AR exposure in the livers of necropsied mountain lions (Rudd et al. 2018). However, multiple mountain lions have been determined by state pathologists to have died from coagulopathy associated with AR exposure." As discussed on the next page, we have had multiple mountain lions in our area that have been determined to have died from AR exposure as a result of coagulopathy, upon necropsy by the pathologists at the state-wide pathology lab at CAHFS.

RESPONSE: This sentence was deleted.

Line 1248 (Riley): Though it may mention it, this Kopanke et al. paper is really about something else, other than reduced coagulopathic effects in felids. I think a more appropriate reference here would be the Gupta 2012 reference, if it mentions it, or something like that. I know of two earlier references that mention the reduced susceptibility in cats, the Roder 2001 "Veterinary Toxicology" book, and the Morgan et al. 2003 "Handbook of Small Animal Practice" (both cited in Riley et al. 2007, if that is helpful).

RESPONSE: This sentence was deleted.

Line 1257 (Riley): A couple of things about this first sentence. Most importantly, it was not us, the National Park Service, that concluded that these 7 deaths were associated with toxicosis and coagulopathy from AR exposure. It all but one case (P04, in 2004, who we were not able to safely extract from the field, so we did a field necropsy), these mountain lions were transported to the California Animal Health and Food Safety Lab's San Bernardino branch, and the necropsy, including the decision about cause of death, was from the pathologist at CAHFS, not by the National Park Service. Even in the case of P04, we consulted about the necropsy with CAHFS and submitted samples. We are happy to provide CAHFS reports for all seven of these cases, if that is helpful.

RESPONSE: The sentence has been revised to… In the Santa Monica Mountains National Recreation Area (CC-S), the deaths of seven mountain lions since 2004 were associated with AR exposure and toxicosis (Riley et al. 2007, NPS 2021)…

Line 1259 (Riley): It would be worth adding an update here, I think, after the first sentence, since we have more recent data in the Benson et al. 2020 Biological Conservation paper showing that AR toxicosis was a leading cause of death in our population up through 2019. Something like: "Through 2019, AR toxicosis was a leading cause of death for mountain lions in the population, along with vehicles and intraspecific strife (Benson et al. 2020)."

RESPONSE: Text added "In the Santa Monica Mountains National Recreation Area (CC-S), the deaths of seven mountain lions since 2004 have been associated with AR exposure and toxicosis (Riley et al. 2007; NPS 2021). Between 2002 and 2019, out of 26 known deaths of adults and subadults in that population, 5 were from AR toxicosis (Benson et al. 2020)"

Line 1262 (Riley): For this sentence, along with Riley et al. 2007, it would be good to cite the more recent work on this question, Serieys et al. 2015 and Serieys et al. 2018, both of which are already in the Lit

Cited.

RESPONSE: Reference changed to Serieyes et al. 2015

Line 1264 (Riley): We documented another case of this, actually with four full-term fetuses. It would be worth adding this case to this paragraph and to Table 4 on the next page. Specifically, adult female P54 was hit and killed by a vehicle in June, 2022, and both she and all 4 of her full-term fetuses had been exposed to multiple AR compounds.

RESPONSE: We thank the reviewer for contributing this additional case. We have added that case, attributed to NPS, and also added more recent CDFW data to this section. Revised text: Fetal AR exposure occurs in mountain lions, as exposure was detected in four of eight (50%) instances where both pregnant female mountain lions and fetal or placental tissues were tested (Table 4; CDFW unpublished data; National Park Service (NPS) unpublished data). Many toxic substances, including ARs, can adversely affect fetal development and survival at doses that may not produce toxic effects in the mother (Gupta 2012). Fetuses are also typically more susceptible to AR toxicity because the placenta is the only source of vitamin K for the fetus (Gupta 2012). AR-related coagulopathy and toxicity was not observed in any of the examined fetuses with AR exposure (Rudd et al. 2020, CDFW and NPS unpublished data).

Line 1271 (Riley): As mentioned in the last note, it would be worth adding P54 from our study to this table. She was exposed to 5 different compounds, and all 4 of her fetuses were exposed to multiple compounds. We can provide the specific compounds and the residue levels for inclusion in the table.

RESPONSE: same as above comment

Line 1278 (Riley): I think it would really be important to mention in this paragraph, or better yet, in a new, separate paragraph, that many cases of exposure of mountain lions to another rodenticide, bromethalin, have been documented in recent years. So far, we have tested 21 animals for bromethalin exposure an 12 have been positive. Bromethalin use has increased significantly in recent years as a result of the ban on ARs, and so has the detection of exposure in non-target wildlife by the CAHFS toxicology lab, according to Bob Poppenga at CAHFS and CDFW folks at the Wildlife Investigations Lab. We don't know what the secondary effects could be, and this emphasizes the point of the last sentence of the paragraph here, about more research being needed on other toxicants. Also, minor point, there is no "Rudd et al. 2019" in the Lit Cited. I'm presuming Rudd et al. 2018 was intended maybe?

RESPONSE: A section on bromethalin exposure in mountain lions has been added to the document.

Line 1296 (Riley): This is certainly true that a major disease outbreak could be "catastrophic," especially for a small population. However, there has never been a major disease outbreak documented in this species, that I have ever seen. So while it is of course important to be aware of the potential for disease, mountain lions specifically, and perhaps so-called solitary felids more generally may be less susceptible to epizootics that could affect many animals. This may be because they are not very social and live at such low densities.

RESPONSE: Wording changed to "However, small, isolated mountain lion populations are at greater risk of experiencing population-level impacts from disease, which could reduce their ability to persist into the future, especially when combined with other threats (Foley et al. 2013). "

Line 1305 (Riley): Since both of these studies were of seroprevalence, they are measuring the prevalence of exposure, not of infection, as stated on line 1392 in a couple of pages.

RESPONSE: Have altered text to read "Researchers have found antibody test-based infection prevalence in mountain lions to be low, "

Line 1320 (Riley): I think just saying "other carnivores" here would be preferable. "Mesocarnivore" is a confusing term that is used in all kinds of different ways by different people and in different circumstances. As just one example that is relevant here, in the original coining of the term mesopredator, in Soule et al. 1988, coyotes were not a "mesopredator" but were in fact the larger predator (for the canyons of San Diego). They seem to randomly sometimes be included as "mesocarnivores" and other times not. If you want to define what you mean by the term it can be OK (or less objectionable, I would argue), but I think it really doesn't add anything here. You already say in the next sentence that these species can be prey of mountain lions.

RESPONSE: This section has been shortened and this paragraph deleted.

Line 1340-1341 (Riley): A couple of things here. I think it would be good to give a citation for this statement about FPV causing high mortality in domestic cats. It is interesting to note, in reference to my previous comment, that domestic cats and African lions, the two most social felids, are also the two where viral infections have caused significant mortality. Also, again, the Foley et al. paper was looking at seroprevalence, so it was detecting exposure to pathogens, as it says right in the title, as opposed to detecting the pathogen itself. This may seem like a minor technical difference, but I think it is an important one.

RESPONSE: Have deleted the sentence about domestic cat population. Sentence including the Foley citation has been changed to "Antibodies to FPV were detected in 36% of wild mountain lions from California sampled from 1991–2008 (Foley et al. 2013). "

Line 1364 (Riley): While this may have been mentioned in Janet's paper (Foley et al.), it seems like there is probably a better direct reference about bird flu evolving to be able to be transmitted between mammals.

RESPONSE: Have changed reference to "Volume 30, Number 3—March 2024 Emerging Infectious Diseases: Recent Changes in Patterns of Mammal Infection with Highly Pathogenic Avian Influenza A(H5N1) Pablo I. Plaza, Víctor Gamarra-Toledo, Juan Rodríguez Euguí, and Sergio A. Lambertucci https://wwwnc.cdc.gov/eid/article/30/3/23-1098_article

Line 1366 (Riley): It is important because of the zoonotic potential, but I would say more relevant in the context of this document is that avian flu causing regular infections, illness, and death in wildlife, specifically mountain lions, could be an issue for mountain lion populations, especially small ones, as you discussed early in the section. A disease that is coming from prey, and not from other lions, could potentially be more of an issue than one that requires contact between conspecifics. Lions are typically mostly ungulate eaters, mostly deer in CA, but they can obviously eat many different things, including birds, as happened in these cases.

RESPONSE: This section has been updated to include six cases and emphasize importance of continued monitoring.

Line 1375 (Riley): I see from the reference that this was in CA. Might be worth mentioning that in the text here, and even saying where (I assume from the eastern Sierras, since Tom is the lead author?).

RESPONSE: This paragraph has been deleted.

Line 1401 (Riley): It might also be worth mentioning that we have documented lepto exposure and infection in mountain lions in our small population in the LA area (Helman et al. 2023, Scientific Reports 13:14368). Not sure if the Straub et al. paper included any animals from our area or not.

RESPONSE: This paragraph has been deleted.

Line 1417 (Riley): I think it would be worth mentioning in this paragraph that we have documented notoedric mange in six mountain lions during the course of our study, including P22. These were females P33 and P53 and P65, subadult males P89 and P90 (kittens of P65), and adult male P22. In all cases the presence of notoedric mange was confirmed through CAHFS, the state lab, working with parasite folks at the Vet school at Davis. Importantly, we also recently documented the death of a mountain lion from notoedric mange, adult female P65, in March 2022, the first case of mortality from notoedric mange in a mountain lion that we know of.

RESPONSE: Text added "In the Santa Monica Mountains, there have been six known cases of notoedric mange, including one adult female who died of the disease in March of 2022 (S. Riley pers comm. March 2024) & "However, notoedric mange had a negative impact on the population of bobcats in CC-S in 2002-2004 (Riley et al 2007), and in 2019-2021 there has been regular mortality from mange (S. Riley pers. comm March 2024)."

Line 1416 (Riley): This is generally true, although we documented an epizootic of the disease in bobcats, which are also a solitary felid, and it had a major impact on our population of bobcats, as discussed in Riley et al. 2007. And although mange in bobcats later declined by 2008-2010, it increased again after that, and in recent years, 2019-2021, we have again seen regular mortality in bobcats from mange. Also, as I mentioned in the last comment, we have had our first mortality in a mountain lion from mange, with P65, and she shared it with her two older kittens, P89 an P90 (we don't know who had it first or who transmitted it to whom).

RESPONSE: Text added "In the Santa Monica Mountains, there have been six known cases of notoedric mange, including one adult female who died of the disease in March of 2022 (S. Riley pers comm. March 2024) & "However, notoedric mange had a negative impact on the population of bobcats in CC-S in 2002-2004 (Riley et al 2007), and in 2019-2021 there has been regular mortality from mange (S. Riley pers. comm March 2024)."

Line 1428-1432 (Riley): I think you really need a different reference here, something about fire and Mediterranean systems more generally. I'm sure Megan's paper mentions that, but it's not the appropriate reference here, I don't think. I just checked Jennings et al., and there are some good references in there that would make sense. Also, there are multiple Williams et al. references in the Lit Cited, but none of them are 2023. Finally, I think you want to have a reference at the end of the paragraph here, about deer response to fire, which shouldn't be too hard to find.

RESPONSE: Text altered to "Fire is a natural disturbance in many California ecosystems. " Lewis et al 2022 added as deer reference. Fixed Williams reference.

Line 1439 (Riley): Again, Megan's paper is valuable and a nice contribution about lions and fire. But it was not a paper about the frequency of fires, so I think you really need a reference that directly is addressing that here. This is also true on line 1461, and for sure on line 1464 about fire return frequencies. You have a number of references for Jon Keeley in the Lit Cited which could probably work well, including the 2005 one and maybe some of the more recent ones (Keeley and Syphard ones), and I know there are some others as well.

RESPONSE: This paragraph has been reworked and sentences deleted.

Line 1487 (Ernest): The CDFW Proposal does not sufficiently account for rapid and severe progression of impacts of climate change (wildfires, drought, floods on fire- and drought-damage landscapes, more extreme weather patterns, etc.), and massive housing and industrial developments in the works and near future that will reduce or eliminate quality and quantity of mountain lion habitat including key movement corridors. The CDFW report cites literature that is now antiquated with regard to wildfire and

climate change in California, and thus doing so makes statements such as (page 50, starting line 1487): ", …burned areas likely continue to be used by mountain lions as redwoods are adapted to wildfire and trees commonly survive most wildfires and trees that succumb remain standing for decades. Additionally, redwood sprouts and seedlings are prolific following fires, numbering in the tens of thousands per hectare, and canopies develop rapidly (Lazzeri-Aerts and Russell 2014)."

RESPONSE: Due to reviewer comments, the Department has reworked the status review and the majority of the petitioned area is included in the area recommended for Listing. Which means that if approved by the Fish and Game Commission, the mountain lions in the area would get the full legal protections under CESA. Added some text in the section on redwoods and softened the language. It now reads "IIn the redwood forests of the Santa Cruz Mountains, mountain lions likely continue to use burned areas following most wildfires as redwoods are adapted to wildfire with trees frequently surviving low and moderate intensity wildfires and decay-resistant dead trees remaining standing for decades. In 2020, an unusually severe fire burned old growth redwoods in Big Basin Redwoods State Park north of Santa Cruz. Six months later, many trees were able to resprout, suggesting redwoods could have some resiliency to changing fire regimes (Peltier et al. 2023). Additionally, redwood sprouts and seedlings can be prolific following fires, numbering in the tens of thousands per hectare, and canopies can develop rapidly (Lazzeri-Aerts and Russell 2014). Consequently, dense cover favored by mountain lions for hunting and travel can develop within a few years following severe wildfire in these forests."

Line 1502 (Riley): I think it would be worth adding a bit here about the other collared lion that was lost during the Woolsey Fire, and to cite the sentence. You could add something like this to the end of the sentence: "…reasonably be attributed to wildfire-related injuries, and another collared lion disappeared as the fire passed through and is presumed to have died in the fire itself (Blakely et al. 2022)." You could also cite our report to CDFW that described these events (the report for 2018-2019), if you wanted.

RESPONSE: Text changed to "Vickers et al. (2015) documented the death of a collared mountain lion in the SA and one in the EPR due to burns from human-caused wildfires and, following the 2018 Woolsey Fire in the Santa Monica Mountains and Simi Hills, one collared lion was found in poor condition with burned feet and eventually died. Another collared lion disappeared and was presumed to have died in the same fire (Blakey et al. 2022)"

Line 1533 (Riley): Please also see the comment for page 20, about the importance of chaparral. As you say, this was speculation by Burdett et al., as opposed to something that they actually addressed in their study, i.e. they didn't have different classes of chaparral based on density or age (time since fire). We found in our recent paper on 15 years worth of data on habitat use and selection (Riley et al. 2021) that chaparral was the most heavily used and consistently selected vegetation type by mountain lions of all age and sex classes. And although we also didn't explicitly evaluate chaparral density, we had a range of different ages for chaparral across the life of the study. So I really don't think there's much evidence of mountain lions avoiding chaparral. Even in Burdett et al., chaparral was used about as much as it was available, and given that it was the most common vegetation type, that was a lot!

RESPONSE: Deleted relevant sentence

Line 1537-1539 (Riley): I don't think these are actually contradictory results at all, because the burned area after the Woolsey Fire was really essentially barren for much, if not all of that 15 months post-fire that we evaluated in Blakey et al. 2022. I think the better comparison is the one with Megan's paper (Jennings et al.) the you make at the beginning of the paragraph, but as you say there, they found that it was "the first few years" post-fire when lions were preferring it, and the kills were more likely in areas less than 6 years post-burn. Whereas again, our results from Blakey et al. were within just the first 15 months, and that fire, which was huge and intense, really moon scaped the whole area, so recovery has

taken some time. Jennings et al. also mentions that lions were avoiding grasslands and sparser areas, and we also found that they avoided grasslands and altered open areas (landscaped areas such as cemeteries and golf courses) in our 2021 JWM paper. More work needs to be done on how vegetation structure specifically affects mountain lion habitat use and selection, something that we're working on with Rachel Blakey. But I don't think there's currently much evidence of chaparral being avoided, and there is good evidence of its importance, as well as of avoidance of areas with low cover.

RESPONSE: Rewrote. It now reads "A study in the Santa Monica Mountains and Simi Hills after the 2018 Woolsey fire showed that, in general, mountain lions avoided burned areas up to 15 months post fire (Blakey et al. 2022).

Line 1542 (Riley): As Jon Keeley and others have regularly argued, though it is really valuable in forested systems such as in the Sierra Nevada, prescribed fire is really not an appropriate tool at this point in scrubland systems (CSS and chaparral), where fire frequencies are already much higher than they should be, and where there is regular type conversion to other vegetation types, often invasive grasslands, as you mention in the next section. So I think it's important to make the distinction here between different ecosystem types. There is forest in some areas of the petitioned area, such as along the Central Coast, and in some farther east areas like the Eastern Peninsular Ranges, but much of it, especially in the South Coast Area, is really dominated by shrublands.

RESPONSE: Text now reads "Several strategies are employed in forested ecosystems including prescribed burns and mechanical fuels reduction"

Line 1549, 1637,1648 (Riley): Just a couple of minor things in this section: Bedsworth et al. is not in the Lit cited (line 1549). On line 1637, it's fine to have Jennings et al., but it might be worth having a couple of other references here about avoidance of grasslands, like maybe Burdett et al. 2010 and Riley et al. 2021, if you want to cover some time breadth and geography (at least in the south). And Fuller et al. 2016 is also not in the Lit Cited (line 1648).

RESPONSE: Fixed reference issues.

Line 1646 (Ernest): Similar problematic statements (as on page 50) and imply that climate change is unlikely to affect “large-bodied mammals” including mountain lions and deer. This statement is likely false in regard to “temperature” but perhaps more importantly are the diverse effects of climate change (not just “temperature”) on disease pathogens, plant communities, and so much more. The cited references for this are also proven outdated by recent climate change effects to California, and to the many newer citations in these regards. Recent wildfires show this thinking is no longer valid. Bowers et al 2024 outline climate change in its diverse ramifications for habitats in Central and Southern California – including drought, increasingly catastrophic wildfires, increasingly catastrophic atmospheric rivers (https://www.science.org/doi/10.1126/sciadv.adi7905). An example of massive housing developments are those slated for the Tejon Range/Tehachapi region (Jan 10, 2024 “…It marks the next stage of a constant progression that will see Tejon Ranch eventually become home to more than 35,000 homes…” on website as viewed January 21, 2024, https://tejonranch.com/news-events/)

RESPONSE: Added text about Tejon ranch development in section on urbanization "For example, there are 35,000 new homes planned adjacent to current development at Tejon Ranch in the Tehachapi Mountains near the southern end of the Central Valley (Tejon Ranch Company 2024). Their buildout would decrease the available undeveloped land in a relatively narrow corridor where mountain lions move between the western Sierra Nevada and the central coast and southern California (Penrod and Smith 2022; Tejon Ranch Company 2024)." Added text to section on infectious disease "Recent detections of emerging diseases in California mountain lions coupled with potential for future changes in the distribution of pathogens and disease vectors due to habitat modification and climate change

supports the value of continued mortality monitoring and disease surveillance in this species (Thurman et al 2024). " We did not find any literature that specifically predicts threats of climate change to mountain lions, only papers that say things might change.

Line 1651 (Riley): I think you did a nice job with a relatively difficult subject in this section, and I agree that it doesn't seem likely that there will be too much of an effect of climate change on mountain lion distribution. We will see I guess. If there were more significant effects on mule deer, then of course that could in turn affect lions.

NO RESPONSE NEEDED

Line 1659 (Riley): I think it's important to add the lack of migration, or specifically immigration, to the factors that contribute to low genetic diversity and potential inbreeding depression, along with drift and inbreeding.

RESPONSE: Done

Line 1683-1688 (Riley): Yes, the Woolsey Fire in the Santa Monicas and Simi Hills in 2018 is a very real example of this. The Woolsey Fire burned 42% of the natural area in the Santa Monica Mountains and 66% of the natural area in the Simi Hills, and overall burned about 1/2 of the natural area within the two areas overall. It was really a devastating event, some effects of which are still being seen 5 years later. A couple of edits for this section - the fire was 39,234 HA, which is 96,949 acres. Also, although we were tracking 13 lions at the time, there were 11 mountain lions that we were tracking that were in danger of being affected by the fire - for example, P22, in Griffith Park, was far away from it. This is accurate to say that two lions died in or as a direct result of the fire, as I referenced for the previous section, but it was really 2 of 11, as opposed to 2 of 13. Also, definitely the best reference to use for this information is Blakey et al. 2022, which is already in the Lit Cited.

RESPONSE: Suggested changes were made

Line 1701 (Riley): I think the Ernest et al. 2014 and Riley et al. 2014 papers really need to be cited here, in a statement about the low genetic diversity of these two populations. The Gustafson et al. papers, discuss it too, certainly, but they are later, and are focused obviously on the whole state. These are the papers that established this issue for the Santa Anas and the Santa Monicas. And Holly's earlier paper in 2003, while important certainly, was not able to evaluate this, certainly not for the Santa Monicas.

RESPONSE: References added

Line 1702-1704 (Riley): We have DIRECTLY documented close inbreeding events multiple times in the Santa Monicas. In Kyle's paper, we can infer it from indirect evidence, but it is important to indicate, and it is much stronger, to say that we know it has been occurring. Specifically, we find kittens from a particular female, and then we use genetics to determine the father. We note cases in Riley et al. 2014, so that can be cited, but we have also documented multiple other cases of it since then. Specifically, we have documented multiple cases of adult male P12 mating with close relatives, including his daughters, grand-daughters, and great-granddaughters. These more recent cases could be cited as Riley et al. personal communication, if you want, but you could also cite reports that we have submitted to the Dept as part of our permit requirements. Specifically, the report covering 2016-2018 mentions a few cases. And in ongoing genetic work with UC Davis, we are documenting even more cases of this kind of close inbreeding.

RESPONSE: Added following text to section 4.10.4 "There are multiple known cases on close inbreeding, for example a male that had kittens with daughters, granddaughters, and great granddaughters (NPS 2018, S Riley pers comm 2014). "

Line 1706 (Riley): Minor thing, but I think it would be worth adding the word "long" here before "runs of homozygosity," as it is long runs that indicate more recent inbreeding.

RESPONSE: Made suggested change

Line 1716 (Riley): OK, but it is important to realize that we only evaluated two populations in Saremi et al., the Santa Cruz Mountains of CC-N, and the Santa Monica Mountains of CC-S, which are also two of the most distant of the smaller, low genetic diversity populations. Importantly, the Santa Ana Mountains and the San Gabriel-San Bernardino Mountains were not evaluated, so it's possible that these various southern California groups will be more similar in their pattern of inbreeding. The current work at UC Santa Cruz and as part of the California Conservation Genomics Project will shed more light on this.

RESPONSE: Noted

Line 1734 (Riley): Although the state-wide work and the Gustafson et al. samples are not from the same time, there are 5-10 years in between, at least, depending upon which Gustafson et al. samples you're talking about and when the scat surveys were done in a particular area. It's probably worth acknowledging that. This is a fair point, and definitely worth making, about census size being much larger than effective population size. I think it is important to acknowledge that estimating Ne from genetic data is a very indirect way of determining it, and there are some populations, such as ours in the Santa Monicas, and also the Santa Ana Mountains and maybe the Santa Cruz Mountains as well, were we have much more direct data on reproduction patterns that would provide a better estimate of Ne. Also, I know there has been a lot of interest and attention to state-wide estimate of the population, but I really don't know how much meaning that has, ecologically. I think it would be worth making comparisons between the census estimates and Ne's for different specific populations, especially in this document where the focus is on these coastal populations.

RESPONSE: This section and the discussion of effective population size has been reworked. The effective population size of individual genetic populations is no longer particularly relevant to the recommendation

Line 1731-1738 (Vickers): The draft analysis by Department and other statewide researchers that the 3,242 statewide population estimate in line 1732 was taken from also has a second population range that is higher based on one of the three models that were developed - that value range should also be noted with explanation. It should also be noted that both values are not yet peer reviewed. Also see my comments elsewhere regarding the use of Ne for population estimation and assumptions based on Florida panther research.

RESPONSE: We have reworked this section and the updated statewide estimate is no longer included here, but is instead is in section 3.2

Line 1733 (Vickers): The value of 483 in line 1733 is from Gustafson et al. 2019 and as noted includes some animals outside of California. The Ne being cited is much higher than the Ne total for the state (210) in Gustafson et al. 2022. See my earlier notes regarding detailing the full range of population estimates available and their sources, strengths, and weaknesses.

RESPONSE: This sentence and the number referenced has been deleted. Table 6 includes the two estimates of Ne for the genetic populations within the petitioned area

Line 1742 (Riley): So here, and throughout the document, there is a lot of going back and forth between citing the 2019 paper and citing the 2022 paper. I think it is not good practice generally, and could give the impression that the different papers are being cited selectively to make a particular point. In this case you were citing the 2019 paper repeatedly, and then now we have the 2022 one cited, but I don't

think it's clear why. I think it's important to be clear why you are citing one over the other. You could also more regularly cite both together, depending on the point being made, which could potentially alleviate this issue.

RESPONSE: Have clarified throughout

Line 1742 (Riley): So when you mention "WSN" here, do you mean the Management Unit, or the genetic cluster? I think it is important to be clear what you mean generally, especially with the abbreviations. The only abbreviation for WSN in the appendix, that I could find, was for the management unit.

RESPONSE: Updated the document to include the phrase "genetic population" when referring to the genetic clusters and use just the abbreviation alone or explicitly name the geographic area when talking about the physical landscape. Have added the full name Western Sierra Nevada to the first time it is mentioned in the text.

Line 1743 (Vickers): Need more recent citations after the sentence regarding "controversial" use of and Ne level of 50 as a threshold for increased risk of extinction.

RESPONSE: Have rewritten the section on effective population size and include Frankham et al. 2014.

Line 1750-1751 (Riley): We specifically addressed this in two detailed analyses of population viability for the Santa Monicas and the Santa Anas, in Benson et al. 2016 and Benson et al. 2019. I definitely think it's important to mention these results here, in a mention of viability, and to cite these papers (which are already in the Lit Cited). Line 1745 mentions how "extinction risk is the result of the complicated interaction of both genetic and demographic factors," which is an important point, and that is what we were specifically able to evaluate in those population viability analyses.

RESPONSE: CC-S which includes the Santa Monica Mountains is now within the area recommended to be listed, and have added the citations.

Line 1752-1763 (Vickers): Heterozygosity is discussed at the state level and in comparison to other western states, but a table or discussion should address the lower levels in the SC and CC populations in Gustafson et al. 2022 versus the SN unit. The similarly low level in the NC unit when compared to the SN unit should be discussed as a cause for concern as well. The heterozygosity levels in the NC individual unit in Gustafson et al. 2022 is notably lower, and similar to the 6 petitioned MU's, when compared to the KC, ESN, and WSN units, a fact that should also be noted in this report.

RESPONSE: Noted. However the NC is outside of the petitioned area and does not appear to be a significant source of migrants into the petitioned area.

Line 1752-1763 (Riley): Somewhere in this paragraph, I think it's important to distinguish between expected and observed heterozygosity, say which one you are focusing on, and why.

RESPONSE: text changed to "An important metric of genetic variation is expected heterozygosity (HE) . "

Line 1756 (Riley): What is this "average"? I think it is important to say what it is here, so the reader can evaluate how it's lower than in other states.

RESPONSE: The sentence contains a range of averages for other states, and allows the reader to evaluate that California's range is generally lower than other states.

Line 1762 (Riley): I think it's important to say something about why the CA landscape is unique. I certainly think this is true, and that It's relevant for lion population genetics, but I'm pretty sure every state would say that, i.e. that they have a unique landscape.

RESPONSE: Text changed to "The lower overall heterozygosity, as well as the large variance in

heterozygosity among local genetics populations, observed in California is most likely driven by barriers to dispersal such as mountain ranges and contemporary patterns of urban and transportation development"

Line 1766 (Riley): OK, it's really two genetic investigations, Holly's in the 2003 paper, and Kyle's in the 2019 and 2022 papers, depending a bit on how you define "investigation." The 2022 paper was using different markers, obviously, but it uses essentially the same samples, though a subset of them. I guess two is still "multiple," but it seems a bit misleading. Also, again in this paragraph, you start by citing the 2022 paper, but then switch over to the 2019 one. As I said, it would be better to be clear about why you're using one vs. the other, I think.

RESPONSE: Fixed

Line 1775 (Riley): I think it's definitely worth saying what the 2Ne-4Ne generations means in terms of number of generations, and in terms of number of years, maybe for a couple of populations, or you could give an average and range maybe.

RESPONSE: This paragraph has been deleted.

Line 1776 (Riley): Though I'm sure we mention it in there, I don't think Saremi et al. is really the appropriate reference for mountain lion generation time. Looking back at the paper actually, I don't see that we gave a citation for lion generation time, which is an oversight. Something from the 2010 Puma book would probably be good.

RESPONSE: This paragraph has been deleted.

Line 1782 (Riley): Which findings are you referring to here, by "these findings"? It's not really clear, I don't think. But overall for this paragraph, yes, I think it's hard to say too much about bottlenecks that may have occurred a long time ago, for many of these populations, and the bottleneck analysis using genetic data is again an indirect one, as opposed to knowing for sure that a population got very small at some point. It might be worth saying something about how recently the bottleneck may have been for some of the smaller populations, say for the Santa Anas especially, and CC-S.

RESPONSE: This paragraph has been deleted.

Line 1792 (Riley): I think it would be worth saying a bit more about what "unique alleles" were found in the SC genetic group. The 2022 paper is cited here, and it seems a bit odd to use the term "unique alleles" about SNP data. I guess that means that there were some loci that were polymorphic in the SC cluster that were not anywhere else? How many loci like that were found? And they were not found anywhere else? This makes me wonder about the 2019 paper, and to what extent there were private alleles found in any of the populations in that study. Either way, I think it would be worth mentioning.

RESPONSE: Text changed to "However, in the SC genetic group contained some private alleles not found in other genetic groups, which should be conserved to help preserve statewide genetic variation (Gustafson et al. 2022). "

Line 1795-1799 (Vickers): The statement in this sentence that acknowledges risks to a small population that are posed by inadequate genetic connectivity, then is followed by the statement that "a small population size ALONE (my capitalization) is not necessarily predictive of reduced population viability" is an odd statement to include, since the Department itself emphasizes again and again in this document the other significant risks to the petitioned populations - genetics, mortality rates, inadequate habitat levels, etc. This sentence seems to minimize risk for the smaller petitioned populations, even though the report lays out in clear detail the multitude of risks of decline that these petitioned populations face.

RESPONSE: Have altered text to read "While genetic risks may significantly increase a small population's risk of extinction, implementation of a well-planned conservation strategy can substantially mitigate risks associated with small populations."

Line 1798 (Riley): So this seems like a major and important statement, but it is currently just a one sentence throwaway line, it feels like. I think a lot more needs to be said here! What would this look like? Is this the plan? What would be represented? How would resilience be measured? What would be considered adequate redundancy? It is not enough to cite these references, I don't think.

RESPONSE: Noted, but getting into the details of a future plan is beyond the scope of this document.

Line 1801-1880 (Vickers): At this location in the report, the six individual MU's begin being discussed as consolidated into two populations based on Gustafson et al. 2022, but neither before this nor after, do there appear to be assessments of the entire group of the six smaller ESU's combined into one ESU or MU as was proposed in the CESA petition. The reasons for this exclusion did not appear to be explained in the report in my reading, and could be interpreted as somewhat arbitrary - it would be appropriate to explain further.

RESPONSE: Section 6.1 is the discussion of why the individual and combined populations do not qualify as an ESU. Due to this and other feedback from external reviewers, the entire petitioned area is evaluated as a DPS.

Line 1803 (Vickers): As noted earlier in the document, I suggest that Table 2 from Gustafson et al. 2019 and Table 1 from Gustafson et al. 2022 need to be included in this document on pages 21 and 22 to inform the reader about the best supported genetic parameters that are known about these populations. Those tables should be referenced here.

RESPONSE: Table 2 in Gustafson et al. 2019 is now included as Table 2

Line 1805 (Riley): Since there are only 4 broad groups, it's worth saying which ones are low, Central Coast and South Coast, and which ones are high, Sierra Nevada and North Coast. Especially because Figure 4 is 40 pages back! Incidentally, it's worth giving a page number here for Figure 4, for that same reason.

RESPONSE: Text modified to read "Of the broad-scale groups, SC and CC have relatively low genetic variation while SN and NC have retained sufficient variation to be capable of serving as sources of genetic rescue under various management scenarios (e.g., improved connectivity, assisted gene flow). "

Line 1808 (Riley): Sure, but maintaining and enhancing connectivity between these broad groups is easier said than done! Especially between NC and CC, through the Bay Area, and between SN and CC, through the Tehachapis and across 5. This is one reason why it might be important to extend protection to the northern part of CC-S, in Los Padres National Forest, as well. As I mention elsewhere as well, connecting all of the coastal populations to the rest of the state is really important, from a genetic point of view, and this Tehachapi connection is the main way that could occur, certainly to all of the Central Coast.

RESPONSE: Noted, and the Tehachapi connection is now included in the area recommended for listing.

Line 1820 (Vickers): See my notes elsewhere in the report regarding use of Ne for statements about population size.

RESPONSE: The inclusion of the estimated effective population size is linked to a statement about low genetic variation, and is part of the criteria for imperilment in the DPS framework which is why we keep it in this section.

Line 1821 (Riley): Yes, if the whole CC-S has a Ne of about 3, this area is clearly at significant risk. This is borne out by the PVA analysis in Benson et al. 2016, and also by the fact that we have documented multiple animals in the region of the Santa Monicas to the Santa Susanas with evidence of potential inbreeding depression, including distal tail kinks and high levels of teratospermia (Huffmeyer et al. 2022).

RESPONSE: Noted. We talk about CC-S and cite the results of Huffmeyer et al. 2022 further down in this section.

Line 1823 (Ernest): The citing of literature reporting "close inbreeding" in the Santa Monica Mountains (CC-S), Santa Cruz Mountains (CC-N), as well as Santa Ana Mountains – is really important. This is a late harbinger of populations that are too small and lacking gene flow from other populations – this is a call to more protection for these populations

RESPONSE: CC-S and CC-N are now in the area recommended for listing

Line 1823 (Riley): As mentioned before, we have actual direct documentation of close inbreeding in the Santa Monica Mountains, repeatedly, as opposed to the "evidence" of it, in Kyle's paper, and the "suggestion" of it, in the genome paper (Saremi et al., line 1826). We report it in Riley et al. 2014, and we have documented it repeatedly since then as well. Again, the way we have done it is by sampling kittens, when we know a female has given birth (we have now documented 27 litters of kittens at the den), and then determining who the father of the litter is by using genotyped samples from males in our study. We are also able to use GPS telemetry data to document mating events between males and females, although it's always important to verify the father using genetics, since females may consort with more than one male, and we are never following every animal in the population. Both here and previously, it should be noted that we have repeated known examples of this close inbreeding. We can compute the total number, and let you know what that is, if that would be useful. As I mentioned, for the ones since the 2014 paper you could cite Riley et al. unpublished data, but you could also potentially cite our reports to CDFW, specifically the one for 2016-2018 where we mention 2 specific cases. We are also currently doing work with graduate student Cass Rodriguez in Ben Sacks' lab at UC Davis to further document other and more recent examples.

RESPONSE: We have added more detail to this paragraph about evidence of inbreeding based on this and other reviewer comments.

Line 1828-1846 (Beier): This clearly states that the Central Coast South MU is a mess. How does it not qualify as a DPS?

RESPONSE: CC-S is now in the area recommended for listing

Line 1829 (Riley): The Huffmeyer et al. 2022 paper needs to be cited here, as it is really the only one that has documented signs of inbreeding depression similar to what was seen in Florida. In Ernest et al. 2014 they mention a tail abnormality, but it is not at all distal (see photo in the paper), and therefore not similar to the Florida panther cases and could more likely be a break.

RESPONSE: Reference added

Line 1830 (Riley): So this statement about the very low genetic variation, at a similar level to the Santa Anas, and lower than anywhere else other than in Florida Panthers, is about the Santa Monica Mountains specifically, and not the CC-S MU more broadly. This should be made clear in the text. In fact, if the CC-S MU includes Los Padres National Forest, than the variation would likely be quite a bit higher. And that would be even more true if the Sierra Pelona Mountains, E of Highway 5, were also included in CC-S (though as I said, I don't think it makes sense to do so). Again, it needs to be very clear what the

boundaries of the different MUs are.

RESPONSE: We have reworked this section and clarify when the Santa Monica Mountains and not CC-S as a whole is relevant.

Line 1833 (Riley): Here, and in some other places, references are not in chronological order. I assume that is the intent in general, for them to be chronological? If so, it should be checked throughout, and made consistent. I definitely think chronological order make the most sense, as opposed to say alphabetical order (which these seem to be in).

RESPONSE: Done

Line 1834 (Riley): The Ernest et al. 2014 and Vickers et al. 2015 papers are not about CC-S, they are about the Santa Ana Mountains, so it wouldn't make sense to cite them here.

RESPONSE: Fixed

Line 1836 (Vickers): After "the" add "significant potential for"

RESPONSE: Have changed text to "Models predict a 16–28% probability of the extirpation of the Santa Monica Mountains population within 50 years if immigration levels remain the same or are reduced, in part due the impacts of inbreeding depression (Benson et al. 2016; Benson et al. 2019)

Line 1836 (Riley): Again, this modeling in Benson et al. 2016 (and 2019) is about the Santa Monica Mountains specifically, not CC-S more broadly.

RESPONSE: Have changed text to "Models predict a 16–28% probability of the extirpation of the Santa Monica Mountains population within 50 years if immigration levels remain the same or are reduced, in part due the impacts of inbreeding depression (Benson et al. 2016; Benson et al. 2019)

Line 1838-1842 (Vickers): It should be noted that the CC-C MU has inadequate levels of protected acreage relative to the amount spelled out in Dellinger et al. 2020 that is needed for long term stability of that source population for the CC-N and CC-S MU's. Development also threatens to bisect the CC-C MU

RESPONSE: Noted

Line 1839 (Vickers): After "inbreeding" add "though the percentages of the habitat that is conserved raises concerns about long term genetic stability and fragmentation. (Dellinger et al. 2020)"

RESPONSE: Done

Line 1842 (Riley): Again, this should say CC-S here, as opposed to the Santa Monica Mountains, since the Santa Monicas are only a part of CC-S, and in fact are the very farthest south, and distant from CC-C, part of it.

RESPONSE: Text has been changed to "Bi-directional migration rate models indicate the CC-C serves as a significant source of migrants for CC-N and CC-S "

Line 1845 (Riley): Yes, this is a good and important point, about maintaining connectivity to and within the CC-C MU. I would add, as you've stated on the previous page, that in particular, connectivity between CC-C and the Sierra Nevada, through the Tehachapis, is especially important.

RESPONSE: Noted

Line 1857 (Vickers): After "Riley et al 2014" add "Gustafson et al. 2019 and Ernest et al. 2014"

RESPONSE: Done

Line 1859 (Riley): Again, the one case of a kinked tail in the Santa Anas is very different, morphologically, from what they were seeing in Florida.

RESPONSE: Noted

Line 1861 (Riley): I think more detail would be valuable here about the results of the analyses in Benson et al. 2016 and 2019, especially since the Santa Anas are currently part of the group proposed for listing. This sentence isn't really true - for the Santa Anas there was a 16-21% of extinction in the models just based on demographic stochasticity. The high likelihood of extinction within 50 years would be if inbreeding depression sets in and affects survival and reproduction the way that it did in Florida.

RESPONSE: This paragraph has been reworked and the relevant text now reads " For example a thirteen-year study (2001–2013) that collared 74 mountain lions in the Santa Anas and EPR observed only one mountain lion move from the SA to the EPR, and that individual was killed for depredating sheep before it could breed and introduce genetic material to the group (Vickers et al. 2015). The impact of this isolation and inbreeding has led to a "16–21% probability of local extinction in the SAM due purely to demographic processes over 50 yr with current low levels or no immigration" (Benson et al. 2019)."

Line 1870 (Vickers): Add "and" after "Nevada"

RESPONSE: Done

Line 1877-1880 (Vickers): There is no reason to believe that maintenance of the status quo for any of these MU's will result in improvement or reconnection absent additional protections that can lead to concrete measures to enhance their survival and genetic connectivity. This paragraph and subsequent recommendations for the most part do not spell out what legal or policy drivers there are, in the absence of added legal protections associated with Threatened status, that will with some confidence lead to the desired improvements to genetic status and long term survival potential.

RESPONSE: The updated recommendation is for the majority of the petitioned area to be listed as Threatened with the resultant legal protections

Line 1878 (Riley): I would argue that there are two populations that are not currently "interconnected," the Santa Anas, and the Santa Monicas, or a Santa Monicas Management Unit, if that were to be considered. It is true that the Wallis Annenberg wildlife crossing will help connect the Santa Monicas to other areas, but it is not completed yet, and while we are confident that it will be effective for mountain lions and other species, I think it is not a good idea to presume that it has effectively connected the Santa Monicas to other areas before documenting it. And, as mentioned elsewhere, there are two other roads between the Santa Monicas and the larger source population of Los Padres National Forest and the Central Coast Central cluster. Finally, as you have also alluded to elsewhere in the document, I think that the San Gabriels/San Bernardinos area is potentially not that well connected to other areas. Though this MU would obviously be afforded protection by listing the South Coast Group as a DPS.

RESPONSE: Changed interconnected to 'somewhat connected'

Line 1900 (Riley): I think it is pretty hard to see what is going on in this map. For example it is hard to pick out the federal NPS, Forest Service, and BLM lands. Our park, Santa Monica Mountains NRA, is basically impossible to see. I think some brighter or more contrasting colors might be helpful. I understand that part of the issue is showing such a large area; perhaps there could be this one, and one showing just the southern California region, where it is potentially a bit more complex? Also, I'm wondering why the CDFW areas are labeled specifically? I understand they are Dept Lands, but I'm not sure they are particularly important in this context. But maybe I'm missing something? Finally a general comment, all of the maps need a north arrow and a scale bar, I think.

RESPONSE: Reworked this map.

Line 1906 (Riley): I think it's notable the Prop 117 and the California Wildlife Protection Act specifically called out the Santa Monica Mountains, the Simi Hills, and the Santa Susana Mountains, the region that we are proposing for potential consideration as a management unit, as areas of concern for mountain lions more than 30 years ago. We certainly believe that that concern continues to be warranted, and that there is plenty of evidence to support that.

RESPONSE: Noted

Line 1993 (Riley): A minor note: this sentence mentions 3 HCPs and 4 NCCPs, and that 3 of the 4 NCCPs include mountain lions. However, the next 4 paragraphs describe 4 plans, all of which seem to be both HCP/NCCPs, and all of which seem to include mountain lions. So potentially a bit of a discrepancy there.

RESPONSE: As is clarified further down "The Orange County Transportation Authority NCCP/HCP (OCTA Plan) lists the mountain lion as a covered species for purposes of the federal HCP, but not for purposes of the NCCP permit"

Line 2074 (Riley): Maybe a minor thing, but shouldn't the title here be "National Forest and BLM lands"? That would better match the ones in this section. And there are resource management plans for national parklands and for military bases too, so not sure why those would be called out here, but not in the other sections.

RESPONSE: Done

Line 2114 (Riley): I think the title here should just be "National Parklands" or "National Parks" or something like that. In the National Park Service, all units, regardless of specific title, are referred to as "parks." And most importantly, from the point of view of conservation, both generally and for mountain lions specifically, it really doesn't matter what the specific name of the park is, i.e., national park or national recreation area or national monument or national preserve (and there are others, like national scenic river, national parkway, etc.). The mandate is the same for all units: to preserve the lands of the national park system, and the resources within them, including the wildlife, for the enjoyment of future generations.

RESPONSE: Done

Line 2129-2132 (Riley): A couple of minor things here - on line 2129, this should say "Other NPS lands," since all of these places are managed by the National Park Service, not by some other federal agency. Also, there wouldn't be a "the" before "Golden Gate National Recreation Area," or before "Santa Monica Mountains National Recreation Area," just as there isn't in front of everything else on this list. Also, Muir Woods is not within the proposed zone, since it is north of San Francisco in Marin County.

RESPONSE: Done

Line 2134 (Riley): I wonder if it would be worth having a section of Land Conservancy lands in this State section, such as those of the Santa Monica Mountains Conservancy, in southern California. They are definitely an important player in a potential Santa Monica Mountain MU, in the CC-S MU, and in southern California generally. And perhaps there are other similar state land conservancies that are worth mentioning?

RESPONSE: Noted, however that is a level of detail that is beyond the scope of this document.

Line 2205 (Riley): A couple of notes here: Runyon Canyon is a city park, but Franklin Canyon is owned by MRCA and by the National Park Service. Encino Reservoir is west of the 405 Freeway and Stone Canyon Reservoir is east of it, although in our proposed Santa Monicas to Los Padres MU, it would all be

included. We think this would be valuable, to include the eastern Santa Monicas, as well as Griffith Park, in the MU, and those areas are all certainly important to the City of Los Angeles.

RESPONSE: Noted

Line 2290 (Riley): Happy Camp is already part of an important linkage, although because it is in the Santa Susanas, as you say, it is really part of the linkage between the Santa Monica Mountains and Los Padres National Forest. Also, as I mentioned in row 45, it would be valuable to include something about the Santa Monica Mountains Conservancy. They have many really important areas, both for conservation overall, and for connectivity specifically. Of relevance here is that they actually own most of the important public lands in the Santa Susanas, specifically areas to the east, along Highway 5, in East and Rice Canyons and that area. I think it would also be worth mentioning, in this section, two other local Ventura County Open Space agencies that are important in a potential Santa Monicas to Los Padres MU, including in the Santa Monicas, Santa Susanas, and especially in the Simi Hills. These are Rancho Simi Recreation and Parks District (RSRPD) and Conejo Open Space Conservation Agency (COSCA). Let me know if it would be helpful to have more information about these two agencies.

RESPONSE: Noted. However that level of detail is bit too fine scale for this document

Line 2251 (Riley): I think this statement about our 2019 paper is a bit strong, i.e., that "Gustafson et al. found more lions emigrated from" the Sierras to Nevada than vice versa. It comes down to what genetic data means exactly, and what the population genetic methods can tell you. I think it's fine to say that "Gustafson et al. (2019) found evidence of more movement from the Sierras to Nevada than vice versa." Depending on the strength of the population differentiation, and how clearly an individual assigns to a different area than it was found in, it can certainly be good evidence that it was a migrant. But that is not the same as knowing that it moved, through radio-tracking (GPS or VHF), or by capturing it in both places.

RESPONSE: Text changed to suggestion.

Line 2290 (Riley): I don't think there is much evidence that jaguars have much of an impact on mountain lions. I am not a jaguar expert certainly, but they have broadly coexisted for many thousands of years across Central and South America, and continue to do so where jaguars are still present. I think citations are needed here at least.

RESPONSE: This section has been shortened and the relevant sentence deleted.

Line 2291 (Riley): I think it would be valuable to show on a map where connectivity may be present currently between CA and Mexico, if possible.

RESPONSE: Added Figure 21 which has a representation of the border and known crossings by mountain lions.

Line 2295 (Riley): I think it's important to be a bit more specific here, about what you're saying is implied by the SNP data, and in particular about local populations having "considerable shared ancestry" and being "more genetically similar than previously thought." Which local populations in particular are sharing this ancestry across barriers? And what is meany by "than previously thought"? Than thought after our 2019 microsat paper? This needs to be clear, I think.

RESPONSE: Text altered to read "The same study used SNPs to characterize variation across more of the genome, which suggests many of these local genetic populations separated by barriers have considerable shared ancestry (Figs. 7, 8) and are more genetically similar than was suggested by the result of Gustafson et al. (2019)

Line 2337 (Riley): We would propose a couple of other considerations about the significance of a population segment that we think are relevant, given this statement that "This consideration my include, but is not limited to, the following." One is the ecological importance of the species, or in this case of the population segment of the species. Mountain lions are a large carnivore, and more specifically, they are a large carnivore that is purely carnivorous, as opposed to omnivorous, and that specializes on large prey, specifically ungulates such as mule deer. Although wolves are making their way back into more of California, for large parts of the state mountain lions are the only species that fills this role, and that is likely to be the case for some time to come and perhaps permanently, if there are places that wolves are not able to recolonize and establish. My understanding is that there is evidence that wolves did not historically occupy all of California, especially the drier, southern parts, dominated by shrublands. Although coyotes, and sometimes even bobcats, will also kill deer, especially fawns, mountain lions are the dominant predator of ungulates in the state, and they will prey on other species as well, including other carnivores such as coyotes, raccoons, foxes, bobcats, and domestic cats. Given the normal densities of mountain lions relative to their various prey species, mountain lions may rarely have significant direct trophic impacts on their main prey populations. However, they can affect some populations through predation, such as rare bighorn sheep populations. And, they can certainly be affecting all of these different species from a behavioral perspective. More and more research, including in California, is investigating and finding ways that mountain lions and other predators may be affecting the behavior of various prey species. Most importantly from a conservation and ecological perspective, mountain lions are the only species that fills their role. While we may not understand all of the ways this role affects other species and the ecosystem more broadly, losing this species from any system is a major loss, we believe, and as we often say, not an experiment that we want to conduct. We believe that every species is important and worthy of conservation, and indeed, this is our mandate in the National Park System. However, it is also true that mountain lions, as the only apex predator regularly preying on ungulates and other large species, are particularly important to conserve from an ecological perspective. Another significant factor that we would propose for consideration is the importance of the population segment to the people of the area and to the state more broadly. In the case of the mountain lions of the Santa Monica Mountains and surrounding areas, people have learned about and followed the population very closely, and we believe care deeply about the continued presence of the species in the Santa Monica Mountains and in the Los Angeles Area more broadly. This was the case specifically with P22, as evidenced by the outpouring of concern and sadness upon his death in late 2022, including a full capacity celebration of life at the Greek Theater. While P22 was the most obvious symbol of lions in LA, and the animal that lived farthest into the city itself, people care about and follow the population more broadly. We believe that it would be a significant loss to the people of southern California and of the state overall if this population segment were lost, and so we would propose the importance of the population to the people of the area as another measure of significance. This is obviously different from the others, in terms of not being related to biological factors, but we think that biology is not the only factor that can be important in conservation. Finally, we think it is worth considering measuring significance by the importance of the management unit in terms of connecting other mountain lion populations. Criterion b, about a gap in the range, might cover this, but it's not clear to me how that criterion is being applied, and it doesn't seem like it is fully covering the importance of these connections. For example, the connection between CC-S, specifically the northern part along 5 in Los Padres National Forest near Gorman, and the Tehachapis, is critical for genetic connectivity for mountain lions across the state. And the connection between the Santa Susana Mountains and the San Gabriels is similarly critical for connecting the Central Coast populations to the South Coast Group. Though this connection is not very strong currently, there is current work going on to better understand and improve it, and that fact that it is not strong does not diminish its importance, I would argue.

RESPONSE: We no longer evaluate the genetic populations individually using the DPS framework. Instead, the whole petitioned area was evaluated and found qualified as a DPS using the existing criteria. Therefore expanding the criteria used in the assessment would not change the recommendation.

Line 2378 (Ernest): The CDFW proposal incorrectly downplays the ecological uniqueness of the Central Coast habitats, and implies that there is little there of ecological importance to mountain lion biology that is not found elsewhere. This is a false assumption as vast lists of endemic plant systems and island native plant systems demonstrate (see Calflora and California Native Plant Exchange online resources). Central Coast habitats are rich in unique ecosystem and biome features. Mountain lion prey evolved with and depend on those unique ecosystems and mountain lions evolved with and depend on the prey. For example, the Santa Lucia ecoregion … has "qualities include the southernmost native stands of the coast redwood, as well as the presence of several notable endemic species." (Reed Noss description as viewed 1/20/2024 https://www.oneearth.org/ecoregions/santa-lucia-montane-chaparral-and-woodlands/). There is a strong genetic signal that the coastal populations south of San Francisco Bay and Delta are distinct from other mountain lion populations in rest of California – see Fig 3 of Gustafson 2022.

RESPONSE: We no longer evaluate the genetic populations individually using the DPS framework. Instead we evaluated the whole petitioned area (including CC-C) and found it qualified as a DPS.

Line 2381 (Ernest): The CDFW proposal incorrectly implies that mountain lions in the Coast ranges lack unique adaptive evolutionary traits. There are no studies that address this issue with any accuracy. The published science cited by the CDFW report is not sufficient to rule out the local adaptations of California mountain lions to their habitats. 1) mitochondrial data and the citations are insufficient to infer anything about local adaptation. This citation and inference should be deleted.

RESPONSE: This section has been reworded and now states "1. There is only one recognized subspecies of mountain lion in North America (P. c. cougar) based on mitochondrial DNA data (Culver et al. 2000; Caragiulo et al. 2014; Kitchener et al. 2017), suggesting a reduced potential for adaptive localized genetic variation among North American mountain lion populations." The department's remaining conclusions about local adaptation are taken directly from published literature (i.e., Gustafson et al. 2019 and 2022).

Line 2435 – 2446 (Wilmers): The criteria for determining "Significance" date back to 1996 and require some updating. Ecological science has made important progress in understanding the significance of species since that time, and this needs to be reflected in the listed criteria. This is especially true for keystone species and apex predators. A keystone species, for instance, wasn't definitively defined until late 1996 (too late for inclusion into the USFWS list of significance criteria) as "one whose effect on ecosystems is large and disproportionately large relative to its abundance" (Power et al. 1996), and in the 1990s ecologists were still debating whether the impacts on ecosystems by top predators were confined to aquatic ecosystems (Strong 1992). But science has made great strides since then. There is now abundant evidence that apex terrestrial carnivores are keystone species through their direct and indirect effect on other species in an ecosystem (Estes et al. 2011). Removing apex terrestrial carnivores can have dramatic impacts on herbivores (Terborgh et al. 2001), trees (Ripple and Beschta 2008), stream erosion (Ripple and Beschta 2006), disease (Levi et al. 2012), carbon cycling (Wilmers and Schmitz 2016, Schmitz et al. 2018) and many other ecosystem processes (Ripple et al. 2014). Surely these impacts are of concern to California residents and should be considered when determining "Significance". The USFWS seems to have anticipated that evaluations of significance would change with new knowledge when they wrote (and the Department repeated – line 2445) "This consideration may include, but is not limited to, the following:" I therefore suggest a new category e) be added to the significance list (lines 2438 – 2446) which acknowledges the many advances in ecological science since the writing of these criteria. I

propose that it read "Evidence that loss of the discrete population segment will lead to significant ecological impact".

RESPONSE: Noted.

Line 2435-2440 (Beier): Significance can derive from "Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon." I would argue that the urban sea thoroughly intertwined with several units (SA, SM/CCS) is a "most unusual ecological setting for the taxon" and thus qualifies as Significant. Anybody who sees the photo of P22 and the Hollywood sign appreciates this fact. Humans are part of ecosystems. And the humans in these ecosystems increasingly value mountain lions.

RESPONSE: Based on this and other feedback we evaluated the whole petitioned area as a DPS and the units mentioned are included in our updated recommended area for listing.

Line 2450 (Riley): We would like to propose another Management Unit that has not been evaluated to date, that we think is worthy of consideration for listing. Specifically, we would propose the "Santa Monica Mountains to Los Padres" Management Unit (or some similar name). Geographically, we would suggest that the northern line of the proposed Southern Coast Unit (p. 102, Fig. 19) be extended essentially along the Santa Clara River from where Highway 14 crosses over it in western Santa Clarita, along the Santa Clara River to the west to where it meets the ocean between Ventura and Oxnard. This means that the MU would then include the Santa Monica Mountains, the Simi Hills, and the Santa Susana Mountains. We would propose that the MU also include a buffer 10 km north of the Santa Clara River, as far west as Saticoy at the east end of Ventura, so that connectivity between the Santa Susana Mountains and Los Padres NF, the critical last step in the overall Santa Monicas to Sierra Madre Linkage, is preserved. In terms of the criteria for listing an MU, the Santa Monica Mountains themselves would be the main focus, but the Simi Hills and the Santa Susana Mountains are critical for the long-term persistence of mountain lions in the Santa Monica Mountains, since connectivity between the Santa Monicas and Los Padres, the site of the nearest large source population, is necessary because of the small size and isolation of the whole population. In terms of the criteria, the Santa Monica Mountains are discrete, because of the physical barrier of the large and very heavily trafficked 101 Freeway, which separates them from the Simi Hills, and thereby all other natural areas, to the north. There are also two other important roads in the MU, the 118 Freeway between the Simi Hills and the Santa Susanas and Highway 126 between the Santa Susanas and Los Padres NF. The discreteness of the Santa Monica Mountain population is also demonstrated by genetic data, first in Riley et al. 2014, and by dispersal data, see also comments for page 20, about population structure. In terms of significance, we would argue that the Santa Monicas to Los Padres MU is significant in 4 ways. The first is a) "an ecological setting that is unusual or unique for the taxon." This MU is the only place in the state, and in fact in the whole range of the species, where mountain lions persist in a megacity, i.e., a metropolitan area of 10 million or more people. And in fact it is one of two places on the planet where a large felid exists in a megacity, the other being Mumbai, India, where there are leopards. There are other urban areas where mountain lions exist on the fringes, such as Seattle, WA; Denver, CO; and Salt Lake City, UT. But none of these cities are nearly as large, sprawling, and crisscrossed by major freeways as Los Angeles. Mountain lions in the potential Santa Monicas to Los Padres MU, which includes the eastern Santa Monica Mountains (E. of the 405 Freeway) and Griffith Park, represent a "setting that is unique and unusual" for the taxon. There is also increasing evidence that animals in urban habitats are specialized to those habitats, and that they are more likely to stay and reproduce within these urban habitats, adding to their unique qualities. Along with criteria a), we would propose that a Santa Monicas to Los Padres MU is also significant in 3 other ways. One, it is the only species filling the apex carnivore role in the ecosystem; two, the population is extremely significant to the people of Los Angeles and the

surrounding region; and 3) the MU represents a critical connection between the CC-C MU and the San Gabriel-San Bernardino MU, another relatively small and isolated MU. This connection would be primarily across Highway 5 south of Santa Clarita, and if connectivity could be increased, it could potentially be through the eastern Santa Monica Mountains, Griffith Park, and the Verdugo Mountains to the San Gabriels.

RESPONSE: The area mentioned is now recommended to be listed.

Line 2450 (Vickers): See earlier notes regarding the lack of examination in the report of the full set of MU's combined as proposed in the CESA listing to designated the entire ESU as Threatened.

RESPONSE: Section 6.1 is an evaluation of whether the petitioned populations meet the criteria to be considered an ESU either individually or collectively. Lines 2378-2380 state "Taken as a whole, the genetic evidence does not support applying the ESU concept to the overall petitioned area or any of the Management Units individually, as a subspecies or ESU for the following reasons:"

Line 2453 (Vickers): See note above under lines 1801-1880

RESPONSE: Section 6.1 is the discussion of why the individual and combined populations do not qualify as an ESU. Due to this and other feedback from external reviewers we evaluated the entire petitioned areas as a DPS.

Line 2453 – 2465 (Wilmers): The petitioners ask the department to consider listing six identified genetic populations of mountain lions along the central and southern coasts as a single ESU or alternatively whether any of the six populations individually or in combination comprise an ESU. I can understand the department treating these as DPSs instead of ESUs – this makes sense for the reasons they describe– but the department still needs to consider all six populations as a single DPS. This was clearly the intent of the petitioners and the departments lack of consideration of the merits for listing all six populations together as a single DPS seems like a major oversight.

Line 2470 (Ernest): The decision matrix Table 7 should be reworked given these multiple issues noted above.

RESPONSE: Done.

Line 2473 (Vickers): It seems reasonable to me to conclude that all 6 petitioned ESU/MU groups are markedly separated from each other based on the clear contemporary genetic separation in both Gustafson papers and the <10% gene transfer between them noted in lines 696-713 that was used to justify assessing the petitioned populations as individual MU's. The matrix presented here is puzzling in that each individual population is listed, and the two population groups, but not the entire petitioned ESU as a single entity. This is especially puzzling given that the report's first listed task was to evaluate the primary proposal in the CESA petition of establishing the six populations together as an ESU (or following the Department's scheme in this report, an MU) and to determine if it warranted being listed as threatened. Though using the larger population groupings from Gustafson et al. 2022 is one option, there are many others as the report notes, thus it is puzzling that an MU combining all 6 smaller MU's was not evaluated. Additionally, other MU groupings might also be considerations. The SMM/CC-S MU would generally be considered to be more associated with southern California than the central coast geographically and ecologically, and could very reasonably be included in the South Coast group MU as easily as the Central Coast group. MU's could be grouped by other measures as well, such as levels of risk of decline based on any number of factors and analyses that have been conducted. In the end, given the levels of risk of both similar and different types that each individual MU faces (habitat loss, and vulnerability to stochastic factors such as disease outbreaks, fire, and excess anthropogenic mortality, and the interdependence of each on several of the others for long term stability), it is my opinion that

each population being examined is in fact both "discrete" and "significant", and that singly the CC-N, CC-S, SGSB, and SA MU's qualify as DSP's, and that by virtue of their criticality as gap populations to the other four, that the CC-C and EPR MU's should be similarly designated and protected with the Threatened Designation.

RESPONSE: Based on this and other feedback we evaluated the whole petitioned area as a DPS and found it significant, thus the units mentioned are included in the updated recommended area for listing.

Line 2474 Table 7, and 2587-2591 (Beier): CC-S: In Table 7, think you could make the case that this unit earns a "Yes" for "markedly separated". Your rationale on 2587-2591 is reasonable, but I think a "yes" response is similarly reasonable.

RESPONSE: Due to the extensive feedback from reviewers and the reworking of the recommendation, Table 7 was no longer necessary and has been removed.

Line 2474 (Riley): We would propose to evaluate another Management Unit in this table, specifically the Santa Monicas to Los Padres MU, including the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, and 10 km north of the Santa Clara River. We would argue that this MU would rank "Yes" under "Markedly separate", for the Santa Monica Mountains specifically; "Yes" under "Unique Ecological Setting" for its "unique and unusual" location in one of the largest and most intensively fragmented urban areas in the world; and "Yes" under two other important elements of "Significance": "Only apex carnivore species in the system" and "Significant value for the local human population." In turn, this would mean that it would be a "Yes" as constituting a DPS, and because it is also clearly threatened, it would be a "Yes" for "Imperiled," and therefore a "Yes" for warranting listing as a threatened or endangered DPS.

RESPONSE: Based on this and other feedback we evaluated the whole petitioned area as a DPS and found it significant, thus the units mentioned are included in our updated recommended area for listing.

Line 2474 (Riley): A couple of other comments on this table: if the "Only apex carnivore species in the system" category were added for significance, then all of the Management Units would be significant. This may seem like an overly broad criterion, but I think it is indeed a valid one, as I mentioned previously, and that the disappearance of this species in any of these area would truly be a significant ecological loss. There are places in the state where that might not be the case because of wolf presence, but that is not currently the case here, and may not be for a long time, if ever, as I mentioned. So that would then mean, according to the table, that any management unit that is determined to be imperiled, would also warrant listing, which would include CC-N, CC-S, the Santa Anas, and SG-SB, along with the currently proposed ones (the EPR and the South Coast Group), or basically everything except for CC-C and the Central Coast Group. One other thought about the potential importance of the Central Coast Central Management unit: it is true that the Central Coast Central cluster is relatively large and seems in decent shape genetically and demographically, currently. However, with an effective population size of about 60 individuals, based on Table 3, and a population estimate of around 150 (same Table), it is not as secure as say the North Coast or Sierra Nevada populations. Given that the Central Coast Central population is currently the main source for both the CC-N and CC-S populations, both of which are imperiled, an argument could be made that it is really important to protect this Central Coast population as well, over the long-term to prevent further erosion or loss of the smaller ones to the north and south. So taking the longer view of protecting the whole coastal area overall might indicate the importance of protecting Central Coast Central as well. Something to consider at least. Finally, though the CC-S overall may not be, the Santa Monica Mountains are definitely markedly separate, we believe represent a unique ecological setting, and are certainly imperiled.

RESPONSE: Based on this and other feedback we evaluated the whole petitioned area as a DPS and

found it significant, thus the units mentioned are included in the updated recommended area for listing.

Line 2475 – 2522 (Wilmers): To determine whether or not each of the management units is markedly separate or discrete, the department relies on genetic data from Gustafson et al. (2019) and (2022) to make pie charts foreach animal showing the animal's genetic ancestry (Figs 15 and 16). They then use these pie charts to ask whether there is evidence of recent migration from other management units or populations. If there is evidence of recent migration into the management unit, the department then claims the management unit is not discrete. This is not a sufficient test. Just because there is some in migration does not mean that the population is not discrete (e.g. as measured by Structure tests).This would be like saying that coyotes and gray wolves are not separate species because they occasionally hybridize. A better test would be to ask whether the amount of in-migration is sufficient to counteract the effects of inbreeding on genetic diversity. This approach has been applied to the Santa Monica mountains population by Benson et al. (2016), but has not been applied to the other management units. Absent this test, the department should ask whether a) the management unit shows genetic structure which would indicate that habitat fragmentation is affecting the genetic composition of mountain lions, b) this structure has been increasing over time indicating that human induced landscape fragmentation is inducing said structure, and c) the activities that created this structure continue or are increasing over time (e.g. road building, vehicle travel, home building etc.).

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2485-2490 (Vickers): The sentences "The SNP data from Gustafson et al. 2022 represent more of the genome and reveal ancestry further back in time. The 2022 study informs questions about the amount of genetic material historically shared between MUs and retained genetic variation within individuals and extant MUs. However, the effects of relatively recent (i.e. within the last few centuries) land use changes that restrict connectivity between MUs is not revealed by such data." are not accurate in my understanding. Microsatellites that are selected for population genetics mutate much more quickly than SNPs, and have more sensitive abilities to determine kinship leading to population structure, but the time scales of change that are revealed by the two methods is substantially influenced by other factors. The Gustafson et al. 2022 analysis used numerous contemporary samples and can be utilized to inform more recent genetic connectivity.

RESPONSE: Due to these and other comments we have overhauled the discussion of Gustafson's 2 studies and time frames. The text addressed in this comment has been deleted.

Line 2490 (Riley): It is definitely my understanding that SNP data like the kind in Gustafson et al. 2022 certainly can be informative about relatively recent land use changes. I have confirmed this with collaborators that we work with on population genetics projects. And this was my understanding from Kyle, while working on this paper, and it is what we were thinking in that paper. Indeed, both the first and last sentences of the abstract mention the effects of urbanization and fragmentation on lion population genetics, which, in this paper, is obviously measured with SNPs. Moreover, there are multiple places in this current document that mention the importance of the SNP data for determining population structure across the state, including from anthropogenic, and therefore more recent, factors. So I'm not sure where this statement at the end of the paragraph is coming from. While microsats evolve relatively quickly, and therefore can be good indicators of more recent evolution of some kind, and individual SNPs may not be evolving quickly, there is great power in the use of 1,000s of SNPs as are commonly used in these studies, including this one. And looking at changes across that many loci can indeed reveal relatively recent changes such as changes in connectivity from land use. The SNP data is richer than the microsat data and can provide information about things that the microsats cannot, including deeper relationships and potentially selection, but that doesn't mean they can't also provide

information about relatively recent changes. Indeed, these relatively recent changes would generally be largely or entirely a result of genetic drift, as opposed to mutation, and the large numbers of markers that you get from the SNP data give you an even better picture of genetic drift than the smaller number of microsats.

RESPONSE: Due to these and other comments we have overhauled the discussion of Gustafson's 2 studies and time frames. The text addressed in this comment has been deleted.

Line 2492 (Riley): Where did these maps come from? They clearly are using the data from our two papers, Gustafson et al 2019 and 2022, but they do not appear in either paper, at least in the main body. I think it's important to say explicitly that the data come from the papers, as is indicated by the figure captions, but that they were produced by others, and ideally who. Also, I think it's very hard to make out what is going on in the pie charts representing different individuals. I know there are already a lot of figures, but I think if there are important places to highlight with the pie charts, I think it would be important to zoom in closer.

RESPONSE: These maps were produced by the Department using the data from Gustafson et al. 2019 and 2022. We have tried to present them at a scale that is relevant for our purposes but also doesn't require too many individual maps.

Line 2516 (Ernest): This statement is not always true: "However, it (genetics) does not provide information about the extent of current connectivity". The statement is false when genetic tools are used to determine kinship relations - then it can provide information on current connectivity - such as with genetic pedigrees as in in Ernest et al 2014, Riley et al 2014, Gustafson et al 2017.

RESPONSE: Due to these and other comments we have overhauled the discussion of Gustafson's 2 studies and time frames. The text addressed in this comment has been deleted.

Line 2526 (Vickers): Re Discreteness/Designation as Markedly Separate: To quote the wording in the report vis a vis the SA population when answering the question with "Yes"- "This population is classified as a fine-scale genetic group by Gustafson et al. (2019)". This designation as a separate population is the case for every one of the 6 petitioned populations, so to say that any of them are not discrete or separate throws into question the basic premise of basing these evaluations on the genetic grouping. That makes no sense to say that is the basis for some to be "discrete" and not others.

RESPONSE: Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2526 – 2536 (Wilmers): I agree with the categorization that this is a markedly separate population. However, the structure of this population is a bit more nuanced than presented in the department's status review and in the two Gustafson et al papers (which suffered from a low sample size of animals east of hwy 101).Rather than lump individuals from east (i.e. the Diablo range) and west (i.e. the Santa Cruz Mountains) of the 101 together, recent genetic evidence suggests that these would be better described by two management units – let's call them Central Coast North-East and Central Coast North-West. (Describe genetics). In an analysis led by my collaborators, Nicolas Alexandre, Megan Supple and Beth Shapiro, we sequenced whole genomes of 506 mountain lions from across California with a range of ~3-20x coverage and a mean ~12x coverage. The data used for estimation of "admixture proportions between populations" and the "estimated number of populations" in the attached figure comes from a set of ~5 million markers (SNPs) filtered for various quality metrics, which were then pruned to reduce computational burden and nonindependence of linked markers (N=~130K). Using a similar approach to Gustafson 2022, the analysis has identified a K value of 12 populations as best fitting the data. This is still

an ongoing analysis and has some issues that still need to be resolved. For instance, there are many instances of highly related individuals in certain populations that need to be pruned out before resolution of even more subtle population structure is visible. However, we can already observe strong signals of structure in the following analysis that are a good starting point. For example, CC-N has a clear split to the east and west side of the 101. As well, we have collared 147 adult and juvenile mountain lions with GPS and/or VHF collars over the past 15 years in the Santa Cruz Mountains, and we have never had an animal leave the mountain range though connectivity to the east across the Coyote Valley to the Diablo range and to the south to the Gabilan range surely existed prior to the construction of Highway 101 and associated development.

RESPONSE: Noted. Based on this and other feedback we evaluated the whole petitioned area as a DPS and found it met the criteria, thus substructure of the genetic populations is less relevant to the recommendation that it was previously.

Line 2537 (Vickers): For the reasons noted above, I feel that the parameters listed in 2537-2547 are inadequate to capture whether this population is in fact "Significant". Thus I believe that the answer here should be "Yes'

RESPONSE: Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2538 – 2548 (Wilmers): As described above in comment 1, the ecological impact of losing mountain lions needs to be assessed as their loss would almost surely result in significant ecological impacts in the Santa Cruz mountains and throughout the other MUs. As an apex predator, mountain lions (and the only apex predator in the MUs being considered) have a large and disproportionally large impact on ecosystems. When mountain lions (and jaguars) were lost from island fragments formed by the damming of a major river in Lagu Guri, Venezuela, herbivore populations ranging from rodents to monkeys increased 10 to 100 fold (Terborgh et al. 2001). In Yosemite valley, where mountain lions are largely excluded by heavy human presence, deer are now limiting the recruitment of young oak trees (Ripple and Beschta 2008). Similarly, in Zion National Park high human visitation excluded mountain lions from certain areas allowing for higher deer densities which reduced recruitment of cottonwood trees, increasing bank erosion and reducing hydrophytic plant, wildflower, amphibian, lizard and butterfly abundance (Ripple and Beschta 2006). Our own work has shown that that the loss of wolves from the north east of the US and consequent invasion of coyotes has had a profound impact on rates of Lyme disease (Levi et al. 2012). Given a similar ecological relationship between mountain lions and coyotes (Wang et al. 2015) as between wolves and coyotes (Levi and Wilmers 2012), it would not be surprising if the presence of mountain lions in coastal California contributes to the much lower incidences of Lyme disease here than occurs in the Northeast. Finally, pumas in our study area eat a lot of domestic cats (Smith et al. 2016) which reduces the prevalence of domestic cats where pumas occur (Wang et al. 2015). Given the substantial toll that domestic cats have on biodiversity (Loss et al. 2013, Lepczyk et al. 2023),losing mountain lions from these habitats will almost surely greatly magnify the impacts of domestic cats on biodiversity through mesopredator release (Crooks and Soule 1999)

RESPONSE: Noted. Based on extensive feedback from reviewers we evaluated the whole petitioned area as a DPS and recommend it for listing.

Line 2539 – 2540 (Wilmers): The department appears to have interpreted the first significance criteria (i.e. “Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.”) to me mean that if the dominant plant species (e.g. redwoods) are found elsewhere in California, then the ecological setting is not unusual or unique as if the only thing determining ecological

uniqueness is the dominant plant species. This is overly simplistic. There are many things that comprise an ecological setting (including but limited to the dominant plant species) such as other plant and animal species, soil types, aquifers, slope, elevation, aspect, water bodies, the spatial scale of watersheds, human developed areas and much more. Determining the difference or uniqueness of two or more different ecological communities is something that is commonly done in ecology using ordination, dissimilarity or other techniques. I am not familiar with all the data the department has at its disposal, but at a minimum I would assume that they at least have species lists of the most common plants and animals in each study area. Based on the data they do have available, they should conduct an ecological uniqueness test that includes multiple (e.g. the 100 most common species) species and other ecological variables rather than one or two dominant plant species.

RESPONSE: Noted. Based on this and other feedback we evaluated the whole petitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population is significant is less relevant than it was in the version that went to external review.

Line 2540 (Vickers): See notes above re CC-N population.

RESPONSE: Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2541 – 2544 (Wilmers): I disagree that the loss of mountain lions in the Central Coast North population would not constitute a gap in range. First, the Central Coast North-West MU (see comment 4 above) is tenuously connected (though threatened by highway 101 and associated development) to the south across highway 101 to the Gabilan range and to the east across the Coyote Valley to the Diablo range. Losing the Central Coast North-West MU would thus create a gap for mountain lions trying to get from the Gabilan range to the Diablo range through the Santa Cruz Mountains. The Central Coast North-West and Central Coast North-East MUs are also connected to MUs north of the bay via the Golden Gate and Carquinez strait respectively. Dellinger et al. (2020) Fig 3 shows that mountain lion habitat from the Central Coast North-East MU abuts mountain lion habitat in the North Bay with only the Carquinez strait separating them. Conventional wisdom has held for along time that mountain lions don't swim, but this is wrong. Stratton et al. (2022) recently documented a GPS collared dispersing male swimming 1.1 km in the Puget Sound, Washington and was able to infer mountain lion swim distances of up to 2 km based on the pattern of occupancy of islands at different distances from the mainland. The Carquinez strait separating the north and south Bay Areas is only 0.8 km wide at Dillon point where a mountain lion could reasonably cross. Even the Golden Gate is less than 2km across and mountain lions do appear in the Presidio or nearby every few years. A water crossing at either site is surely a rare occurrence given the low bidirectional migration estimate between sites north and south of the Bay (0.003 from Table S2 Gustafson et al. 2019), but these rates of crossing have almost surely been reduced by human development along both shorelines and by ship traffic within the waterways.

RESPONSE: Noted. Based on this and other feedback we evaluated the whole petitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population qualifies as a gap in range is less relevant than it was in the version that went to external review.

Line 2546 (Riley): This seems like a judgement call, and I'm not sure that I agree with this conclusion, that there are not "markedly different genetic characteristics" based on the SNP data. The fact that Fig. 16, with SNP data, shows some evidence of potential shared ancestry farther back, doesn't mean that there aren't important genetic differences here, in the Santa Cruz Mountains. In fact, when I look at Fig. 16, and compare the Santa Cruz Mountains and CC-N to CC-C, they look quite different! How much difference is enough, to be "markedly different"? How is this being measured? It's not clear to me.

RESPONSE: Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2550 (Vickers): In the document, the word "threatened" is utilized to describe some of the six petitioned populations before the final recommendation that may decline to suggest Threatened status. Using the word "threatened" in multiple and conflicting ways is likely to be confusing to the reader. An example follows from the CC-N MU evaluation section: Imperiled? Threatened or Endangered: Yes. This is a small, isolated population with an effective population size of 16.6 and an estimated 33–66 adult animals. Conclusion: Evidence does not support a designation as a threatened or endangered DPS.

RESPONSE: Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2550 – 2551 (Wilmers): I agree that this population is threatened or endangered. In addition to the low effective and estimated population sizes, we have recently documented two adult mountain lions with kinked tails – a trait associated with inbreeding – in the Santa Cruz Mountains population.

RESPONSE: Noted.

Line 2552 (Wilmers): I disagree with this. Given my analysis above that the loss of mountain lions from this DPS would constitute both a 'gap in range' (Comment 7) and have a significant ecological impact (Comment 5), scientific evidence favors designation as a threatened or endangered DPS.

RESPONSE: Noted. Based on this and other feedback we evaluated the whole partitioned area as a DPS and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2558 and 2586 (Vickers): The CC-C MU is bordered on the north by a discrete isolated population (CC-N MU), and on the south by the CC-S MU, itself containing one of the two most imperiled population segments (SMM) in the state, as well as at its margin the Tehachapi population which recent research suggests has significant restriction of connectivity due to major freeways (Vickers and Najera unpublished). Thus, it is my opinion that the CC-C MU is in fact discrete and likely becoming more so since its connection to the SN population is dependent on the Tehachapi Range, which is itself under threat from plans for high speed rail, SR 58 widening, and steadily increasing traffic on I-5, SR 58, and SR 14, as well as two large planned developments. These infrastructure elements all serve to further reduce connectivity for both the CC-C MU and CC-S MU to the east and south, and will be likely to exert more effects in the future. Given the dynamic negative challenges to connectivity occurring on the ground in that area (despite the Wallis Annenberg bridge over the 101 freeway that will benefit only the small SMM population), in my opinion the answer relating to the questions of discreteness/marked separation for both the CC-C and CC-S MUs should be "Yes".

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS. Therefore whether each individual genetic population qualifies as discrete is less relevant than it was in the version that went to external review.

Line 2560 (Riley): So the implication here is that there is enough gene flow between CC-N and CC-C that CC-C is not markedly separate, yet CC-N is, based on line 2526? That doesn't make sense, I don't think. Or is it that CC-C is not markedly separate just because of the connections in the South between CC-C and CC-S?

RESPONSE: Noted. Based on this and other feedback we evaluated the whole partitioned area as a DPS

and found it met the criteria. Therefore whether each individual genetic population meets the criteria is less relevant than it was in the version that went to external review.

Line 2562 (Riley): This mention of CC-C ancestry in CC-S except for the Santa Monica Mountains provides further support for evaluating and potentially listing a separate Santa Monica Mountains MU, as we are suggesting.

RESPONSE: The Santa Monica Mountains are now in the area recommended for listing.

Line 2573 – 2576 (Wilmers): The department appears to use an effective population size (Ne) of less than 50 individuals in determining whether a DPS is potentially imperiled. This derives from the so called 50-500 rule proposed by Soule (1980) and Franklin (1980) nearly 45 years ago in which they recommended that a population of ≥ 50 individuals was necessary to avoid inbreeding depression in the short term and that a population of ≥ 500 individuals was necessary to maintain evolutionary potential in the long term. These thresholds were based on the opinions of animal breeders and limited data on laboratory animals. Since then however, numerous studies have shown that inbreeding depression can occur in populations with Ne's ≥ 50, and as such recent authors have suggested that a more appropriate limit of Ne ≥ 100 be set to avoid inbreeding in the near term (Frankham et al.2014). Similarly, several lines of theoretical and empirical evidence now suggest that an Ne ≥ 1000 is necessary to maintain evolutionary potential in perpetuity (Frankham et al. 2014). If an Ne ≥ 50is insufficient to prevent inbreeding, then surely it is too small to prevent imperilment. If the goal is simply to preserve mountain lion populations in the near term, then an Ne ≥ 100 should be the minimum to avoid imperilment, but if the goal is to maintain mountain lion populations in the long-term, then the department should aim for an Ne ≥ 1000. To achieve this later target would require maintaining and restoring connectivity among mountain lion populations throughout California and to neighboring states. Even if we are to accept an Ne ≥ 50 as the acceptable threshold, the department doesn't consider that the Ne estimate of 56.6 for the Central Coast Central MU taken from Table 2 of Gustafson et al (2019) has 95% confidence intervals (CIs) that included values < 50 (CIs 47.4 – 69). Furthermore, Gustafson et al (2022) estimates an Ne for the Central Coast Central of only 26.9. Taken together these point to the fact that the Central Coast Central population may well have an effective population size less than 50 and should be regarded as imperiled.

RESPONSE: Due to this and other comments, we use Frankham et al. (2014) suggested Ne=100 to prevent inbreeding depression over short timescales (~5 generations) as the criteria for imperilment.

Line 2577 (Vickers): Dellinger et al. 2020 found that key genetic elements (expected heterozygosity, allelic richness, and effective population size) that are recognized as significant to mountain lion population long term survival were all higher in habitat that was protected versus unprotected. It was surmised in that paper that this was the result of unprotected habitat being more prone to fragmentation and other anthropogenic factors that disrupt connectivity. Since the CC-C MU has the least percentage of habitat that is protected of the six MU's, its north-south intra-MU connectivity is vulnerable to development, and it is a critical gap between the CC-N MU and the CC-S MU, that it too should have the increased protection of threatened status.

RESPONSE: CC-C is now in the area recommended for listing.

Line 2585 – 2612 (Wilmers): How can the Central Coast South population be imperiled, but not discrete? This makes little sense. Either it is a discrete population that is imperiled (due to extremely low effective population size and inbreeding) or it is not discrete and not imperiled (because it has plenty of gene flow from other populations as the department suggests). It is hard to imagine how this population is showing such stark signs of inbreeding if it is not really discrete. The genetic (e.g. structure plot inset in Gustafson et al (2019) and other (e.g. high rates of malformed sperm and kinked tails) evidence suggest

the population is both discrete and imperiled.

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS. Therefore whether each individual genetic population qualifies as discrete is less relevant than it was in the version that went to external review. This section has been deleted.

Line 2587 (Riley): Again, there is explicit acknowledgement of the Santa Monica Mountains being separated from the rest of CC-S, and therefore from CC-C, by "heavy urbanization," which includes freeways. This continues to indicate the importance of considering a Santa Monica Mountains MU.

RESPONSE: The Santa Monica Mountains are now in the area recommended for listing.

Line 2590 (Riley): I think this assessment of how much connection there is between CC-S and CC-C is premature. There really wasn't very good sampling of southern CC-C and northern CC-S for our statewide papers, because those samples just weren't available. More recently, through various efforts by the Dept, there are significantly more samples available, is my understanding. And as I said before, it is important to specify somewhere what the boundaries of the CC-S MU are. I don't think it makes sense to have the Sierra Pelona, across Highway 5, as part of CC-S. I don't think anyone in the area would consider the Sierra Pelona mountains, east of 5 and above Highway 14, as part of the "central coast." And I don't think it makes sense based on what we have seen of lion population genetics, both in our 2014 paper, and in these two statewide papers.

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS, which makes the discussion of the connectivity between the individual genetic populations less relevant, and this section has been deleted.

Line 2594 (Riley): As stated in a couple of previous comments, we believe that the Santa Monica Mountains specifically do indeed represent a unique ecological setting as the most intensely urbanized place in the state, and indeed in the country and hemisphere, where there are mountain lions or any large felid.

RESPONSE: The Santa Monica Mountains are now in the area recommended for listing.

Line 2596-2603 (Vickers): The way that the term "gap" is used in the report for assessing these populations is inappropriate in my view. Populations seem to only qualify if they are as links in a straight or curving chain of discrete links, but in fact each population south of the CC-N MU and east of the SA MU is a link that would create an insurmountable connectivity gap if that population were to be extirpated or if connectivity within or between the MU's were seriously disrupted by accumulated infrastructure. Interestingly, the most critical linking population area or "gap" (as noted by the Department in the report) is the Tehachapi Range, and though it is included in the proposed ESU, it exists at that margin of the CC-S and CC-C MU's but the report does not classify it as to what MU it belongs to. This is partially due to the low numbers of genetic samples that were available from there for the Gustafson analyses. More samples are now available from research by UC Davis there in the last year and those may help define their most appropriate grouping. However, since the status of that Range has a bearing on the designation for the CC-S and CC-C MU's, it may be necessary to include it in both in my opinion. If included in the CC-S MU it makes that MU clearly a "gap" area. The lack of definition of where that population falls makes proper classification of the CC-S MU difficult. Recent UC Davis research suggests that the population across the Tehachapis is to some degree restricted in free movement between the SN and the CC-C and CC-S MU's (Vickers and Najera unpublished). The report seems to be treating the Tehachapi Range population as part of the CC-C MU connection to the SN when in fact the western end of the Tehachapis falls on the border between the CC-C and CC-S MU's, and thus may be functionally a part of both, and critical to both. In these sentences however, the CC-S MU is

depicted as just the SMM population despite earlier in the document and in the genetics analyses the CC-S MU includes mountain lions substantially north of US 101 and perhaps to the Tehachapis. So assuming that the Tehachapi Range is at least functionally a marginal part of the CC-S, the CC-S could also be classified as a "gap" population. It is a given that disappearance of that Tehachapi population, or loss of what diminished connectivity there is across that Range, would in fact leave the biggest gap of all in connectivity for the genetic health of all six MU's. In my opinion this answer for the CC-S should instead be "Yes" for all of these reasons.

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS, which makes the discussion of the gaps between the individual genetic populations less relevant, and this section has been deleted.

Line 2597 (Riley): I disagree that losing CC-S does not represent a significant gap in the range, although as I said, I'm not really clear on how this "gap in range" criterion is being applied. Most importantly though, I definitely think that CC-S is critical for connectivity to other MUs. Again, this may depend a bit on where CC-S is considered to be, but assuming that the northern part of CC-S is the Los Padres National Forest area around Gorman and Frasier Park, which based on Fig. 1, it would be, than it would be the connection between the entire Central Coast area and the Sierras, and therefore the rest of the state (other than the South Coast). CC-S also includes the connection between the coast and SG-SB, and therefore to the whole South Coast area (SAs, EPR). So really you could argue that CC-S is the most important MU for connectivity in the entire state, certainly in the petitioned area. It is true, as stated on line 2600, that the connection to SGSB is currently very limited, but in my opinion that does not mean that we should give up on it, nor does it diminish the importance of the connection. On the contrary, I would argue that it is especially important that healthy populations of lions exist on both sides, so that if we're able to improve connectivity, the improvement will still be useful for this species. And there are currently efforts underway to improve connectivity across 5, and ideally 14 too, for wildlife generally and for mountain lions specifically. Finally, while it is true that the Wallis Annenberg Wildlife Crossing is under construction and will significantly improve connectivity between the Santa Monica Mountains and areas north (last sentence here), I don't think that means we should assume its success at significantly assisting the mountain lion population before it is even finished, let alone before we have been able to monitor its use and ultimately how the lion population responds. And as we've stated elsewhere, though 101 is the biggest and most significant barrier for the Santa Monica Mountains, there are two other roads between the Santa Monicas and Los Padres, the 118 Freeway and Highway 126, across which connectivity is also important.

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS, which makes the discussion of the gaps between the individual genetic populations less relevant, and this section has been deleted.

Line 2601 (Beier): "Connectivity across highway 101 linking the Santa Monica Mountains to the Simi Hills will be significantly improved following the completion of the Wallis Annenberg wildlife overpass, which will promote gene flow within the southern portion of this MU." I do hope this is true, but we don't really know this yet.

RESPONSE: That sentence has been deleted.

Line 2612 (Riley): As we've mentioned, we have direct evidence of extensive close inbreeding in the Santa Monica Mountains population, within CC-S. This is mentioned for the SAs (line 2683), so it should also be mentioned here. We mentioned two cases of it in Riley et al. 2014, and we also reported on three other cases in our Report to the Dept, specifically covering the years 2016-2018. So this could be cited instead of a personal communication.

RESPONSE: This section has been deleted, and details of inbreeding in the Santa Monica Mountains has been added to section 4.10.4

Line 2612 (Riley): Mountain lions in CC-S are indeed imperiled, and there are a number of other sources of data other than the statewide papers. We investigated the viability of the population in a very detailed and comprehensive way for the Santa Monica Mountains, using the best available empirical data on demography and genetics, in Benson et al. 2016 and 2019. I think it is important to mention and cite these results here. Specifically we found that over the next 50 years there was a 20% chance of extinction just based on demography along, because of the isolation and small size of the population in the Santa Monicas. And when genetics were taken into account, if inbreeding depression reached a similar level as seen in Florida, there was essentially a 100% (99.7) chance of extinction over 50 years, with a median time to extinction of 15 years. Also, as mentioned in previous comments, we have directly documented close inbreeding, i.e. mating between close relatives, multiple times in the Santa Monicas (Riley et al. 2014, NPS reports).

RESPONSE: CC-S is now in the area recommended for listing.

Line 2613 (Riley): As mentioned in other comments, we believe that the mountain lion population in the Santa Monica Mountains is both discrete and significant. It is discrete, based on physical separation and genetic evidence, and it is significant as the most urban population of the species in the state and beyond; as the only apex predator in the system; and because of its significance to the people of the Los Angeles Area.

RESPONSE: The Santa Monica Mountains are now in the area recommended for listing.

Line 2613 (Wilmers): I disagree that the Central Coast Group is not discrete. It is hard to understand how the department came to this determination. The discriminant analysis of principal components plot (Fig. 3, page21) shows clear genetic structure differentiating the Central Coast from other populations in the state. There is no natural reason for this genetic structure to occur – were it not for the activities of humans, there is no reason that a wide-ranging species capable of dispersing 100s of miles would show such population structure. The cause is human development in the form of highways, row crop agriculture and urban areas fragmenting habitat and making it more difficult for mountain lions to disperse from one area to another. That there might be occasional migrants into the population from outside the Central Coast MU does not negate its discreteness as evidenced by the strong genetic structure, low effective population sizes and multiple lines of evidence of inbreeding (described above and in the status review). Finally, the department suggests that the Los Padres National Forest provides connectivity to public land east of the MU without mentioning that this is bifurcated by highway 5 – one of the busiest interstates in the United States and getting busier every day. Substantial sprawl is expected to continue along the I5 with a new community of 12k homes being planned for the Tejon ranch in the Tehachapi at the part of I5 purportedly providing connectivity to the Central Coast Group.

RESPONSE: Noted. Based on reviewer feedback we evaluated the whole petitioned area as a DPS, which makes the discussion of discreteness of the individual genetic populations less relevant, and this section has been deleted.

Line 2619-2623 (Beier): Here you assert that the Central Coast Group is not markedly separate. Figure 3 suggests that it is quite separate. One could argue "Yes" just as strongly. Remember, there is a time lag between land use changes and genetic response. I would strongly argue that the trajectory is leading toward a "yes". If there were superb crossing structures on US-101, SR-14, and I-5, one could say the trajectory might be getting better.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic

populations meet the criteria for a DPS, and this section has been deleted.

Line 2622 (Riley): I'm not convinced that there is "evidence of gene flow and migration" in the Santa Barbara through Ventura area." What is this evidence exactly? One problem may be, as I mentioned before, that it's very hard to see the pie charts in Figure 17 and 18. So it may be worth zooming in on particular areas, to make certain points, more so than is currently the case. I think another problem, again as I said before, is the lack of extensive sampling in this area, of the northern CC-S and southern CC-C. And finally, as I've also said, there needs to be a clear description of the boundaries of the management units, which is not the case currently, that I've seen. Where does CC-C end and CC-S begin? Is the Sierra Pelona in CC-S? I think it should be part of the Western Sierra Nevada, which is what it looks more like is happening in Figure 1, back in the beginning of the document. But overall, in order to be able to evaluate these management units and how discrete they are, we need to know where they begin and end.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2628 (Riley): In terms of connection between the Central Coast and the San Gabriels, we have done work specifically in this area and on this question, and there is no evidence that this is the case, and in fact there is substantial evidence that it is not the case. We have tracked many animals over the years in the Santa Susana Mountains, and never had one cross the 5 Freeway to establish itself in the San Gabriels or Sierra Pelona. And we have had many animals come right up to the freeway, which is clearly a home range boundary. This is evident in a figure in Riley et al. 2014, but we have also seen it regularly in other animals since then, including some animals that we're tracking currently (P105 and P106). We also did a study with Caltrans and LA Metro specifically along Highway 5 in the stretch between the 14 interchange and Santa Clarita, where we monitored 9 different crossing points and natural areas in the vicinity on both sides. We never detected mountain lions at any of the crossing points, or nearby on the East side, although we did detect them in the vicinity on the west side, at multiple sites. Finally, in our regional genetic analysis, we also saw strong evidence of genetic differentiation across Highway 5 (Riley et al. 2014, and subsequent unpublished analyses).

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2630 (Riley): As I said, I don't agree that the Central Coast is not markedly separated from other populations. It is physically separated, by the Central Valley and Highway 5, and that separation is borne out by genetic data, as far as I can tell.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2634 (Riley): Again, we believe that the Santa Monica Mountains, in the Central Coast Group, does indeed represent a unique and unusual ecological setting for the species.

RESPONSE: The Santa Monica Mountains are now in the area recommended for listing.

Line 2641 (Riley): It's hard for me to understand how, if the Central Coast Group has "markedly different genetic characteristics," it is not also markedly separated. This gets back to the point about whether SNP data are also relevant for recent changes, which they definitely can be, even if they also provide information about deeper ancestry (more so than microsats, say).

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2647 (Riley): I agree that the Central Coast overall, specifically because of the presence of the CC-C group, is not imperiled, in the way that the others in the petitioned area are. I think it's worth saying here that that CC-C MU is one of just 4 (along with ESN, WSN, and NC) MUs with an Ne of more than 50 (as opposed to saying "few"). Also, however, as I mentioned in reference to the Table, although it is not as imperiled as the others, Central Coast Central is indeed critical for the long-term survival of the CC-N and CC-S populations, and therefore for the whole Central Coast. If it's important to conserve the species in the petitioned area, it may be worth considering whether it is worth protecting the Central Coast Central unit, because of its critical role as a source for the other areas.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2647 – 2651 (Wilmers): I disagree this population is not imperiled. The effective population size of the Central Coast Group as estimated by Gustafson et al. (2019) is 76, which is less than the Ne ≥ 100 threshold currently recommended by conservation biologists (Comment 10). Additionally, the combined effective population sizes from all three populations calculated by Gustafson et al. (2022) is only 50, a margin of only one effective animal over the older Ne ≥ 50 rule. By either metric the population should be considered imperiled

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2652 – 2653 (Wilmers): Given my analysis for discreteness (comment 12) and imperilment (comment 13) above, the Central Coast group now meets the standards to be designated as a threatened or endangered DPS.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2661 (Riley): Yes, based on Fig. 17, there do seem to be quite a few migrants into the SAs from the southeast. How many are there specifically? It is hard to see, but worth mentioning, I think.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, which makes the gene flow between the individual genetic populations less relevant to the recommendation. This section has been deleted, but the maps and some of the text has been moved to section 2.4

Line 2662 (Riley): Do you means to say that 74 lions in the EPR, or 74 in the EPR and the SAs together? Otherwise, how many were tracked in the SAs? This needs to be clear, I think.

RESPONSE: This section has been deleted, and has been clarified where mentioned in the rest of the document.

Line 2666 (Riley): What is the evidence for the increased traffic and development, and what is meant by "recent years"? Maybe Winston can help with this. Also, the Huffmeyer et al. reference has 2022 as the year, in the Lit Cited. Technically it was accepted and in press in late 2021 I believe, but printed in 2022, so either could in theory be used, but it would be good to be consistent with the Lit Cited.

RESPONSE: This section has been deleted, and the reference has been fixed in the rest of the document.

Line 2668-2672 (Beier): You correctly state: "The conflicting evidence between Vickers et al.'s (2015) telemetry study and Gustafson's et al.'s (2019) genetic work may, in part, be explained by worsening fragmentation from recent land use changes as many of the tissue samples analyzed by Gustafson et al. (2019) were obtained prior to the onset of Vickers et al.'s (2015) study." I agree 100%. But recent (and

ongoing) land use changes and time lags in genetic response also affect other groups for which we lack telemetry data, so although Gustafson genetic map is superb, time lags mean it may not reflect the condition today, and certainly not tomorrow.

RESPONSE: Noted.

Line 2671 (Riley): This is confusing - many of the samples in our 2019 Gustafson paper were from before 2000, is that right? That seems surprising, but either way, it needs to be clear. Were they maybe from Paul Beier's work back in the 90's? But also, I think the excellent long-term telemetry data that Winston and others collected is clear evidence of the Santa Anas being discrete, along with the fact that there is a major, busy freeway, I-15, separating the Santa Anas from the EPR. The population genetic data is of course valuable, but the population assignments are an indirect, and not always perfect, measure of immigrants. The telemetry work is directly measuring this movement.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2672 (Vickers): May add: "Telemetry and camera studies have documented two additional mountain lions crossing I-15 west to east from the SA to the EPR, though both stayed for only short periods of weeks to a few months and then returned to the SA before their collars dropped off as planned. No collared mountain lions have been recorded crossing I-15 from east to west, though Gustafson et al. 2018 documented in an extensive pedigree construction for the SA and EPR populations three mountain lions sampled in the SA whose genetics suggested their origin was the EPR. Two of those were deceased when sampled in the SA and no offspring of theirs were detected. One of the three however (M86) appeared to have reproduced extensively and sired eleven offspring that were detected in the SA group at the time. In that same Gustafson et al. 2018 pedigree reconstruction, 3 animals were detected in the EPR whose genetics suggested that their origin was the SA. More recently, over a 3-year camera monitoring period along I-15, no mountain lions have been detected moving from the EPR to the SA, though two individuals were photographed moving from the SA into the EPR under I-15. Efforts are underway with Caltrans and others to increase connectivity through existing passageways like Temecula Creek and to build additional infrastructure for safe passage over or under the highway south of that point. (Vickers unpublished data)"

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2677 (Vickers): See earlier comments re CC-N population - lines 2435-2441

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2688 (Riley): This is true just for demographic stochasticity, but the model's predictions are much more dire when they include inbreeding depression causing declines in survival and reproduction. And as mentioned at the top of the page, there is evidence of this in the region based on poor sperm quality. I think another sentence or clause is needed here to at least mention this potential even more severe danger to the population.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2702 (Vickers): Add: "However, movement across the southern border is becoming more and more restrictive for wildlife including mountain lions due to border security infrastructure expansion and increased border patrol activity over time."

RESPONSE: This section has been deleted.

Line 2729 (Vickers): See earlier comments re appropriateness of use of Ne for population estimation and additional information that is needed here.

RESPONSE: We have reworked the discussion of effective population size and no longer use it to estimate population size. In addition the effective population size of individual genetic populations is no longer particularly relevant to the recommendation,

Line 2736 (Vickers): See earlier comments re discreteness and marked separation of the six populations. In my opinion this answer should be "Yes"

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2736 (Riley): I would argue that the SG-SB is indeed discrete. Both our regional genetic analysis (Riley et al. 2014) and the statewide papers (both Gustafsons) indicate that Highway 5 is a major barrier and that this group is separated from the Central Coast. As I mentioned above, this is also borne out by our mountain lion tracking data in the area. I think figures 3 and 17 actually show that this group is indeed discrete from a genetic point of view, Figure 3a quite compellingly so.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2742 (Riley): As mentioned, we have extensive tracking and camera data, and some genetic data (Riley et al. 2014) about the strength of Highway 5 as a barrier to movement and gene flow for mountain lions.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2759 (Riley): As mentioned, I don't agree that SG-SB is not discrete. Although it's also true that there were relatively few samples available from this area for the statewide papers. I know more recent samples have been acquired by CDFW work in the area, especially at the southern end of the population, so perhaps those could help shed some light on this area.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2759 (Vickers): In my opinion this population should be listed as a threatened DPS.

RESPONSE: Due to reviewer comments, we no longer evaluate whether the individual genetic populations meet the criteria for a DPS, and this section has been deleted.

Line 2795 (Vickers): See earlier comments re appropriateness of use of Ne for population estimation and additional information that is needed here.

RESPONSE: We have reworked the discussion of effective population size and no longer use it to estimate population size. In addition, we evaluate the petitioned area as a whole and the effective population size of individual genetic populations is no longer particularly relevant to our analysis.

Line 2804 (Wilmers): As stated above in comment 2, the department needs to consider whether all six MUs taken together meet the criteria for listing as a single DPS. This would be a good place in the report to do so. For the sake of my review, let's call this single DPS the "Coastal Group", and evaluate them for Discreteness, Significance and Imperilment. Regarding Discreteness, the Coastal Group is markedly separate from other populations in the state using the same genetic arguments I have used above for the

other MUs (comment 12) and the department has used for the Southern Coast Group. The Coastal group is also discrete because it has an international border. Regarding significance, the coastal group is significant according to Unique Ecological Setting, Gap in Range and Ecological impact criteria as described by the department and above. Regarding imperilment, the coastal group is imperiled for numerous reasons; 1) It has a combined effective population size of 70.6 (Gustafson et al. 2022) which is less than the Ne = 100 threshold described above, 2) the MU is experiencing signs of inbreeding in the North, Central and Southern parts of its range (as described above and in the status review) and 3) urban, road and/or agricultural development have and continue to fragment populations throughout all of the Coastal group MU.

RESPONSE: Due to reviewer comments, we evaluated the whole petitioned area as a DPS and found it met the criteria.

Line 2807-2817 (Vickers): The proposed ESU area constitutes a "significant" portion of the range in my opinion. Significant should be better defined as a term in this context - i.e. significant as a percentage of all the habitat in the state, or in other ways? As a proportion of the habitat I believe that a common reading of the term would classify the ESU area as significant.

RESPONSE: Noted

Line 2844 (Riley): Yes, we agree with this statement, of course, and think that it provides continued support for considering a Santa Monica Mountains MU.

RESPONSE: The Santa Monica Mountains are now included in the area recommended for listing.

Line 2846 (Riley): I think it's worth naming these groups, the two broad-scale ones, central coast and south coast, and the 6 fine-scale ones, CC-N, CC-C, CC-S, SG-SB, SA, and EPR, so that it's very clear what you're referring to here, and so that readers that aren't intimately familiar with everything won't have to wonder.

RESPONSE: This portion of the sentence has been deleted and text now reads "Long-term maintenance of genetic variation within the genetic populations in the petitioned area is reliant on habitat conservation and connectivity"

Line 2850 (Riley): Yes, this is a very important point, and we agree that connecting the coastal areas to the Sierras, through the Tehachapis, is critical for mountain lion populations across the state, long-term. The Santa Monicas to Los Padres MU that we are suggesting be considered would provide potential connectivity between the Central Coast and the San Gabriels. An important point is that this connection between a potential Santa Monicas to Los Padres MU and the San Gabriels-San Bernardinos MU would connect these two fine-scale MUs, but it would also be essentially the only connection between the broad scale MUs of the Central Coast and the South Coast. So this adds significantly to the importance of this connection. In theory, connection across 5 between the Santa Susanas and the San Gabriels could then also provide connection from the San Gabriels north to the Sierra Pelona and then to the Tehachapis, though that is a bit more indirect. However, the best connection between the coast and the Sierras is directly to the Tehachapis, though the northern part of CC-S, in Los Padres up in the Gorman, Frazier Park, Grapevine area. This area would not be covered in our proposed Santa Monicas to Los Padres MU, so we think it is worth considering whether CC-S is also worthy of listing, because of its significance for connectivity state-wide. If this connection is maintained or enhanced, this would provide another potential place connecting the Central Coast to the South Coast, though again a bit more indirectly, through the Sierra Pelona and to the San Gabriels.

RESPONSE: The area mentioned is now recommended to be listed.

Line 2864 (Riley): I think it's important to make it clear what you're referring to in this last sentence, since the previous one addresses multiple things, including protecting habitat, and the term "crossing infrastructure" is a bit nebulous. You could just say "of crossing structures" at the end of the sentence before "for effectiveness," or something like that.

RESPONSE: Done

Line 2874 (Riley): I think it is definitely worth citing the Benson et al. 2023 statewide survival paper here, when talking about depredation mortality rates (line 2874) and about concern about how depredation mortality could affect the coastal populations (line 2878). As mentioned earlier, this recent publication includes a massive amount of data on survival and mortality causes over decades, over the entire state, and including essentially all of the major researchers on lions, including Dept folks, in the state, and it specifically addresses these survival rates and mortality cause rates in a rigorous way.

RESPONSE: These sections are summaries of the threats more fully explained in Section 4, and do not contain citations. We discuss Benson et al. 2023 in the section on over exploitation 4.3.

Line 2889 (Riley): Yes, and there is no evidence that where wolves and bears coexist with mountain lions, which is essentially all over the west wherever wolves have returned, that this predation matters for lion populations.

RESPONSE: Noted

Line 2895 (Riley): Mark's work on these interactions is certainly interesting, but yes, even when there are wolves across the state again, mountain lions certainly coexisted with wolves and bears for millennia and do so currently in every place that wolves have returned to the west. And as mentioned earlier, lion harvest rates have actually been increasing in states with wolves, so significant, widespread population impacts seem unlikely.

RESPONSE: Noted

Line 2898 (Riley): It would be worth updating this section a bit. We certainly agree that these intraspecific interactions are likely more important in isolated areas such as the Santa Monica Mountains, and it was indeed the case that intraspecific conflict was the leading cause of mortality in the early part of the study, as we reported in Riley et al. 2014, coming especially from adult male P001, who killed a son (P005), a daughter (P007), and a former mate (P002); and also from P001's son, P009, who killed P-B and P008. And we certainly agree, as you say here, that this source of mortality, though it occurs in other populations too, especially unhunted ones, is likely exacerbated by the lack of dispersal out of places like the Santa Monicas. It might also be worth mentioning that when major, habitat altering or destroying events like fire happen in an isolated area, this intraspecific conflict could be further exacerbated. After the Woolsey Fire wiped out about 1/2 of the natural area in the Santa Monicas, there was even more overlap between males (both adults and subadults) in the unburned, eastern half of the Santa Monicas, as we discussed in Blakey et al. 2022. However, as our study has continued, other mortality causes have caught up to and even surpassed intraspecific conflict as sources of mortality. It would be important to cite Benson et al. 2020 (Biol. Conserv. 241:108294) here, where we determined rates of survival and mortality causes for the first almost 20 years of the study, covering 53 deaths, and found that anticoagulant rodenticide poisoning and vehicle mortality were equivalent with intraspecific conflict overall. And in fact, in the few years since this work, vehicles are now the most common cause of mortality.

RESPONSE: This section is a summary of 4.4 on competition where we have included the major points of this comment. The summary sections do not include references or new information.

Line 2902 (Beier): Remove the second period.

RESPONSE: Done

Line 2920-2925 (Riley): By far the best way to evaluate the importance of different mortality causes is through the use of telemetry data, since that gives an unbiased view of survival rates and of the rates of mortality from different causes. Fortunately, as mentioned before, we have a very recent, comprehensive analysis of mountain survival rates and mortality rates for different causes, including vehicles, from across the state and from 100's of collared animals over many years (Benson et al. 2023). Vehicles are indeed an important cause of mortality in the state, and through this analysis we can directly measure its importance against other mortality causes. The telemetry studies have of course not occurred everywhere, or across all years, but they are in more than just the Santa Monica Mountains and Santa Ana Mountains, and overall they give an excellent assessment of the importance of different mortality sources, including vehicles. Counts of vehicle mortalities can give some idea of total numbers, but there are all kinds of well-understood biases associated with such counts, especially if they are not based on systematic surveys for vehicle mortalities, which the Shilling et al 2023 survey is not. These counts are certainly valuable, and they are useful as minimum counts of mortality. But it is important to be aware of the limitations.

RESPONSE: Noted. We have included mention of the results of Benson et al. 2023 in this summary section.

Line 2935 (Riley): Although it may be somewhat true for Highway 17, I don't agree with this statement for the 101 Freeway, and potentially for many future crossings, depending on the specifics of what kind of road they're on. So, we of course believe the wildlife crossing structures specifically, and wildlife connectivity generally, are extremely important for wildlife conservation now and in the future, for all kinds of species, including for mountain lions. However, different crossing structures have different main goals, and different roads have different primary impacts. Major freeways are generally more important in terms of their barrier effects, because few animals even try to cross them, whereas smaller roads such as smaller highways and secondary roads have fewer barrier effects, but they are often more important as potential mortality sources. The main goal of the Wallis Annenberg Wildlife Crossing is not to reduce vehicle mortality, because that is not a major issue for the 101 Freeway, one of the widest and busiest freeways in the world. The main goal is to connect the two natural areas of the Santa Monica Mountains and the Simi Hills, for all species of wildlife, including mountain lions. The crossing will indeed provide safe passage for animals, including mountain lions, but it will not prevent vehicle mortality from continuing in our area, and more of the vehicle mortalities in our region have been on smaller highways or secondary roads than on freeways - of the 41 vehicle mortalities that we know of 25 have been on smaller roads vs. 16 on freeways. So as I said, wildlife crossings are critically important, but depending on where they are and what kind of road they cross, they may not make that much difference in terms of vehicle mortality.

RESPONSE: Have changed 'significantly reduced' to 'may be substantially reduced' so it now reads "If wildlife crossing structures and fencing become widespread within the proposed DPS, mortality from vehicle strikes may be substantially reduced."

Line 2947 (Riley): For the Santa Monica Mountains and surrounding areas, so for a potential Santa Monicas to Los Padres MU, two things are true: 1) toxicants have caused significant mortality in our population; and 2) we have computed cause specific mortality rates associated with it across our overall study area, and it was of similar importance as intraspecific strife, and now just behind vehicles, as the most important causes of mortality. This is all most recently documented in Benson et al. 2020 (needs to be added to the Lit Cited).

RESPONSE: Have added this sentence "In the relatively small population in the Santa Monica Mountains National Recreation Area, AR toxicosis was the third leading cause of death after vehicles strikes and intraspecific strife."

Line 2959, 2963 (Riley): In the Santa Monica Mountains, we have documented both mortality as a result of fire (line 2959), and a major loss of usable habitat after the Woolsey (line 2363) in Blakey et al. 2022, so it would be worth citing that in both of these places, I think.

RESPONSE: These sections are summaries of the threats laid out in Section 4, and do not contain citations.

Line 2998 (Riley): Yes, and as mentioned before, we did detailed viability modeling, based on the best available empirical data and including both demographic and genetic factors, and determined that both the Santa Monica Mountains and Santa Ana Mountains populations are at imminent risk of extinction, especially if connectivity is not improved and inbreeding depression worsens.

RESPONSE: The paragraph has been rewritten to reflect changes in section 4.10 and that sentence has been deleted.

Line 3008 (Riley): This is likely true, that the North Coast, Central Coast overall, specifically Central Coast Central, and Sierras are likely in pretty good shape at this point, and for the foreseeable future. However, the petition is not about those areas, it is specifically about the Central Coast and South Coast, and for all of those areas, except for Central Coast-Central, I think there are significant concerns.

RESPONSE: Have changed 'high potential' to 'potential'

Line 3071-3095 (Vickers): Though the Department spells out the specific reasons that they believe the ESU designation is not appropriate, it is notable that by changing the names of the population segments from ESU's to MU's they can then be potentially listed if determined to be DPS's. Nevertheless, as noted above, in the report, in practical terms, it would seem to be a "distinction without a difference" since the proposed actions for the genetically defined population segments would be the same if listed as threatened under CESA.

RESPONSE: Noted

Line 3096 Figure 19 (Riley): As we have mentioned earlier, we recommend considering adding a new Management Unit to the South Coast Group, to include the Santa Monicas up to Los Padres. There is strong evidence that the Santa Monica Mountains are discrete, based on physical, behavioral/ecological (lack of dispersal), and genetic factors. And we believe that this MU is significant, based on four criteria: 1) it is a unique and unusual ecological setting for the species in and around Los Angeles, a megacity; 2) mountain lions represent the only apex carnivore in the system; 3) the MU maintains critical connectivity to the San Gabriels-San Bernardinos MU, and therefore between the entire rest of this threatened South Coast Group and the Central Coast; and 4) the population is of major cultural significance to the people of southern California and the state. We also think it's worth considering whether the Central Coast South MU overall would be important to list as threatened because of its link to the Tehachapi Mountains and thereby to the Sierra Nevada Mountains. Connecting the Coastal populations overall to the rest of the state, via the Sierras, is critical for the long-term genetic health of the species in the entire state, we believe.

RESPONSE: Due to this and other comments, the suggested area is now included in the area recommended for listing

Line 3104 (Ernest): The CDFW proposal includes a proposal for a Distinct Population Segment (DPS) in the South Coast Ranges. The jagged lines denoting the boundary of the geographic area of this DPS

primarily follow roads, curiously bisect the city of Los Angeles immediately adjacent to the Santa Monica Mountains, and are not following ecological/bioregion designations – this is very problematic. Why does the CDFW proposal cut this jagged and apparently arbitrary line in LA around and excluding the Santa Monica Mountains? Makes no sense.

RESPONSE: Due to extensive feedback from reviewers, the area recommend to be listed now includes the Santa Monica Mountains.

Line 3105 Figure 19 (Beier): You did a reasonable job of setting the eastern edge of the DPS. But in the west, why not include CC-S in the DPS? As I said above (comment on Table 7 and lines 2587ff), the evidence for this unit could be interpreted in either direction.

RESPONSE: CC-S is now in the area recommended for listing

Line 3117-3123 (Vickers): The Naidu 2015 PhD thesis is not appropriate to be cited or used to infer anything regarding California mountain lions – the work was not later peer-reviewed, and only used eight samples collected over 30 years ago from California populations. That analysis also used limited numbers of microsatellites (15) and SNP's (25) which is insufficient for inferences. The sweeping conclusions in the report regarding potential connectivity are not appropriate based on this evidence.

RESPONSE: The question of the genetic ancestry of the mountain lions in the Mojave Desert is tricky because there are no genetic studies that include samples from that area. Therefore, we use scientific studies that can help provide context even if they do not examine the question directly. Peer review is not a requirement for information to be used in a status review, and Naidu's sample sizes are small, but not unusually so for work of that time. The text now reads "Another study compared samples from the coastal areas of the SC group (including EPR) and southwest Arizona (Naidu 2015). There was minimal evidence of gene flow between the mountain lions in the coastal area of the SC group and those along the border or in Arizona. In fact, the individuals sampled in south coastal California were found to be more genetically similar to those sampled from the North Rim of the Grand Canyon than those directly across the desert in southwest Arizona (Naidu 2015). However, the study had a small sample size, and did not include samples from the inland desert regions of California. Therefore, the results provide little information regarding the genetic assignment of mountain lions in the desert regions of California. " This discussion has been moved the section 6.2.1

Line 2229 and 3119 and 3120 (Ernest): The CDFW proposal also makes assumptions about mountain lions that may range into the Mojave Desert that are not supported by the best scientific evidence. There are no cited valid and published studies to compare mountain lions sampled in the Mojave Desert and Arizona to the Petitioned Coastal California Populations. The Naidu unpublished PhD 2015 that is cited in the CDFW report lacks peer-review and is not valid for comparing Arizona (and the intervening Mojave Desert) to California Coastal populations. The Naidu PhD 2015 study (and inferences that followed in the CDFW proposal) make invalid conclusions based on the only 8 samples from California, across at least 3 separate populations (meaning at best 2-4 samples per population – insufficient for population genetic analyses), and sampled from a period decade(s) older than the Arizona samples. Naidu 2015 analysis also used insufficient set of microsatellite and SNP DNA markers to make valid inferences with regard to California mountain lions.

RESPONSE: The question of the genetic ancestry of the mountain lions in the Mojave Desert is tricky because there are no genetic studies that include samples from that area. Therefore, we use scientific studies that can help provide context even if they do not examine the question directly. Peer review is not a requirement for information to be used in a status review, and Naidu's sample sizes are small, but not unusually so for work of that time. The text now reads "Another study compared samples from the coastal areas of the SC group (including EPR) and southwest Arizona (Naidu 2015). There was minimal

evidence of gene flow between the mountain lions in the coastal area of the SC group and those along the border or in Arizona. In fact, the individuals sampled in south coastal California were found to be more genetically similar to those sampled from the North Rim of the Grand Canyon than those directly across the desert in southwest Arizona (Naidu 2015). However, the study had a small sample size, and did not include samples from the inland desert regions of California. Therefore, the results provide little information regarding the genetic assignment of mountain lions in the desert regions of California. " This discussion has been moved the section 6.2.1

Line 3156 (Riley): Yes, I totally agree about the importance of the Central Coast Central MU as a source of migrants for the small and imperiled CC-N and CC-S, as I've said in other comments. It might be worth considering whether this area is worthy of protection because of this critical role, even though it is less imperiled than the CC-N and CC-S MUs.

RESPONSE: CC-C is now in the area we recommend for listing.

Line 3167-3169 (Beier): "assisted gene flow" is a slippery slope that can be abused as an excuse not to restore long term connectivity. If you are going to suggest translocations, make a clear demand that the translocation program must monitor gene flow carefully and NOT use the translocations as an excuse to avoid the long-term mgt actions needed. "Deposit $XX million in a particular conservation fund. If you have not made highways permeable and protected key habitat, you lose the $XX million. You cannot use translocation as a cheap way to avoid doing the things that work in perpetuity."

RESPONSE: Noted. Text now includes " While self-sustaining connectivity through a network of corridors, highway wildlife crossings, and habitat patches with functional ecosystem processes would be ideal for long term sustainability, assisted gene flow between populations through targeted translocations should be considered as a short-term management action to augment the genetic variation of the most isolated small populations."

Line 3174-3208 (Vickers): Given that genetic isolation has already been shown to be a substantial extirpation risk for the SMM portion of the CC-S MU, and SA MU (Benson et al.2019), and the SGSB MU and the CC-N MU also have substantial genetics-based risks, it would seem counterintuitive to count on the same processes that have been operating historically to improve the current status without legal interventions to protect those MU's. The Department's recommendation in the report suggest protections be extended only to the SA and SGSB MUs without what would seem to be a commonsense reason why the SMM/CC-S MU and CC-N MU are not in similar enough positions to also warrant protections. A recommendation to make no changes in status or management for those populations and the CC-C MU that can be enforced or written into policy or statute would seem to be a recipe for the genetic status of the populations in the coastal group to continue to decline over time. Single new overcrossings over SR 17 and US 101, though notable, are unlikely to be enough to assure adequate connectivity for those populations. Development threatens to divide the CC-C MU into two segments, and US 101 in the northern Gabilans, I-15 between the SA and EPR MU's, I-10 between the EPR and SGSB MU's, SR 14, I-5, SR 58, and High Speed Rail, along with proposed developments, are all present and increasing threats to connectivity for these MU's that are under consideration. One only has to look at the SA MU and SMM portion of the CC-S MU to observe connectivity occurring now and then through existing infrastructure or simply across highways at grade, but it is not enough to halt continuing genetic decline and advancing extirpation threats.

RESPONSE: The areas mentioned are now included in the area recommended for listing, and if listed would receive the full legal protections of CESA.

Line 3180-3186 (Wilmers): While this list isn't comprehensive, it should surely include I-5 and SR 58 in the Tehachapis as top priorities for restoring and maintaining gene flow for the petitioned populations.

Highway 101 in the coyote valley and near Rocks Ranch should also be top priorities for restoring connectivity into and out of the Santa Cruz Mountains. Finally, crossings along highway152 at Pacheco pass are critical to maintaining connectivity within the CC-North West MU.

RESPONSE: Noted, and this suggestion has been incorporated into section 10.1 with the following text "The following crossing locations have been identified by mountain lion experts and should be among the top priorities for the implementation of crossing infrastructure: 1) Highway 58 near the town of Tehachapi 2) I-5 between the Grapevine and Gorman"

Line 3210 (Riley): I think the Department's recent efforts to better estimate mountain lion population density, and to develop methods to do so, has been really valuable. One other potential research and monitoring goal would be to further evaluate mountain lion populations, using the best available demographic data on survival, reproduction, and census numbers, and using population modeling techniques. Personally, I don't think the number and density of mountain lions across the entire state, particularly given its size and complexity, is of as much importance as determining population abundance and potentially trends in different management units. Maybe something to consider as another Research and Monitoring goal. We had a full-day discussion of this as part of the most recent California Mountain Lion Scientific Working Group meeting in the fall, organized by the Dept.

RESPONSE: Noted. The recommendations include "Determine mountain lion distribution, abundance, resource selection at multiple spatial scales, movements and dispersal patterns, foraging ecology, and landscape genetics in the Sonoran and Mojave deserts, including the lower Colorado River region. Work collaboratively with tribes, adjacent states, Baja California, Mexico, universities, other government entities (e.g., Caltrans, BLM, NPS, State Parks, USGS, Military), IUCN and IUCN Species Survival Commission Cat Specialist Group, and other NGOs." and "Develop rigorous population estimates for the individual genetic populations using available demographic data and/or population modeling techniques."

Line 3301 (Riley): At some point the Lit Cited section needs to be carefully gone over. There are some references that are missing, but are cited in the text; there are some with missing authors, or book editors; and some need more information about the reference, and about how the reader can acquire it. For example, for all of the CDFW reports, how would someone acquire those, so they can evaluate them? A website or more of an address or something should be available whenever possible.

RESPONSE: Noted

The version of the status review sent to external peer reviewers is included below, including line numbers for reference.

STATE OF CALIFORNIA

NATURAL RESOURCES AGENCY

DEPARTMENT OF FISH AND WILDLIFE

DRAFT REPORT TO THE FISH AND GAME COMMISSION

A STATUS REVIEW OF THE PETITIONED SOUTHERN CALIFORNIA/CENTRAL COAST EVOLUTIONARILY SIGNIFICANT UNITS (ESUs) OF MOUNTAIN LION (*Puma concolor*) IN CALIFORNIA



CHARLTON H. BONHAM, DIRECTOR

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Draft***August 31, 2023***Draft

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Cover photograph by Irvine Ranch Conservancy on Orange County Parks Land; used with permission.

EXECUTIVE SUMMARY

To be added following peer review.

1. REGULATORY SETTING

1.1 Petition Evaluation Process

On June 25, 2019, the California Fish and Game Commission (Commission) received a petition that proposed the listing of the mountain lion (*Puma concolor couguar*) as threatened or endangered in a portion of the state identified as the Southern California/Central Coast Evolutionarily Significant Unit (ESU). The petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing, that the Commission consider whether any of the populations, singularly or in combination, comprise an ESU and meet the criteria for listing. Commission staff transmitted the petition to the Department of Fish and Wildlife (Department) pursuant to Fish and Game Code section 2073 on July 5, 2019, and published a formal notice of receipt of the petition on July 26, 2019 (Cal. Reg. Notice Register 2019, No. 30-Z, p. 1086). A petition to list or delist a species under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.)(CESA) must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant" (Fish & G. Code, § 2072.3).

On January 31, 2020, the Department provided the Commission with its evaluation of the petition, "Evaluation of a Petition from the Center for Biological Diversity and the Mountain Lion Foundation to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act," to assist the Commission in making a determination as to whether the petitioned action may be warranted based on the sufficiency of scientific information (Fish & G. Code, §§ 2073.5 & 2074.2; Cal. Code Regs., tit. 14, § 670.1, subds. (d) & (e)). Focusing on the information available to the Department relating to each of the relevant categories, the Department recommended to the Commission that the petition be accepted.
At its scheduled teleconference public meeting on April 16, 2020, the Commission considered the petition, the Department's petition evaluation and recommendation, and comments received. The Commission found that sufficient information existed to indicate the petitioned action may be warranted and accepted the petition for consideration. Upon publication of the Commission's notice of its findings, the Southern California/Central Coast ESU of mountain lions became designated a candidate species on May 1, 2020 (Cal. Reg. Notice Register 2020, No. 18-Z, p.692).

Notification, Information Received, and Peer Review

Following the Commission's action to designate mountain lions within the petitioned ESU as a candidate species for threatened or endangered status, the Department notified affected and interested parties and solicited data and comments on the petitioned action pursuant to Fish and Game Code section 2074.4 (see also Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2)). Comments on the petitioned action were invited via a general notification letter dated May 21, 2020 sent to subscribers to the Fish and Game Commission's CESA email list, via the California Regulatory Notice Register dated May 1, 2020 (Number 18-Z), and through a statewide tribal notification letter dated May 13, 2020 sent via U.S. mail and again via email on May 22, 2020. The same general notification letter was distributed via U.S. mail and via email (when an email address was available) to owners and managers of lands supporting mountain lions primarily within the geographic area of the petitioned ESU, including County Agricultural Commissioners, County Fish and Game Commissions, Caltrans district offices, California Department of Parks and Recreation units, California Department of Pesticide Regulation, military land managers, environmental organizations, the Bureau of Indian Affairs (BIA), California Cattlemen's Association, California Wool Growers Association, Mountain Lion Foundation, Center for Biological Diversity, Audubon California, Natural Resource Defense Council, Endangered Habitats League, Planning and Conservation League, scientists familiar with mountain lions, and other interested individuals and organizations. The Department received 21 comments in response to the general notification and 10 comments in response to the tribal notifications. Supplemental comments were received from the BIA, California Cattlemen's Association, the Center for Biological Diversity, State Parks, lion researchers and some land managers. Comments received are included in Appendix A.

Pursuant to Fish and Game Code section 2074.6, the review process included independent and competent peer review of the draft status review by persons in the scientific/academic community acknowledged to be experts on mountain lions and related topics and possessing the knowledge and

expertise to critique the scientific validity of the status review contents. Appendix F contains the specific input provided to the Department by the individual peer reviewers, the Department's written response to the input, and any amendments made to the status review (Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2)). Independent experts that reviewed the Status Review are listed below.

Table 1. Status Review peer reviewers.

Name	Affiliation
Reviewer 1 name	
Reviewer 2 name	
Reviewer 3 name	

This Status Review was prepared by the Department's Wildlife Branch with input from regional biologists.

1.2 Status Review Overview

The Commission's action designating the mountain lion within the boundary of the petitioned Southern California/Central Coast ESU as a candidate species triggered the Department's process for conducting a status review to inform the Commission's decision on whether listing mountain lions within the petitioned ESU is warranted. At its scheduled public meeting on April 14, 2021, the Commission granted the Department a six-month extension to complete the status review and facilitate external peer review.

This status review report is not intended to be an exhaustive review of all published scientific literature relevant to the mountain lion in California; rather, it is intended to summarize key points from the best scientific information available relevant to the status of the species, primarily within the boundary of the petitioned ESU. This final report, based upon the best scientific information available to the Department, is informed by independent peer review of a draft report by scientists with expertise relevant to the mountain lion. This review is intended to provide the Commission with the most current information on the mountain lion and to serve as the basis for the Department's recommendation to the Commission on whether the petitioned action is warranted. The status review report also identifies habitat that may be essential to continued existence of the species and provides management recommendations for recovery of the species (Fish & G. Code, § 2074.6). The receipt of this report is to be placed on the agenda for the next available meeting of the Commission after delivery. At that time, the report will be made available to the public for a 30-day public comment period prior to the Commission taking any action on the petition.

1.3 Administrative Status

In California, mountain lions are designated as a specially protected mammal per Fish and Game Code section 4800. State law prohibits the take, possession, transport, import, or sale of a mountain lion or mountain lion products with limited exceptions. Take of mountain lions is allowed, under specified conditions, for scientific research purposes and to protect public health and safety, listed or fully protected bighorn sheep (*Ovis canadensis* spp.*)* populations, and livestock or other property.

There are currently two recognized subspecies of mountain lion throughout the Americas (Culver et al. 2000, Kitchener et al. 2017). Lions in North and Central America are classified as *Puma concolor couguar,* while most mountain lions in South America are classified as *Puma concolor concolor.* One formerly recognized subspecies of mountain lion was listed as a California Species of Special Concern until recently. The Department's Species of Special Concern (SSC) designation is similar to the federal Sensitive Species designation. It is administrative, rather than regulatory in nature and intended to focus attention on animals at conservation risk. The designation is used to stimulate needed research on poorly known species and to target the conservation and recovery of these animals before they meet the CESA criteria for listing as threatened or endangered (Thomson 2016). The Yuma puma subspecies of mountain lion (*Puma concolor browni*) was designated by the Department as a subspecies of special concern in 1986 (Williams 1986, Kucera 1998, CDFW 2022a). However, research by McIvor et al. (1995) and Culver et al. (2000) detected little morphological or genetic support for retention of the *P.c. brownii* subspecies. Consequently, the Department no longer considers mountain lions from the valley of the Colorado River and adjacent rocky uplands of the Sonoran Desert to be a distinct taxonomic unit.

1.4 Summary of Petition

The Petitioners propose listing mountain lion populations south of San Francisco Bay in the coastal, Transverse, and Peninsular Mountain ranges, the Sonoran Desert, and part of the Mojave Desert as a single Southern California/Central Coast Evolutionarily Significant Unit (ESU). Alternatively, the Petitioners propose the Commission determine whether one or more of the six populations in the following areas identified by Gustafson et al. (2019) comprise an ESU and meet the criteria for listing as threatened or endangered: 1) Central Coast North (CC-N), which includes the Santa Cruz Mountains and San Francisco Bay Area counties to the east; 2) Central Coast Central (CC-C), generally from southern Monterey Bay to Ventura County; 3) Central Coast South (CC-S), which includes the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills; 4) San Gabriel and San Bernardino Mountains (SGSB); 5) Santa Ana Mountains (SA); and 6) Eastern Peninsular Ranges (EPR), which includes eastern San Diego County to the Colorado River and the border with Arizona, and is bounded on the south by the border with Mexico. These populations are six of the 10 genetically discernable populations in California as delineated in Gustafson et al. (2019) (Fig. 1). Specifically, the petitioners suggest that the following combinations of populations be considered ESU(s): "Group all three Central Coast populations (CC-N, CC-C and CC-S) into one ESU, with the remaining three

populations placed into a second ESU (SA, EPR, and SGSB). Alternatively, the Central Coast populations could be treated as one ESU, SA and EPR as a second ESU, and SGSB separately listed as a third ESU."

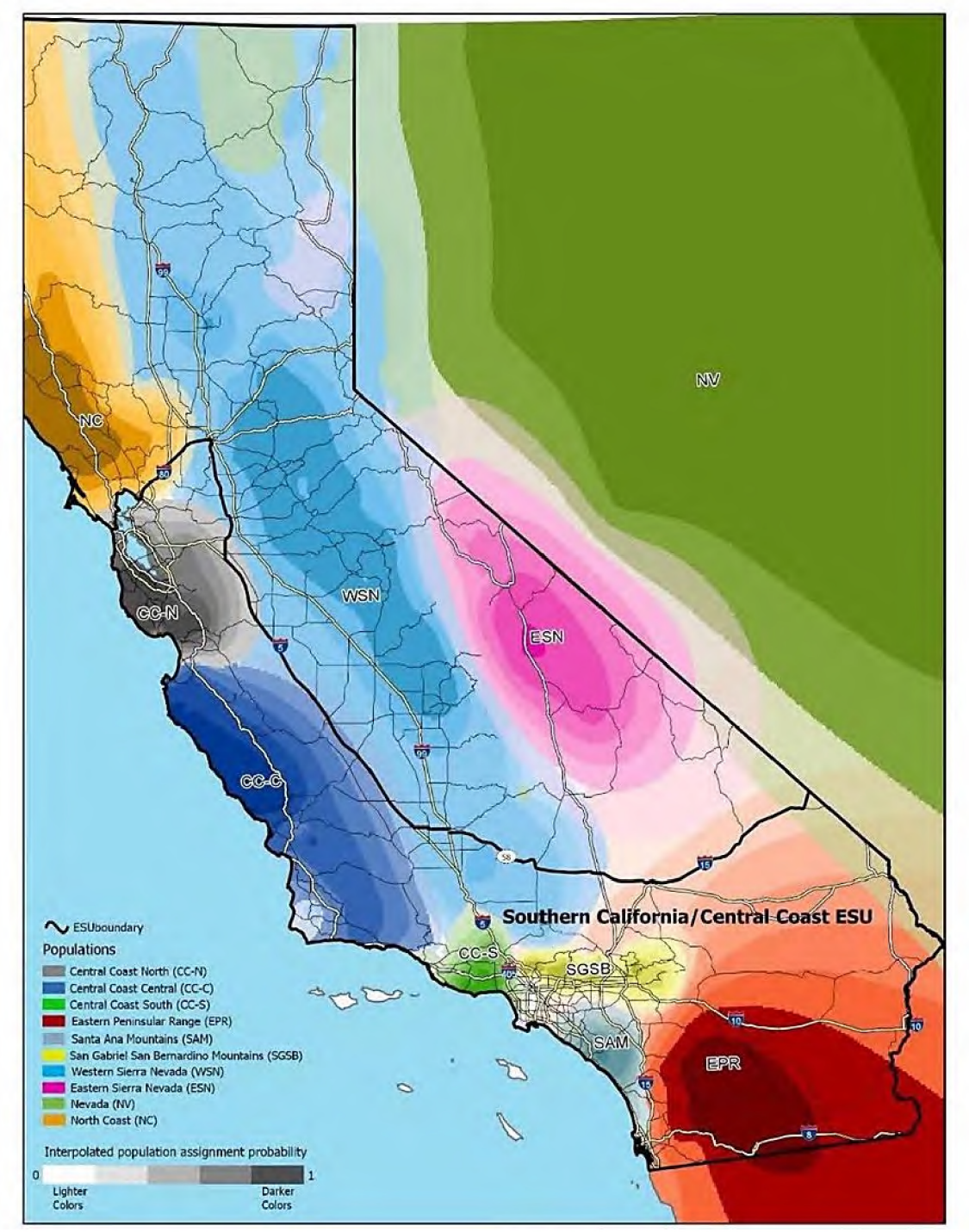

Figure 1. Map of fine-scale genetically discernible mountain lion populations and major roadways in California based on data collected from 1992 to 2016 (genetic information from Gustafson et al. 2019). Black line outlines the petitioned Southern California/Central Coast ESU boundary. This figure is from the Petition, Figure ES 1.

The Evolutionary Significant Unit concept was developed primarily for use in salmonids by the U.S Fish and Wildlife (USFWS) and National Marine Fisheries Service (NMFS) and has been used to list populations of anadromous salmon under the federal Endangered Species Act such as the Columbia River chum salmon ESU (64 Fed. Reg 14508–14517 (March 25, 1999)). The use of ESUs by the Department to evaluate the status of species pursuant to CESA is supported by recent listing determinations by the Commission (e.g., Southern Sierra Nevada Fisher ESU, Coho salmon, central California coast ESU) and by the determination of California's Third District Court of Appeal that the term "species or subspecies" as used in CESA (Fish & G. Code, §§ 2062 and 2067) can include ESUs (*Cal. Forestry Assn. v. Cal. Fish and G. Com.* (2007) 156 Cal.App.4th 1535).

To be considered an ESU under federal policy, a population must meet two criteria: 1) it must be substantially reproductively isolated from other conspecific (i.e., same species) population units; and 2) it must represent an important component of the evolutionary legacy of the species that contributes to the genetic diversity of the species as a whole (Waples 1991). The genetic isolation "does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in different population units" (Waples 1991). The Department used these criteria in its evaluation of ESUs for the Pacific fisher and uses them in this status review.

For brevity the term "petitioned ESU" is used throughout this report. When "petitioned ESU" appears, it is intended to encompass the petitioner's proposal to list the petitioned area as a single ESU as well as the petitioner's alternative proposal to evaluate each of the six genetically discernible populations identified by Gustafson et al. (2019) singularly or in combination, within that area as ESUs.

2. BIOLOGY AND ECOLOGY

2.1 Species Description and Life History

Mountain lions belong to the mammalian order Carnivora and are members of the cat family Felidae, subfamily Felinae, and a part of the Puma lineage. Numerous common names include puma, cougar, panther, painter, and catamount (Young and Goldman 1946, Hunter 2015). Mountain lions were once widespread in the Americas, but European settlers extirpated them from most of the U.S. and Canada east of the continental divide by the beginning of the 20th century, with only a small population remaining in Florida and a population of unknown size in Texas; although populations in Mexico do not appear to have suffered similar extirpations (Hall and Kelson 1959, Pierce and Bleich 2003, The Cougar Fund 2023). However, since the late 20th century, breeding populations of mountain lions have returned to North and South Dakota and Nebraska, and those states have instated legal hunting in recent years (Hunter 2015, The Cougar Fund 2023).

Adults are large and slender with muscular limbs and a long, black-tipped tail that is about one third of

the animal's total length. Males are typically larger than females. Males generally weigh 55–65 kg (121–143 lbs.) with a length of 2.2–2.3 m (7.2–7.5 ft.) from nose to tail tip, and females generally weigh 35–45 kg (77–99 lbs.) with a length of 2.0–2.1 m (6.6–6.9 ft.) (Currier 1983).

Deer (*Odocoileus* spp.) are the most common prey of mountain lions in the United States, Canada and parts of Mexico, making up about 70% of their diet (Ruth and Murphy 2009). The relationship between mountain lions and deer is so strong that lion distribution throughout the Americas has been described as largely a function of deer distribution (Young and Goldman 1946, Pierce et al. 2000). However, mountain lions are opportunistic predators and known to eat up to 232 different species of mammals, birds and reptiles across their extensive geographic range (Karandikar et al. 2022). This includes but is not limited to elk (*Cervus canadensis*), feral horses (*Equus ferus caballas*), feral burros (*Equus asinus*), guanaco (*Llama guanicoe),* wild pigs (*Sus scrofa)*, pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*), brocket deer (*Mazama* sp.), ocelots and related felids (*Leopardus* sp.), greater rhea (*Rhea americana),* coyotes (*Canis latrans*), bobcats (*Lynx rufus*), porcupines (*Erethizon dorsatum*), fishers (*Pekania pennanti*), rodents, wild turkeys (*Meleagris gallopavo*), and livestock (Young and Goldman 1946, Currier 1983, Iriarte et al. 1990, Sweitzer et al. 1997, Wengert et al. 2014, Allen et al. 2015, Vickers and Garcelon 2022).

Mountain lions reach sexual maturity at two to four years, and females care for their young for the first one to two years (Quigley and Hornocker 2009). They have a polygynous social structure, and males do not contribute to rearing young (Logan and Sweanor 2009). Mates locate each other with auditory and olfactory signals including scrapes, made by using their hind feet creating a shallow trough with a small mound of ground debris at the distal end. These forms of communication are also vital for maintaining family cohesion and avoiding competition or direct threats from other mountain lions. Identity, social status, and reproductive condition may all be possible functions of scent markers (Logan and Sweanor 2009). Mountain lion scent marks seem to serve as "bulletin boards," which males and females visit to determine the temporal presence, reproductive status, quality, and possibly even the individual identity of other mountain lions (Currier 1983, Logan and Sweanor 2001, Harmsen et al. 2010, Allen et al. 2014).

Gestation lasts 82–96 days (Young and Goldman 1946, Currier 1983, Hunter 2015). Litter size ranges from one to six, though two to four kittens are typical (Pierce and Bleich 2003, Beier et al. 2010, Riley et al. 2014). Reproductive females seek refuge from human activities. Wilmers et al. (2013) found that mountain lions exhibiting reproductive behaviors (denning and chemical and vocal communication) avoided human disturbances by distances four times greater than non-reproductive mountain lions. At 12–18 months, mothers may come into estrus and become aggressive towards their young, encouraging dispersal (Pierce and Bleich 2003). Intraspecific predation is a known source of mortality in mountain lion populations (Beier and Barrett 1993, Logan and Sweanor 2001, Allen 2014). Survivorship of dispersing mountain lions is low relative to adults with established home ranges, and dispersing young are more likely than resident mountain lions to be involved in depredation incidents or other conflicts with humans as they try to find prey without the advantage of an established home range (Torres et al. 1996).

A study of juvenile lion dispersal was conducted by Beier (1995) in the Santa Ana Mountains of

southern California from 1988 to 1992. Juvenile mountain lions dispersed via habitat corridors in a landscape fragmented by urbanization, and some dispersers used corridors containing manmade features such as golf courses and major freeways. Each collared male dispersed over several weeks to months, and as many as four temporary home ranges were occupied sequentially. The mean dispersal distance from a sample of eight males was 63 km (39.1 mi.). Three of the male dispersers died by vehicle strikes, one was shot, one died of disease, and one died of natural cause, leaving only two surviving dispersers. The one monitored female disperser wandered throughout the northern half of the Santa Ana Mountains, changing directions ≥ 5 times upon encountering the urban-wildland interface and covered ≥ 342 km (212.5 mi.) without establishing a temporary home range. Four months after her dispersal date, she returned to the edge of her natal range and bedded near her mother for one day, dying near that location days later of unknown causes. All travel in corridors and habitat peninsulas occurred at night. It was noted that a dispersing lion cannot use a corridor unless its normal travel pattern causes it to encounter the corridor entrance.

Vickers et al. (2015) observed numerous southern California study animals dispersing > 80 km (50 mi.), and one young male moved > 140 km (87 mi.) from California into northern Mexico and back. Mountain lions are known to be capable of dispersing at least 2,450 km (1,522 mi.), and most long-distance dispersers are thought to be young males in search of available mates (Hawley et al. 2016).

Mountain lions are primarily solitary, territorial, and occur in low density. They require large areas of habitat with adequate prey abundance (Quigley and Hornocker 2009). They have large home ranges often comprised of multiple vegetation community types including riparian, chaparral, oak woodlands, coniferous forests, grasslands, and desert environments including rocky desert uplands (Grinnell 1914, Grinnell et al. 1937, Williams 1986, Dickson et al. 2005, McClanahan et al. 2017, Dellinger et al. 2018) and occur from near sea level to high mountain elevations (Grinnell et al. 1937, Young and Goldman 1946, Hunter 2015).

Average home range size in California ranges from 300–350 km^2 (116–135 mi^2) for males and 90–100 km^2 (35–39 mi^2) for females (Grigione et al. 2002, Riley et al. 2021) and varies with prey density. While male home ranges can overlap spatially, male mountain lions are territorial, making temporal overlap between males rare (Logan and Sweanor 2001). However, males attempt to overlap their home ranges with multiple female home ranges to enhance breeding opportunities. Females are less territorial with their home ranges often including significant overlap, and the degree of home range overlap is typically greater where prey densities are higher (Stoner et al. 2018). Subadult males are generally met with aggression from resident adult males and tend to disperse farther from their mothers' home range than subadult females, up to nearly 500 km (310 mi; Pierce and Bleich 2003, Grigione et al. 2002). Due to these behavioral mechanisms, local abundance of male mountain lions is generally limited by available habitat (Maletzke et al. 2014), while female abundance is generally limited by prey availability (Stoner et al. 2018). Given the importance of females to population growth and because one male can breed with multiple females, mountain lion populations are ultimately limited by prey availability (Logan and Sweanor 2001).

2.1.1 Sources of Mortality

From 1974 to 2020, the primary drivers of mountain lion mortality in California were found to be anthropogenic when cause of death could be determined. The leading cause was permitted lethal removal resulting from livestock depredation incidents (17.5% of attributable mortalities), followed by vehicle strikes (14.8%; Benson et al. 2023). Other known mortality factors in order of importance were non strife natural mortality (12.5%), killing by other mountain lions (intraspecific predation or strife; 11.8%), poaching (9.9%), lethal removals to protect endangered bighorn sheep (5.3%), and other human causes (3.4%) (Benson et al. 2023). It should be noted that 76% of Benson et al.'s data was collected since 2000; therefore, the results are indicative of more recent causes of mortality. Other known causes of mortality include disease, catastrophic wildfires (Grinnell et al. 1937, Beier and Barrett 1993, Wilmers et al. 2013, Riley et al. 2014, Vickers et al. 2015) and complications associated with exposure to pesticides and rodenticides (Riley et al. 2007, Rudd and Rogers 2021). However, 24% of tracked mountain lions in Benson et al.'s (2023) study died of unknown causes, which is a greater proportion than those that died of any single known cause.

Dellinger et al. (2021a), using the same dataset (expanded to include 1972 and 1973), derived survival estimates for mountain lions by age, sex, and habitat association. They used data from radio-collared mountain lions across 24 study areas and found of the 629 collared individuals, 246 died while being monitored. Annual survival for all adults (≥3 years old; n = 430) and subadults (≥1 and <3 years old; n = 199) combined across the state was 0.746 (CI 0.719–0.774). Depredation removal was a greater source of mortality for males (n = 36; 0.085 [0.060–0.110]) than females (n = 20; 0.038 [0.024–0.053] Dellinger et al. 2021a). Annual survival estimates by sex and age-class are summarized in Table 2.

Table 2. Survival estimates (with confidence intervals) by sex and age-class for mountain lions in California from 1972–2020 (data from Dellinger et al. (2021b)).

	Males	**Females**
Subadult	0.636 (0.558–0.725)	0.740 (0.631–0.867)
Adult	0.698 (0.649–0.751)	0.806 (0.772–0.843)

Dellinger et al. (2021a) found survival rates varied by location, clustering into three categories representing animals with home ranges primarily located in urban, rural, or remote/wilderness settings. Animals occurring in remote/wilderness areas (n = 131) had higher annual survival rates (0.794 [0.740–0.853]) than animals in rural areas (n = 92; 0.591 [0.498–0.703]), while survival of animals occurring in urban areas were intermediate and not significantly different from either remote/wilderness or rural areas (n = 156; 0.735 [0.682–0.792].

Mountain lions have few natural predators in California. Mountain lions are subordinate to black bears and gray wolves (*Canis lupus*) across parts of their geographic range including California (Elbroch and Kusler 2018). Black bears occasionally kill mountain lion kittens (Elbroch and Kusler 2018), but mainly affect mountain lions through kleptoparasitism of kill sites in California (Elbroch et al. 2015).

Where gray wolves and mountain lions coexist, wolves are known to affect adult and kitten survival, resource selection, prey selection, bedding locations, and population size (Bartnick et al. 2013, Elbroch et al. 2015, Kusler et al. 2017, Elbroch and Kusler 2018, Elbroch et al. 2020). Currently, no resident wolf packs or individuals are known to exist in the petitioned ESU area.

2.2 Range and Distribution

A species' range is the general geographic area within which a species normally occurs, while its distribution is the set of locations occupied by individuals of a species within its range at a given time. For purposes of CESA and this Status Review, the term range refers to the species' California range (*Cal. Forestry Assn. v. Cal. Fish and Game Com.* (2007) 156 Cal. App. 4th 1535, 1551), though emphasis is on the geographic area of the petitioned ESU. Mountain lions currently range throughout all California ecoregions. Though verified mountain lion sightings and encounters have occurred in all counties in the last decade, they are most commonly reported from the more mountainous and remote areas of the state (Dellinger et al. 2021b; Fig. 2). Mountain lions are most likely to establish home ranges in areas with sufficient forest and shrub habitat which promote presence of their primary prey, mule deer (*Odocoileus hemionus)* (Dellinger et al. 2020*a*). In California, these areas include the coastal mountain ranges from southern California north to the Oregon border, the southern Cascade Range, and the Sierra Nevada (Fig. 2). The areas with the least suitable habitat, and thus lowest densities of both mule deer and mountain lions, include intensively farmed areas of the Central Valley and lowlands of the inland desert regions of the state. However, recent survey work has found resident breeding populations of mountain lions near the Sutter Buttes in the Sacramento Valley and in the Mojave Desert (McClanahan et al. 2017, Dellinger et al. 2018). The distribution of mountain lions in California has changed little from what Grinnell et al. (1937) described, with a few notable exceptions: the large, high density urban areas of the San Francisco Bay Area and the Los Angeles–San Diego coastal plain and inland valleys, and intensively farmed agricultural areas such as the Salinas Valley and the Central Valley where historical reports noted mountain lions were not uncommon in riparian areas (Newberry 1857). Central Valley riparian corridors likely played an important role in connecting mountain lion populations in the Sierra Nevada with populations in coastal mountain ranges.

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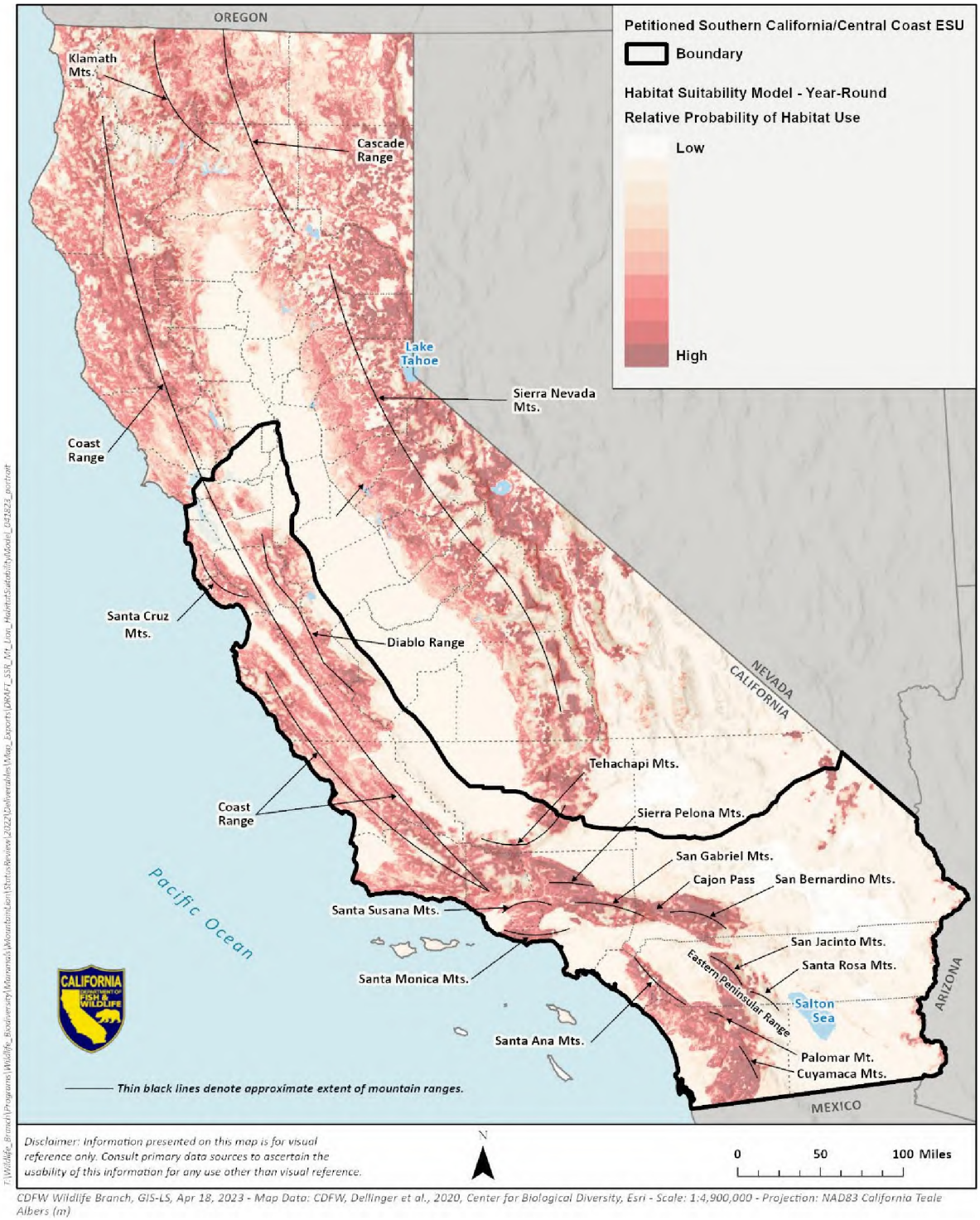

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557 **Figure 2.** Range and distribution of mountain lions in California based upon a habitat selection model (Dellinger et
558 al. 2020*a*). Darker red indicates a higher probability of mountain lion occupancy. Mountain lions may occur in

areas outside of this distribution, though such animals may include breeding and/or dispersing individuals. Major mountain ranges in the petitioned ESU are labeled.

2.3 Habitat That May Be Essential to the Continued Existence of the Species

Dellinger et al. (2021b) described general patterns of mountain lion habitat use in California:

> "Mountain lions are among the most widely distributed carnivore species (Logan and Sweanor 2001). This wide distribution is a product of their ability to persist in almost any habitat provided adequate prey is available. When establishing a home range, mountain lions select habitat with adequate prey and stalking cover to aid in meeting energetic demands. After establishing a home range, many things, including human activity, can influence habitat use patterns (Wilmers et al. 2013).
>
> In California, mountain lion habitat use patterns were found to be seasonal in the more temperate areas of the state (Dellinger et al. 2018) while, in the more Mediterranean areas, mountain lion habitat use patterns are more stable between seasons (Wilmers et al. 2013)."

Studies of mountain lions in North America have noted patterns of associations with vegetative and topographic cover, steep slopes, and higher elevations, and avoidance of open agricultural lands, sagebrush (*Artemesia tridentata*) dominated habitats, open meadows, and pastures (Murphy 1983, Logan and Irwin 1985, Laing 1988, Lindzey et al. 1994, Pierce and Bleich 2003). .

Zeller et al. (2017) found that in southern California, mountain lions preferred to establish home ranges that contained chaparral, scrub, and grasslands, but within those home ranges, spent their time in slightly more rugged terrain, riparian areas, and woodland. Dickson and Beier (2002) noted riparian areas were selected for in all seasons by mountain lions in southern California and suggested the preference is related to the presence of stalking cover and prey. Use of chaparral stands may be dependent on stand age. Burdett et al. (2010) speculated that dense, mature late seral chaparral may be avoided because mule deer prey cannot easily move through such stands. Other noted associations include strong preference for rugged areas and a strong avoidance of human development in the form of agricultural areas, urban areas, and roads (Burdett et al. 2010).

2.4 Population Structure

There are currently two recognized subspecies of mountain lion throughout the Americas (Culver et al. 2000, Kitchener et al. 2017). Lions in North and Central America are classified as *Puma concolor couguar,* while most mountain lions in South America are classified as *Puma concolor concolor* (the subspecific identity of some mountain lions west of the Andes in South America remains uncertain). This taxonomy is partly based on the finding that the entire North American population is genetically homogenous at three mitochondrial loci (Culver et al. 2000), which was further supported in an analysis by Caragiulo et al. (2014) which analyzed three different mitochondrial genes and used a larger number of modern mountain lion samples. Genetic diversity is greater in Central and South American mountain

lions, and it is hypothesized that the North American population derived from a recent (i.e., late Pleistocene circa 10,000 years ago) recolonization by a small number of founders whose ancestors originated in eastern South America 200,000–300,000 years ago (Culver et al. 2000, Caragiulo et al. 2014).

Several studies have demonstrated that the complex geography and land use patterns in California have influenced patterns of gene flow and genetic exchange among mountain lions in different areas of the state (Ernest et al. 2003, Gustafson et al. 2019, 2022). Two studies are especially relevant to understanding the genetic structure of mountain lions within the petitioned ESU. The first is Gustafson et al. (2019), which the petitioners referenced extensively. Gustafson et al. (2019) collected samples from 992 mountain lions around California and Nevada and used microsatellite markers—which undergo mutations at a relatively rapid rate and are appropriate for examining differences between populations at short timescales (on the order of hundreds of years). The authors identified nine clusters of similar genetics, which they referred to as genetic populations, in California and one cluster in Nevada. Though these populations show significant genetic differentiation, they are not fully isolated (Fig. 3). There is gene flow among many of the populations with the WSN population providing important recent connectivity between the Central Coast populations and populations to the north and east, and the SGSB population linking the EPR and SA populations with the WSN and the Central Coast populations.

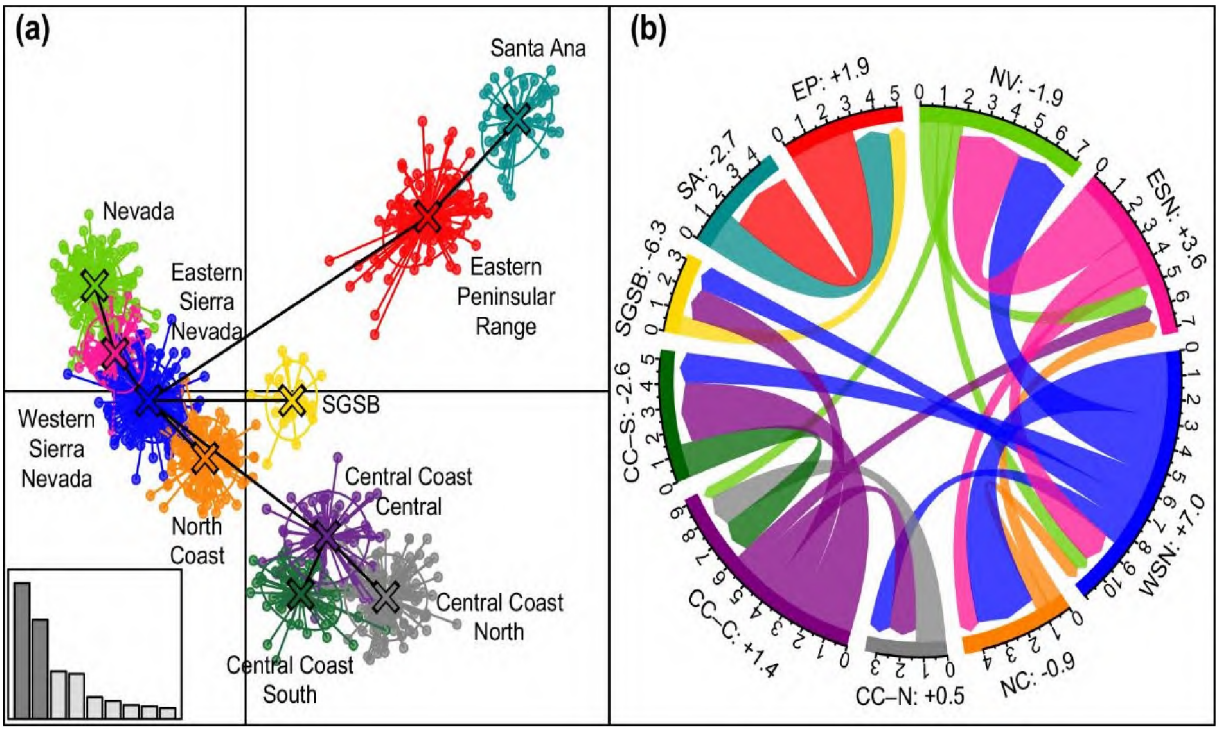
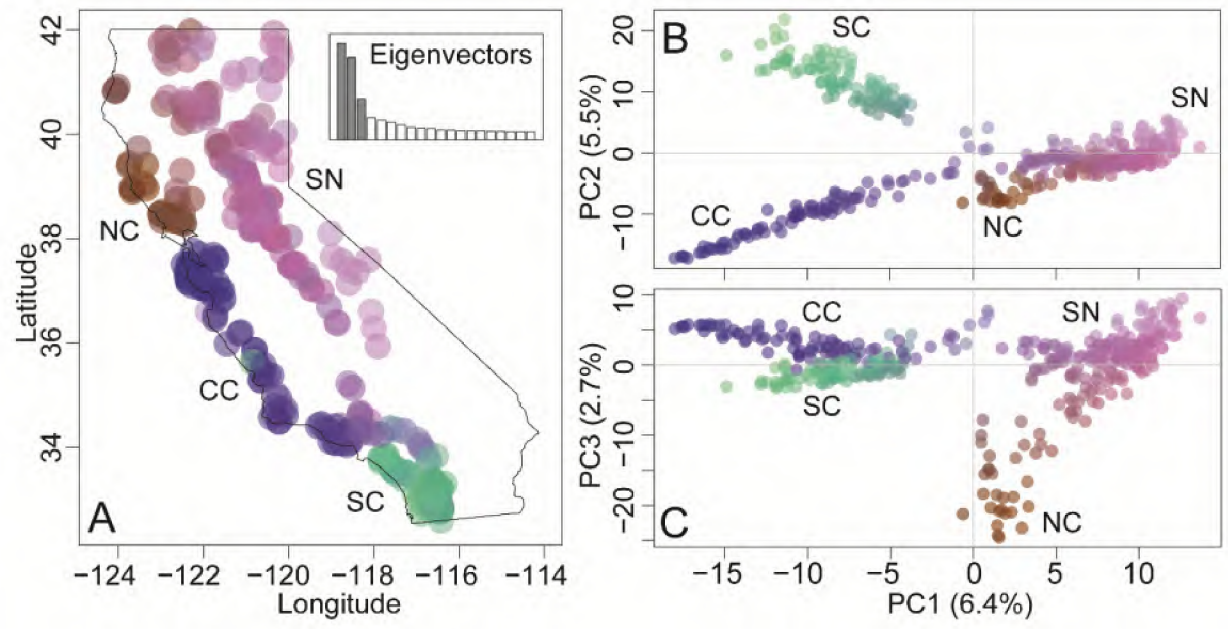


Figure 3. Functional connectedness of puma populations, based on (**a**) discriminant analysis of principal components and (**b**) bi-directional migration rate estimates (multiplied by 100 for visualization). Each dot represents an individual (**a**). Each color (**a,b**) represents a population. Black lines (**a**) indicate the most closely

related population based on genetic dissimilarities. The inset barplot (**a**) shows which axes are being displayed (i.e., discriminate functions 1 and 2) and the relative proportion of variation explained by each of the 9 discriminant functions. Two-thirds of the individuals in each population are contained within the corresponding ellipsoid. For a biologically meaningful interpretation, only estimates of interpopulation migration rates with 95% confidence intervals that do not cross 0 are presented (**b**). Net genetic source-sink migration rates are presented next to population names with positive values indicating net genetic source and negative values indicating net genetic sink (e.g., WSN exported 9% of migrants and received 2% so its net rate is +7%). *NV* Nevada, *ESN* Eastern Sierra Nevada, *WSN* Western Sierra Nevada, *NC* North Coast, *CC-N* Northern section of the Central Coast, *CC-C* Central section of the Central Coast, *CC-S* Southern section of the Central Coast, *SGSB* San Gabriel San Bernardino, *SA* Santa Ana, *EP* Eastern Peninsular Range. Reproduced from Gustafson et al. (2019).

The second study relevant to understanding the genetic structure of mountain lions within the petitioned ESU is Gustafson et al. (2022), which analyzed 16,285 genome-wide single-nucleotide polymorphisms[1] (SNPs) from 401 pumas sampled broadly across the state. SNPs can be used to understand the differences among populations at evolutionary timescales relevant to the discussion of ESUs (i.e., thousands to tens of thousands of years). SNPs are known to resolve population genetic structure with higher resolution and greater statistical power than the microsatellites that were used in the 2019 study (Narum et al. 2013, Vendrami et al. 2017, Hohenlohe et al. 2018). Using SNPs, Gustafson et al.'s (2022) best supported model identified four broad-scale genetic clusters concordant with California's geography: North Coast (NC); Sierra Nevada (SN); Central Coast (CC), which includes Gustafson et al.'s (2019) CC-N, CC-C, and CC-S genetic populations; and Southern Coast (SC), which includes Gustafson et al.'s (2019) SA, SGSB, and EPR (Fig. 4).



[1] Random substitutions of the nucleotides at identified positions on DNA which typically do not code for physiological or behavioral traits.

Figure 4. Principal component analysis (PCA) of 401 pumas at 16,285 SNPs reveals four broad-scale genetically discernable populations (NC = North Coast, CC = Central Coast, SC = Southern Coast, SN = Sierra Nevada). (A) The colorplot (R package *adegenet*) of the PCA represents colors corresponding to a combination of the first 3 eigenvectors. The inset plot shows the proportion of the variance explained by shaded PC eigenvectors 1–3 compared to other eigenvectors. The color values are plotted at sample locations to demonstrate geographic structure. Colorplots of (B) PC1 and PC2 and (C) PC1 and PC3 resolved the 4 broad-scale genetically discernable populations. Reproduced from Gustafson et al. (2022).

On a finer scale, both cluster analyses and genetic differentiation tests by Gustafson et al. (2022) also support the presence of nested substructure within the four well-supported, broad-scale populations. The authors found evidence of 10 fine-scale genetically discernable populations roughly approximate to the genetic populations identified by Gustafson et al. (2019). Consistent with the 2019 study, there is evidence these fine-scale populations are not fully genetically isolated. Evidence of historic genetic exchange among the fine-scale populations with the WSN population providing important connectivity between the Central Coast populations and populations to the north and east, and the SGSB population linking the EPR and SA populations with the WSN and the Central Coast populations from Gustafson et al.'s (2019) microsatellite analysis (Fig. 3) is further supported by the SNP analysis (Gustafson et al. 2022). Additionally, the CC-S genetic population is of critical importance to sustaining statewide gene flow because of the intersection of dispersal corridors connecting the SN, CC, and SC broad scale genetic populations. Both publications suggest a pattern of population structure consistent with both natural landscape features (e.g., Central Valley, San Francisco Bay, Sierra Nevada Crest) and anthropogenic development (e.g., roads and highways, housing developments) impeding gene flow at various temporal and spatial scales resulting in gene flow among mountain lion populations in California following a "horseshoe" network around the Central Valley. San Francisco Bay acts as the open end of the horseshoe, with NC, WSN, ESN, CC-C, and CC-N comprising the body of the horseshoe (Ernest et al. 2003, Gustafson et al. 2019, 2022). Notably, the Santa Monica Mountains, SGSB, SA, and EPR are not part of the horseshoe.

2.4.1 Management Units

Although populations are linked, natural topography and anthropogenic development of the California landscape has resulted in local populations experiencing different demographic rates, levels of connectivity, and genetic variation—even over short geographic distances. We propose an alternate conceptual framework, the Management Unit (MU) (outlined below), to understand and conserve contemporary California mountain lion populations. We propose that the existing population genetic data of Gustafson et al. (2019) can be used to delineate the boundaries of six MUs within the petitioned area.

The management unit concept represents an important tool for the conservation and management of discrete populations in relation to contemporary landscape change. Management units have been defined as demographically independent populations whose growth rate depends primarily on local births and deaths rather than immigration (Moritz 1994). Therefore, there is a requirement of limited connectivity among MUs that emphasizes the notion of demographic independence and thus the need for separate management (Taylor and Dizon 1999). The MU concept becomes particularly useful for

delineating groups for purposes such as monitoring the effects of human activity on population abundance and regulating those activities (Palsbøll et al. 2007, Schwartz et al. 2007). The identification of MUs is therefore central to the near-term management and conservation of mountain lions in California. The populations and the areas of habitat they occupy are important for maintaining genetic variation and contributing to the long-term adaptability and persistence of the species. Substantial threats to portions of the statewide population exist—habitat loss and fragmentation, mortalities from vehicle strikes and depredation take, habitat degradation from climate change and wildfires, and exposure to and mortality from toxic rodenticides—which necessitates long-term planning and management to ensure their persistence.

The delineation of MUs requires a threshold of dispersal rates among populations, in this case dispersal meaning the movement of individuals from the birth population into another. Work by Hasting (1993) suggests that population growth rates within occupied patches of habitat become correlated at dispersal rates above 10%, effectively resulting in a single demographic unit (i.e., population) among patches (or in this context, a management unit). By this threshold, populations warrant assignment to different MUs if the rate of dispersal among populations is < 10% (Palsbøll et al. 2007). However, movement data based on direct observations are not always available for natural populations, and the use of population genetic analyses has been proposed as an indirect means of inferring levels of connectivity. Estimates of population genetic divergence, which is a function of migration rate, are increasingly being used to delineate the boundaries of MUs (Funk et al. 2012).

We are defining MUs based on a genetic differentiation of 10%, which is a conservative estimate. Use of the Gustafson et al. (2019) dataset is appropriate for this purpose as it is based on microsatellite markers which have a faster mutation rate and should reflect patterns of connectivity over shorter timescales (Funk et al. 2012). Gustafson et al. (2019) present bi-directional estimates of the migration rate between local populations in their manuscript. None of the six genetic populations within the petitioned area have a net bi-directional migration rate estimate of 10% or greater. These results provide conservative evidence suggesting the genetic populations within the petitioned area(s) are demographically independent and warrant management as separate MUs.

The SNP data presented in Gustafson et al. (2022) would be less suitable for this purpose. Those populations relevant to the petitioned area include CC-N, CC-C, CC-S, SGSB, EPR, and SA as identified in Gustafson et al. (2019). We will refer to these Management Units going forward and assess them under various criteria for listing under CESA in Section 6.

3. STATUS AND TRENDS IN CALIFORNIA

3.1 Trends in Distribution and Abundance

Significant changes in mountain lion distribution have occurred within the petitioned ESU due to habitat loss and fragmentation from land use changes as early as the late 1700s and continuing to the present from ongoing development and the associated transportation and infrastructure networks. Many areas within the historical range of mountain lions have been modified by urban and agricultural

development, primarily in the San Francisco Bay Area, southern California, and the Central Valley, making them mostly unsuitable for mountain lions. The highly urbanized zone spreading out from Los Angeles as well as coastal development between Los Angeles and San Diego to the border with Mexico has supplanted large areas of lion habitat in the coastal valleys and plains between isolated patches of remaining habitat in the Santa Monica, San Gabriel, San Bernardino, and Santa Ana mountains (Fig. 5; Vickers et al. 2015, Benson et al. 2016, 2019, Gustafson et al. 2019). The Eastern Peninsular Mountains are also affected by human development and road networks but to a lesser degree than the aforementioned four mountain ranges. Likewise, remaining habitat in the Santa Cruz Mountains and southern San Francisco Bay Area is increasingly constricted by development and busy highways (Wilmers 2014, Wang et al. 2017). However, establishing temporal trends in distribution is difficult due to the paucity of reliable historical data.

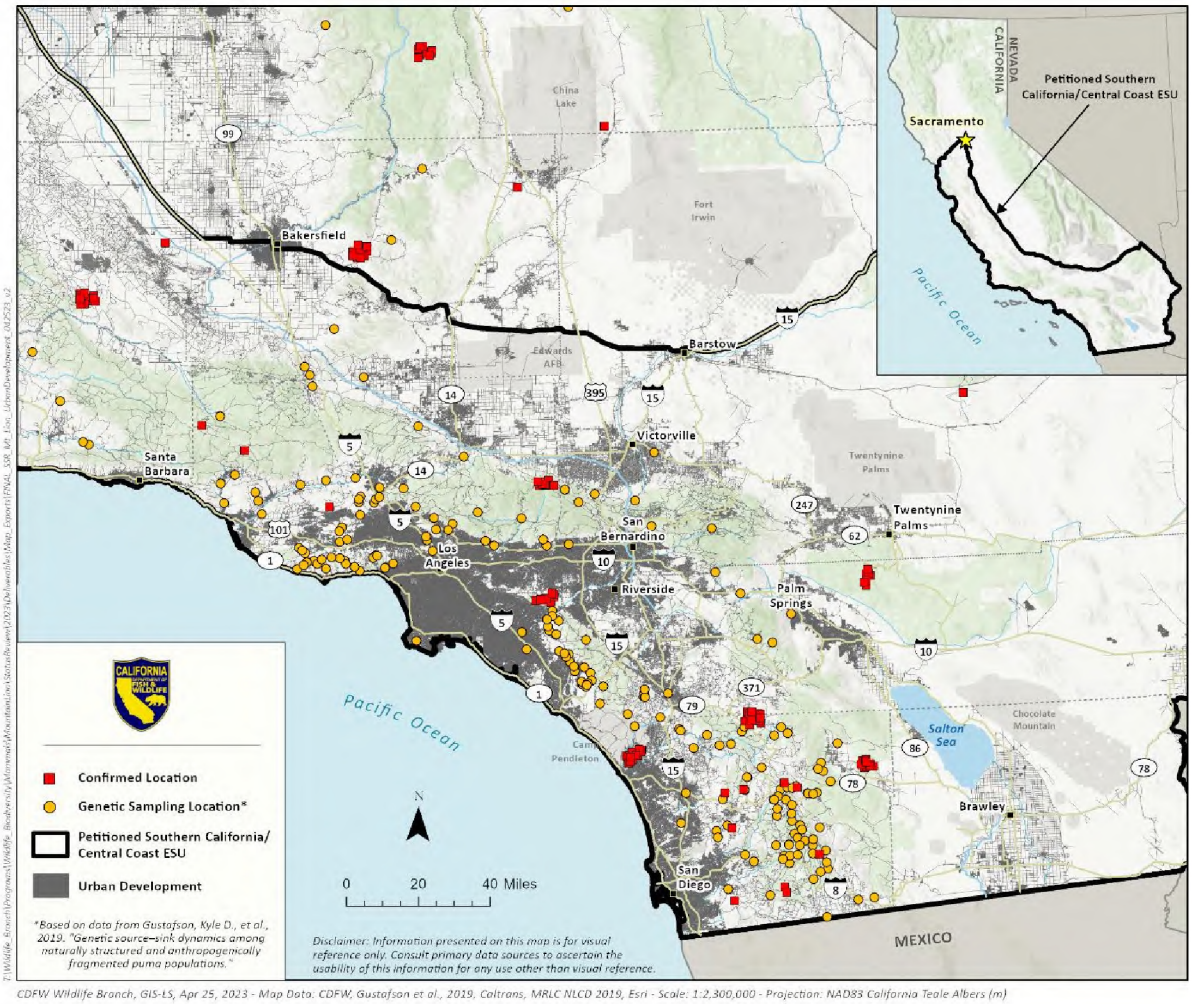


Figure 5. Map of extent of human development in southern California. Included on the map are genetic sample locations from Gustafson et al. 2019 (orange circles, samples collected 1992-2016) and confirmed locations of

mountain lions from CDFW camera traps (red squares, images captured 2009-2022). Note: does not show agricultural development.

There are no rigorous or systematic early California mountain lion population estimates available. The first data-driven estimate was made during years that a trapping bounty was in effect in California, when biologists estimated there were 600 mountain lions in California, 10 years prior to the end of the bounty period in 1953 (McLean 1954, Dellinger and Torres 2020). L. W. Sitton (1977), nearly 10 years after the conclusion of the bounty period, estimated that there were approximately 2,400 mountain lions in California. A 1989 study estimated 4,100–5,700 mountain lions in the state, based on the amount of suitable habitat and adult density estimates from prior studies (Mansfield and Weaver 1989).

Two long-term survival studies on radio-collared mountain lions in the SA provide some insight into population trend for mountain lions in rural enclaves in southern California (Beier 1993, Vickers et al. 2015). Studying 32 radio-collared mountain lions from 1988–1993, researchers found a 75% adult survival rate (Beier and Barrett 1993), which is similar to adult survival rates in other populations, e.g., the CC-S Management Unit (Riley et al. 2014). However, in a more recent SA study, 31 mountain lions marked from 2001 to 2013 had a survival rate of 56.5% across all sexes and age groups (Vickers et al. 2015). These results, combined with genetic information compiled in Gustafson et al. (2019), suggest that semi-rural areas such as the SA are population sinks for mountain lions, while remote, undeveloped areas (e.g., the Sierra Nevada) act as source populations (Dellinger et al. 2021a,b; Benson et al. 2023).

3.2 Population Size

The Department recently used fecal DNA data from 336 individual mountain lions collected from 13 study sites widely distributed throughout the state to estimate the statewide mountain lion population size using a spatial capture recapture model. The result is a statewide estimate of 3,242 (95% CI 2,826-3,742) mountain lions. It is important to note that this population estimate includes all age classes of mountain lions, including dependent young. More modeling work is required to provide an accurate assessment of how lion density varies in different habitats of the state in order to derive population estimates for specific management units (CDFW unpublished data).

Using the effective population sizes presented in Gustafson et al. 2019, an estimate of adult population can be created for the management units within the petitioned ESU (Table 3). Mountain lion population estimates in the table are derived from the estimated ratio of effective population size (N_e) to total adult population size (N). Effective population size essentially estimates the number of breeding adults in a population that successfully pass their genes on to future generations, recognizing that only a portion of adult animals in a population breed (see section 4.9.3 for more information on N_e).

Table 3. Effective population size and estimated total adult population of central coast and southern California mountain lion Management Units (derived from Gustafson et al. 2019).

Population	Effective Population Size (N_e)	Estimated Total Adult Population (N)[a]
Central Coast North (CC-N)	16.6	33–66
Central Coast Central (CC-C)	56.6	113–226
Central Coast South (CC-S)	2.7[b]	5–10
Santa Ana Mountains (SA)	15.6[c]	31–62
San Gabriel/San Bernardino Mountains (SGSB)	5	10–20
Eastern Peninsular Range (EPR)	31.6	63–126
Total Petitioned ESU	**128.1**	**255–510**

[a] Calculations are based on the estimated ratio of effective to total adult population size (N_e/N) of Florida panthers being 0.25–0.5 (Ballou et al. 1989). This ratio was used in the Florida Panther Recovery Plan (USFWS 2008) and is inclusive of estimates derived for other wild felids including ocelots (*Leoparuds pardalis;* Janečka et al. 2008) and tigers (*Panthera tigris*; Smith and McDougal 1991). It is recognized that these derived population estimates, while informative, are not definitive and may be superseded by new population estimates being developed by the Department.

[b] Benson et al. (2019) calculated an N_e of 4 for the Santa Monica Mountains population within the CC-S. Applying the Ballou et al. (1989) factors would lead to an estimate of 8–16 mountain lions in this area, which is roughly consistent with current estimates of this well-monitored population.

[c] Several studies provide N_e calculation for the SA population. Ernest et al. (2014) calculated an N_e of 5.1 and Benson et al. (2019) calculated an N_e of 6. Applying the Ballou et al. (1989) factors to the most recent calculation would lead to an estimate of 12–24 mountain lions in the SA, which is roughly consistent with current estimates.

The N_e/N method is one method of generating population estimates for mountain lions that are informative, but not definitive. However, the best currently available data agree that most of the Management Units within the petitioned ESU have small population sizes and low genetic variation (see Section 4.9), which could put them at increased risk of local extirpation (Beier 1993, 1995, Dickson et al. 2005, Ernest et al. 2014, Riley et al. 2014, Vickers et al. 2015, Benson et al. 2016, 2019, Gustafson et al. 2019).

4. FACTORS AFFECTING ABILITY TO SURVIVE AND REPRODUCE

4.1 Past and Threatened Modification and Destruction of Habitat

4.1.1 Urbanization

Anthropogenic habitat loss and fragmentation has been occurring in California since the arrival of Spanish settlers in the 18th century and increased dramatically with expansion of mining and agriculture in the mid-19th century. Early 20th century naturalists catalogued the flora and fauna throughout the state and noted the loss of formerly abundant prey species of the mountain lion, including elk, mule deer, pronghorn, and beaver (Stephens 1906, Grinnell 1914, Merriam 1919, Leopold 1966). Successive waves of agricultural and other development, including roads and highways, resulted in the conversion of natural vegetation, and led to further loss and fragmentation of mountain lion habitat. Development impacts have been extensive in the greater San Francisco Bay area, Los Angeles Basin and adjacent mountain ranges, Sacramento, and San Joaquin valleys (water diversions, agricultural development, and residential development), and the South Coast Province (residential, commercial, agricultural, and industrial uses).

The California State Wildlife Action Plan (SWAP) summarizes existing stressors on wildlife populations and ecosystems in the state and describes recent and ongoing habitat loss, fragmentation, and degradation in California (CDFW 2015). The SWAP reports significant habitat loss among many important ecosystems throughout the state. For example, over 195,000 ha (480,000 acres) of rangeland habitats were converted in California between 1984 and 2008 (approximately 3% of available rangelands) primarily due to residential and commercial development and agricultural intensification (Cameron et al. 2014). Additionally, habitat degradation—resulting from pollution, invasive species, livestock grazing, intensive recreation, soil erosion, drought, flooding, or wildfire—is a widespread stressor to wildlife populations in California (CDFW 2015).

Habitat fragmentation occurs when portions of habitat are lost or degraded such that natural areas are divided into small and isolated remnants (CDFW 2015). This fragmentation can have numerous negative impacts on wildlife including declining biodiversity and impairment of ecosystem functions; isolation of species into small subpopulations susceptible to extinction; and inhibition of movement between populations that leads to reduced genetic variation and inbreeding (Ibid.). Species with large home ranges, like mountain lions, require large contiguous areas of habitat or connectivity between multiple diffuse patches of habitat as resources are dispersed across a broader area, habitat fragmentation may lead to a loss of the habitat necessary for survival (e.g., sufficient breeding or foraging habitat) (Ibid.). In California, examples of habitat fragmentation include the conversion of native grasslands to agriculture in the Central Valley, which fragmented once continuous habitat into small patches, and in southern California, urbanization of historic habitat and movement corridors between mountain ranges (Ibid.).

In southern California in particular, human populations are especially dense, and land conversion is extensive. The significant amount of urban, suburban, and rural development in this area—resulting from population pressures of the region's 24 million residents—has led to substantial habitat loss and fragmentation (CDFW 2015). Currently, nearly 40% of the land area in southern coastal California is in urban and suburban use (CAL FIRE 2010). Beyond the immediate footprint of the development, urban, suburban, and rural growth patterns have fragmented the landscape (CDFW 2015). Land-use planning and zoning laws have allowed sprawling development with

residential housing located far from existing urban centers, requiring new roads and infrastructure, as well as communities designed with large lot sizes and little or no preserved open space (Ibid.). These development patterns not only reduce the amount of habitat available but also degrade the quality of adjacent habitat making the remaining natural habitats more vulnerable to the incursion of invasive species, air, and water pollution, and altered fire regimes (Ibid.). In addition, the developed areas, roads, and utility corridors fragment the landscape leaving few or no corridors between natural areas (Ibid.).

The habitat loss and fragmentation described in the SWAP have caused reductions in the geographic distribution of mountain lions in the central and south coast regions of California. Moreover, in the absence of adequate habitat conservation efforts, including connectivity measures, such reductions are expected to continue. A study of mountain lion habitat in the CC-S and EPR MUs showed that nearly half of lion habitat in the study area is on private land, and approximately one-third of the lands that were available habitat in 1970 will be developed by 2030. Additionally, some habitat that is currently adjacent to development may become fragmented, with potential loss of connectivity and increased risk to mountain lions from vehicle strikes and depredation take (Burdett et al. 2010).

Additionally, limited habitat connectivity has resulted in highly restricted gene flow in many areas of central and southern California. For example, between the EPR and the SA MUs, connectivity is limited due to the barrier effect of Interstate 15 in the Temecula region. Similar connectivity challenges occur between the CC and WSN MUs. Recently published information on reproductive and morphological abnormalities in mountain lions indicate inbreeding in the CC-S (Huffmeyer et al. 2022). This study provides new evidence of inadequate habitat connectivity and highly impeded gene flow for these populations (see section 4.9 for more information).

Residential and industrial development is projected to continue throughout the petitioned ESU, even in the areas that are already highly urbanized (United States Environmental Protection Agency (USEPA) 2017). Projections of increased housing density through the year 2050 demonstrate that continued development will exacerbate existing barriers to mountain lion movement, effectively rendering existing pathways less permeable, and in some areas may lead to complete isolation of portions of MUs (Ibid.). Areas that are projected become substantially more isolated by the year 2050 due to residential development include the Santa Cruz Mountains of the CC-N, the SGSB MU, the Santa Monica and Santa Susanna mountains in the CC-S MU; and the Sierra Palona and Tehachapi Mountains near the nexus of the WSN, CC-S, SGSB and EPR MUs (Ibid.).

The cumulative effects of approximately 200 years of major habitat loss and fragmentation due to development and road construction, loss of riparian habitat and vital water sources due to water diversions and dams, and the associated reduction and shifting of prey species appear to have contributed to the separation of mountain lions into smaller population units in the central and southern regions of California. In the Santa Monica Mountains, researchers have documented an unusually high number of mortalities from intraspecific aggression, presumably at least partially attributable to mountain lions being confined to remaining patches of suitable habitat and unable to disperse across anthropogenic barriers (Riley et al. 2014). The impact is most pronounced near large human population centers such as those in southern coastal California and the San Francisco Bay area.

4.1.2 Agriculture and Forestry

The conversion of native lands to intensively farmed crops and pasture has large swaths of land that no longer provide foraging and reproductive habitat for mountain lions. This conversion began as early as the 1700s in coastal California and accelerated rapidly in the 19th and 20th centuries as water storage and delivery systems were developed enabling the irrigation of crops. Approximately 43% of California's land area is used for agricultural production (California Department of Food and Agriculture (CDFA) 2009). In recent years 3.6 million hectares (9,000,000 ac.) of land has been in intensively farmed irrigated agricultural production on average (California Department of Water Resources (DWR) 2023). Although the same pattern of conversion of native vegetation communities to agricultural uses occurred wherever suitable soils and adequate water existed, it is in California's 47,000 km^2 (18,000 mi^2) Central Valley, by far the largest contiguous region of intensively farmed land in the state, that the change has been most dramatic. The Central Valley appears to form a semi-permeable barrier between coastal mountain ranges from the Sierra Nevada and Cascade mountains. Historically the Central Valley contained extensive riparian forests along the Sacramento and San Joquin rivers, their tributaries, and in the delta which likely provided corridors of suitable cover for mountain lions living in and traveling through the valley. In places, riparian forest and scrub along tributary rivers descending to the Sacramento and San Joaquin rivers from the Sierra Nevada in the east and the Coast Ranges in the west likely facilitated genetic connection between the Western Sierra Nevada genetic group and the Central Coast MUs. However, an estimated that 92-97% of such forests have been lost through channelization, altered hydrology, and conversion to agricultural and urban uses, and much of the remaining riparian forest has been modified (CDFW 2014). Loss of Central Valley riparian forests and riparian scrub is likely a major driver of contemporary mountain lion population structure.

Although the impacts are less intense and less permanent, commercial timber harvesting may adversely modify mountain lion habitat at the northern extreme of the petitioned ESU. A study of mountain lion home ranges in the redwood forest of northwest California found mountain lions used forest areas with a greater proportion fragmentation and edge more frequently than areas of more contiguous forest; however, lions generally avoided areas of active timber harvest operations (Meinke 2004). Mountain lion home ranges included different stages of forest succession from freshly harvested stands to late seral forests, perhaps indicating commercial timber management, as regulated by CAL FIRE, does not fragment mountain lion habitat or isolate populations. Conversely, Smallwood(1994) found mountain lion use of forest stands of the central coast, north coast, and Sierra Nevada Mountains sharply declined within 6 years following clear cut harvest. Mountain lions generally prefer heterogeneous habitat, and redwood growth rates are fast compared to the conifer species of the Sierra Nevada, so it is possible that even recently harvested commercial timberland in the redwood forest of central California could continue to provide important mountain lion habitat.

4.2 Vehicle Strikes, Roads, and Rail Lines

As mentioned in the section on mortality sources (2.1.1), vehicle strikes are the second most common cause of known mortalities of mountain lions in California (Benson et al. 2023). The Road Ecology

Center at the University of California, Davis (UC Davis) has records of 535 mountain lions killed on state highways between 2015–2022 (Shilling et al. 2023). However, these records only include reported mountain lion mortalities, so the true number is likely higher. Figure 6 displays documented mountain lion mortality events caused by vehicle strikes from 2000 to 2021. The incidents were mapped from a collection of roadkill reports from Department records and from Dr. Fraser Shilling at the Road Ecology Center. Though the data were not collected systematically as part of any statewide scientific investigation, reported collisions are most common in or near the urban areas of the central and south coasts.

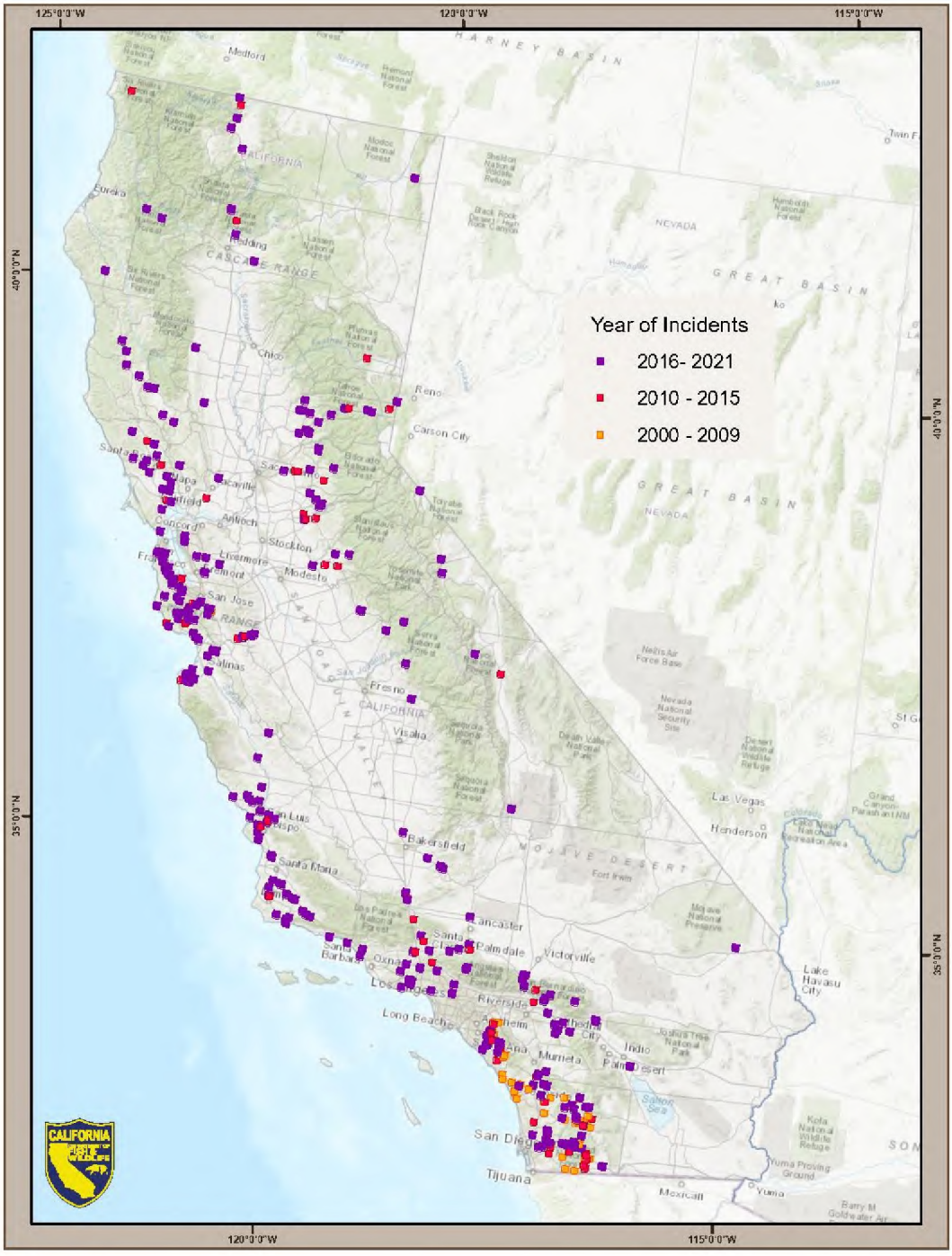


Figure 6. Mountain lion vehicle strike mortality incidents from 2000–2021 from a collection of roadkill reports from Department records and Dr. Fraser Shilling at the University of California, Davis, Road Ecology Center.

In southern California (SA and EPR), the Los Angeles and San Diego regions are major areas of road mortalities (Shilling et al. 2023). From 1981 to 2013, reported vehicle strikes accounted for 53% (50/94) of known mountain lion deaths in the SA MU (which includes the greater Los Angeles metropolitan area) and 30% (46/154) in the EPR MU (which includes the greater San Diego metropolitan area) (Vickers et al. 2015). Vehicle strikes remain the main mortality factor for mountain lions in the SA MU, and a tertiary mortality factor in the EPR MU (Ibid.). Due to the high levels of vehicle-related mortalities in the SA and EPR lion MUs, land protection alone may not be sufficient to ensure mountain lion persistence in the region (Ibid.).

In the Bay Area (CC-N), vehicle strikes are also a significant source of mortality. California State Route (SR)-12, SR-17, SR-1, and especially Interstate-280 have high numbers of mountain lion mortalities (Shilling et al. 2023). Shilling and Vickers (2023) identify the stretch of I-280 northwest of San Jose as the deadliest highway in California for mountain lions with 20 deaths along a 32 km (20 mi.) stretch from 2015–2022. At least six mountain lions were killed by vehicle strikes on Highway 17 in the Santa Cruz Mountains between 2008–2018 (Midpeninsula Regional Open Space 2017, Slade 2018), and news outlets reported at least three vehicle strikes killing mountain lions on I-280 in San Mateo County between 2014 and 2016. Unpublished Department records indicate ≥ 15 mountain lions killed by vehicle strikes on Highway 17 and ≥ 15 mountain lions killed by vehicles on I-280 from 2014 to 2020, and an additional 10 road killed mountain lions from the CC-N MU in 2021 alone (Terris Kasteen, pers. comm.).

Vehicle strikes also may also cause indirect mortality of dependent young mountain lions. When a female with dependent young is struck by a vehicle, the kittens likely starve to death or become easy prey for predators, including other mountain lions. If the kittens are larger and more mobile, they may approach areas where they are more likely to encounter humans as they search for food. This was seen in November 2017, when a mother mountain lion was killed by a vehicle strike in the SA and two of her kittens were found roaming near human development—one in a backyard and the other along a road (Veklerov 2018). Both kittens, too young to survive on their own, were removed from the wild and placed in the Oakland Zoo.

In addition to direct mortality from vehicle strikes, roads also pose a threat to mountain lions in terms of restricted movement. Radio and satellite-tracking data have revealed that mountain lions will sometimes approach a busy freeway, hesitate to cross, linger in the area, or sometimes pace back and forth parallel to the freeway before turning back (Stoner et al. 2008). Dr. Winston Vickers observed this behavior recently in a female lion that originated from the SA. The satellite-collared lion was heading easterly toward the EPR, but when she encountered I-15, she ranged up and down along the freeway before turning around, ultimately returning to the SA (W. Vickers, pers. comm.).

The threat of vehicle strikes is not limited to roads and highways. Trains also kill wildlife (Gangadharan et al. 2017), and railways often parallel highways and roads (e.g., an existing railway runs roughly parallel to Interstate-15 in the Cajon Pass area between the San Gabriel and San Bernardino Mountains). A high-speed rail line (HSR) is planned to run roughly parallel to I-15, and a HSR line is planned from the Victorville area to Las Vegas in the median of I-15, with a barrier wall at the base of

the HSR line. Other areas for HSR are the Central Valley and the route from San Jose through Pacheco Pass.

Planning for safe wildlife crossings in southern California has been underway for nearly two decades. In 2008, the South Coast Missing Linkages Project identified areas of the state where linkages are needed (Fig. 7). The County of Ventura has incorporated these linkages into their General Plan land use zones to help ensure these important wildlife movement corridors remain passable (Ventura County 2019). The Department and the California Department of Transportation (Caltrans) have announced there will be three wildlife overcrossings along I-15 and the HSR line in San Bernardino County which should facilitate the movement of mountain lions and other species (CDFW 2023a). In addition, current undercrossings and culverts will be maintained and improved along the corridor.



Figure 7. Important wildlife corridors identified in the South Coast Missing Linkages Report (SC Wildlands 2008).

The Department has identified and prioritized selected wildlife barriers statewide, and 10 out of 12 high priority barriers were associated with mountain lions (CDFW 2022b). However, funding to

implement wildlife crossing projects, including land acquisition to make the crossing more natural and acceptable to wildlife, has been limited to date. The lack of wildlife crossings, particularly in highly urbanized areas or across major transportation corridors, contributes to the current mortality rates associated with vehicle strikes. There has been some recent movement on this issue; construction for the Wallis Annenberg Wildlife Crossing in the Liberty Canyon area of the CC-S MU (Fig. 8) broke ground in 2022. The overpass will facilitate mountain lion movement between the Santa Monica Mountains and the Simi Hills and could ultimately facilitate genetic exchange between the CC-S and the rest of the CC and/or SN. It may also minimize local vehicle-related mortality. And a wildlife undercrossing with associated fencing and habitat conservation was constructed under Highway 17 in the Santa Cruz Mountains in February of 2023. Another wildlife crossing over Highway 101 in San Benito County is in the planning and fundraising phase. Together, these crossings will facilitate the movement of mountain lions between the Santa Cruz Mountains in the CC-N MU and the Gabilan Mountains of the CC-C MU.



Figure 8. Rendering of Wallis Annenberg Liberty Canyon Wildlife Crossing. Source: Santa Monica Mountains Conservancy.

4.3 Predator Control and Overexploitation

4.3.1 Historical Overexploitation

The management of mountain lions in California has varied widely in the last century. In the early to mid-20th century, mountain lions were a bountied predator in California, like other western states (Young and Goldman 1946, Dellinger and Torres 2020). When the bounties ended in 1964, mountain lions were classified as a nuisance or vermin species—an unlimited number of mountain lions could be killed year-round without a hunting license, but there was no longer paid incentive for removal (Dellinger et al. 2021b). From 1969–1972, mountain lions were considered a game species and could be hunted with a proper hunting license; their status as a game species was reinstated from 1986–1990, but no mountain lions were harvested during this period (Ibid.). Between 1972–1986 and again 1990 to present, mountain lions were classified as a specially protected species preventing hunting (Dellinger and Torres 2020).

During the bounty period (pre-1964), paid incentives encouraged people to hunt and kill mountain lions resulting in approximately 12,580 mountain lions killed across California (Dellinger et al. 2021b). Nearly one-third of the bounties paid in the first few decades were in northern California in Humboldt, Trinity, Mendocino, and Lake counties (Dellinger and Torres 2020). Additionally, the Department employed 1–5 lion hunters whose only job was to remove mountain lions throughout the state (McLean 1954; Dellinger and Torres 2020).

After the bounty period, mountain lions become classified as a game species by the Department, and two hunting seasons took place (1970–1971) during which 118 animals were harvested from 4,953 permits issued (Dellinger et al. 2021b). Following the second hunting season, a legislative moratorium on mountain lion hunting was put into effect(Fitzhugh and Gorenzel 1986). However, this moratorium did allow mountain lions to be killed for injuring or killing pets and livestock under state issued depredation permits (Dellinger et al. 2021b). The moratorium expired in 1986 causing mountain lions to revert to their previous status as game animals (Ibid.). The Department then began to establish hunting zones and harvest quotas—a process that was near completion in 1990 when hunting tags had been issued for the newly established mountain lion zones (Ibid.). However, a voter ballot initiative (Proposition 117) was made law by California voters which classified mountain lions as a "specially protected mammal species" (FGC 2019). Mountain lions have retained this designation with the only allowable take occurring via depredation permits when mountain lions are encountered attacking or threatening livestock, after causing property damage, to protect public safety, or targeted removal for animals negatively impacting federally listed bighorn sheep populations (FGC 2019).

4.3.2 Livestock Depredation and Human Safety

The interactions between humans and mountain lions in California have profound impacts on the conservation and management of the species. Human-wildlife conflicts are interactions that result in perceived, potential, or actual negative impacts to one or more species. As the state's trustee agency

for fish and wildlife resources (Fish & G. Code, § 1802), the Department's responsibilities include serving as the primary state agency charged with helping to resolve human-wildlife conflict, public safety, and depredation issues (CDFW 2015).

In some cases, mountain lions that are a threat to domesticated animals can be taken, both lethally and nonlethally. Mountain lions encountered in the act of pursuing, inflicting injury to, or killing livestock or domestic animals may be killed by landowners and their agents without prior authorization (Fish and G. Code, § 4807). The Department is also required to be responsive to depredation permit requests when mountain lions injure or are thought to have injured property such as livestock and pets (Fish & G. Code, § 4802 et seq.). Lethal removals are carried out under the authority of Department-issued depredation permits to the property owner experiencing the damage. The property owner can then designate a third party (e.g., local trapper) to carry out the depredation permit. Additionally, the Department may take or authorize local public safety agencies to take mountain lions perceived to be an imminent threat to public health and safety through nonlethal techniques or, when nonlethal techniques prove ineffective, through lethal take (Fish & G. Code, §§ 4801, 4801.5).

In 2013, the Department developed a situation-specific approach for responding to human-mountain lion conflict including: 1) mountain lions in areas of human habitation, 2) mountain lions depredating pets/livestock, and 3) mountain lion public safety situations. The most noteworthy change in management action reflected in this approach was specifying that only one mountain lion could be taken under a single depredation permit. In 2017, the Department again revised its approach, consistent with Fish and Game Code section 4801.5, to prioritize non-lethal measures for dealing with mountain lion depredation in the Santa Monica and Santa Ana mountains where research indicated that local mountain lion populations constrained by anthropogenic barriers lacked genetic variation (CDFW 2017). In 2020, the Department amended its mountain lion management policy to expand the area where non-lethal measures would be prioritized, consistent with Fish and Game Code section 4801.5 (CDFW 2020). Specifically, the Department has implemented a 3-step process across the central coast and southern parts of California to guide its case-specific response to mountain lion depredations. In this 3-step process, non-lethal measures (e.g., hazing and improvements to animal husbandry) are used to try and resolve depredations during the first two instances of a depredation event at a given property. If a third depredation event occurs at a property despite the implementation of non-lethal measures the Department considers authorizing lethal removal of the offending animal. It should be noted that this process is based on the individual property and not the individual mountain lion. Elsewhere across the state, the Department uses a 2-step process in response to depredation events, such that non-lethal measures are used after the first event. A lethal permit may potentially be issued if another depredation occurs at the same property.

From January 2010 through 2020, the Department recorded 3,637 reported mountain lion incidents. These include public safety concerns and depredations as well as sightings and complaints of nuisance animals. Of the incidents, 2,202 were reported depredations (predation on pets or livestock by mountain lions), 1,327 were classified as potential human conflict cases, and 108 were general nuisance. For incidents of any type, El Dorado County had the most reports (261 reports) followed by Shasta County (176) and Los Angeles County (168). Many reported mountain lion incidents involve

observations that cannot be confirmed, due largely to the transitory nature of wildlife sightings and incidents. For potential human conflict incidents, Los Angeles County had the most cases (108) followed by San Diego County (85), and Mendocino County (65). From 1986 to 2020, there were 19 reported mountain lion attacks on humans, 3 of them fatal, in California. Prior to the 2020 amendment to the Department's mountain lion management policy, 8.6% of all reported mountain lion depredations resulted in the lethal removal of one or more mountain lions from within the petitioned ESU. Following the amendment, the percentage declined to just 0.2% (CDFW Wildlife Incident Reporting System accessed 5/16/2023). The Department prioritizes human safety and lethally removes mountain lions that represent an immediate threat to public safety.

Depredation, wherein mountain lions attack pets and livestock, account for most reported mountain lion-human incidents. Conflicts related to depredation are increasing (Dellinger et al. 2021a) in part due to population growth and development in rural communities and natural areas and expansion of agricultural activities. From 1972 to 2020, at least 3,694 mountain lions were removed in depredation incidents (Dellinger et al. 2021b), and it was the leading cause of attributable mortality of collared mountain lions (Benson et al. 2023). Over the last 20 years, an average of approximately 92 mountain lions have been removed on depredation permits per year across California (Dellinger et al. 2021b). Over this same period, an average of 2.55 mountain lions were removed annually in the SC genetic group identified by Gustafson et al. (2022) (composed of the SGSB, SA, and EPR MUs), 1.4–2.7% of the estimated population size (as estimated by Gustafson et al. (2019)), and approximately 11.7 mountain lions were removed annually from the CC genetic group (composed of the CC-N, CC-C, and CC-S MUs), equating to an annual removal of 3.9–7.7% of the estimated population size (Dellinger et al. 2021b).

Of the mountain lions killed because of depredation, 66% are male (CDFW 2019), and approximately 33% involving dispersing subadult males (Torres et al. 1996). From 1981 to 2013 in the SA and EPR MUs, the number of male mountain lions taken for depredation exceeded the number of females removed by 340% (Vickers et al. 2015). Not only do mountain lions killed pursuant to depredation permits diminish the total abundance of mountain lions in these populations, but because they consist predominantly of males, the number of primary gene dispersers is also greatly reduced, which further inhibits adequate gene flow between lion populations in California (Vickers et al. 2017).

Most reported depredation incidents from 1972–2019 were of sheep and goats on small scale operations (Dellinger et al. 2021a). Interestingly, researchers have noted that at the county level, mountain lion depredation rates increase by 9% for every lion removed through a depredation permit the prior year (Dellinger et al. 2021a). The authors suggested this was likely a result of subadults moving to given areas when resident adults were removed. Those subadults are more likely to use areas closer to people and have less well-developed hunting skills and are likely to favor targeting easily killed domestic animals (Dellinger et al. 2021a). This suggests non-lethal measures instead of lethal removal in response to mountain lion depredation incidents could benefit both mountain lions and livestock owners.

Dellinger et al. (2021a) found that the number of reported depredation events involving pets trended upward from 1972 to 2019. Given that most depredation incidents involve pets and non-commercial livestock, it seems unlikely that the number of conflicts will decline in the future, particularly in the

urban southern coast region. Nisi et al. (2022) found that although mountain lions in the Santa Cruz Mountains avoided the areas where they were most likely to come into conflict with humans during the day, they were more likely to be in those areas at night when lethal responses are more likely to occur. Nisi et al. (2022) suggested that ways in which mountain lions interpret human cues and risk levels do not lead to changes in behavior that are sufficient to reduce conflict with humans. Therefore, improving livestock husbandry to minimize the risk of depredation is vital to further reduce the lethal take of mountain lions.

Mountain lions are occasionally removed when predating upon state and federally endangered Sierra Nevada bighorn sheep (*O. canadensis sierrae*) or state threatened and federally threatened Peninsular bighorn sheep (*O. canadensis nelson*). The Department is authorized to take such actions via Fish and Game Code section 4801, and such actions are identified in each species' federal recovery plan (USFWS 2000, 2007). Historically, this action has primarily affected the SN genetic cluster in the ESN outside the petitioned ESU boundary and where mountain lion populations are relatively large and well connected (CDFW 2021).

In addition to reported depredation take, poaching and other unpermitted take is rarely reported but has been observed in the CC-S, SA, and EPR (Beier and Barrett 1993, Riley et al. 2014, Vickers et al. 2015) as well as in the CC-N (Yap et al. 2019). Benson et al. (2023) reported 26 out of 263 known California mountain lion mortalities from 1974–2020 were due to poaching, accounting for 2%-3% of annual mortalities, a less frequent source of mortality than depredation take (6%), vehicle collisions (4%), natural mortality (3%), and being killed by another mountain lion (3%); although it is possible that collared study animals are illegally taken less frequently than unmarked animals. .

Benson et al. (2023) found that the annual rate mortality from killing for management purposes (0.06 [0.05–0.08]), was roughly equal to all types of natural mortality (0.06 [0.05–0.08]) and is additive to natural mortality. Collectively, all forms of permitted take are unlikely to negatively influence mountain lion populations and trends when viewed at the statewide level, nor in the large and well-connected NC and SN populations. However, the additive mortality resulting from depredations and human conflicts in areas where lion populations are already small and isolated such as California's central and south coasts may result in local population declines (Benson et al. 2023). Importantly, the authors noted the risk of mortality from management killing declined from 2001 to 2020, and raised the possibility that the decline may be related to the recent changes in CDFW's management policies.

4.4 Competition

Mountain lions compete with other large carnivores in most areas of their range. Black bears are known to occasionally displace mountain lions from their kills which deprives them of calories, potentially forcing them to expend additional energy hunting to procure more prey (Allen et al. 2021). In a study in Mendocino County, mountain lions did not seek bear-free areas to mitigate competition with black bears; rather, they increased their predation rates to compensate for the kills stolen by bears (Elbroch et al. 2015). It is unknown whether displacement by black bears occurs frequently enough to affect mountain lion survival and reproductive rates (Elbroch and Kusler 2018). Mountain

lions and bears overlap in space in almost all mountain lion habitats in California except for the Santa Cruz Mountains, and until recently the Santa Monica Mountains. In western North America gray wolves affect adult and kitten survival, directly kill individual mountain lions, and affect habitat and prey selection, bedding locations, and population size (Bartnick et al. 2013, Elbroch et al. 2015, Kusler et al. 2017, Elbroch and Kusler 2018, Elbroch et al. 2020)). Given the small size and limited distribution of California's current gray wolf population, competition between wolves and mountain lions has not been a significant threat to the persistence of mountain lions to date, and as wolves are currently absent from the petitioned ESU, wolf competition is not considered a current threat. Finally, smaller predators and scavengers such as coyotes are known to opportunistically feed from mountain lions kills (Brunet et al. 2022), although the degree this loss of food resources impacts lions is difficult to quantify.

Intraspecific conflict and aggression appear to be a significant mortality factor in areas where mountain lions occupy small patches of suitable habitat (Vickers et al. 2015). Intraspecific aggression has been identified as the leading cause of mortality for the nearly isolated mountain lions in the Santa Monica Mountains (a portion of the CC-S; Riley et al. 2014). Although intraspecific aggression is a common source of mortality in mountain lion populations (Beier and Barrett 1993, Logan and Sweanor 2001, Allen 2014), unusually high levels have been observed in the CC-S MU (Riley et al. 2014). About 41% of deaths of radio and satellite-collared mountain lions being tracked from 2002 to 2018 in the Santa Monica Mountains were from intraspecific aggression, with multiple cases of adult males killing their siblings, offspring sired by other males (i.e., infanticide), and previous mates (Riley et al. 2014). These high levels of intraspecific aggression/predation are likely due to limited available habitat in the Santa Monica Mountains, which are largely surrounded by urban and agricultural development and other dispersal barriers (Riley et al. 2014, Benson et al. 2019). Additionally, in the SA MU, intraspecific predation was documented on two occasions in recent years (W. Vickers, unpublished data). Therefore, this form of competition should be considered a potential threat to lion populations in small, isolated MUs such as the CC-S, SA, and the SGSB. However, the effect of competition on the entire petitioned ESU is unknown and is simply one potential piece of the cumulative impacts on mountain lions in California—not likely a significant threat on its own.

4.5 Toxicants

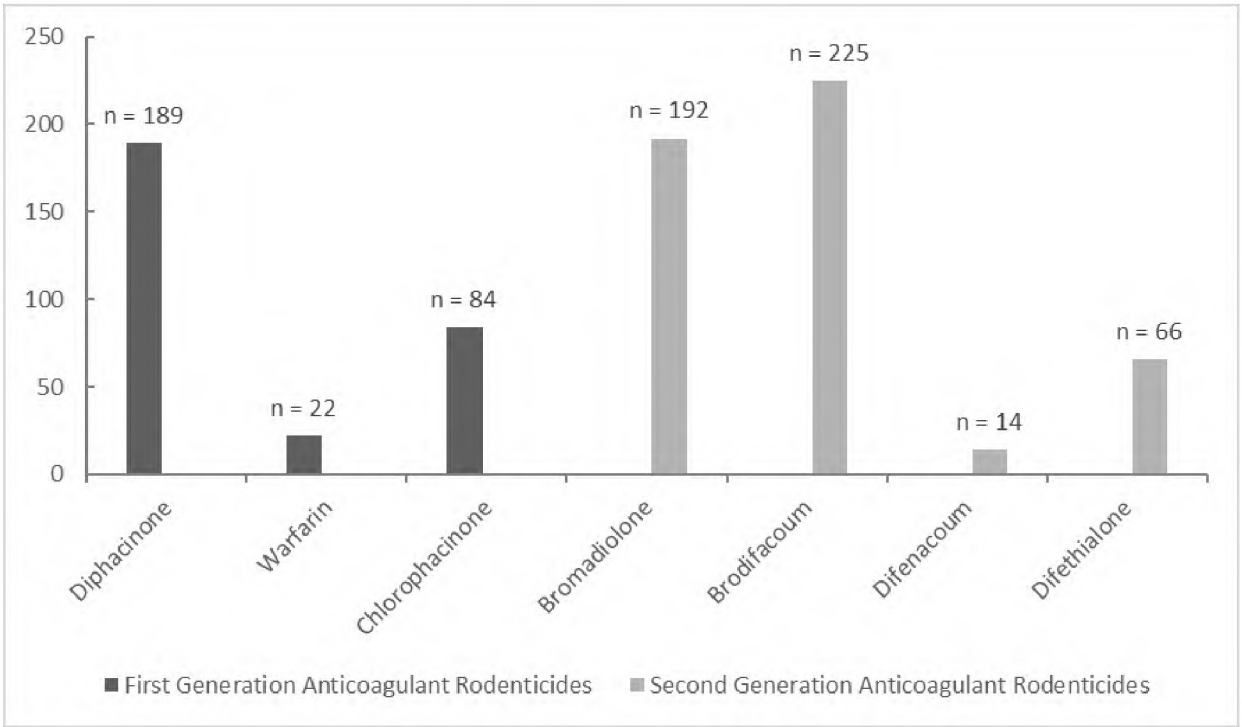
Mountain lions throughout California are exposed to toxic chemicals in their environment which can be lethal or debilitating depending on the extent of exposure. Some ingested toxicants can be transferred in utero to fetuses, and debilitated lions may be more susceptible to other forms of mortality such as starvation and traumatic injuries.

4.5.1 Pesticide Exposure

Anticoagulant rodenticide (AR) baits are commonly used to control rodent pests in urban, suburban, and agricultural areas (Litovitz et al. 1998, Maroni et al. 2000). As summarized in Serieys et al. (2015), ARs interrupt the production of vitamin K-dependent blood clotting proteins, leading to the depletion

of these proteins over a period of days and inducing mortality by internal hemorrhage. Comprised of two classes of compounds, ARs are the primary chemical method used worldwide for the control of rats and mice. First-generation ARs, including warfarin, diphacinone, and chlorophacinone, are more readily metabolized, have a shorter half-life in liver tissue (two weeks to several months), and must be consumed in multiple feedings to reach a lethal dose. Second-generation ARs include brodifacoum, bromadiolone, difenacoum, and difethialone, and were developed to target rodents with genetic resistance to warfarin. Due to increased toxicity and persistence in animal tissues, with half-lives ranging from 6–12 months, second-generation ARs may persist in liver tissue for more than a year in some species. Both classes of compounds have a delayed onset of action, and death from AR consumption can occur up to 10 days after ingestion. Individual rodents may continue to accumulate the compounds over a period of days, increasing their likelihood of capture by predators as they become weakened by the toxicant. For these reasons, ARs have the potential of creating primary and secondary poisoning risks to non-target wildlife; this is especially the case for predatory mammals as they consume targeted prey that have ingested ARs. AR exposure has been positively associated with proximity to urban areas, raising concerns about long-term conservation impacts of AR exposure on non-target wildlife populations on the fringe of urban areas (Hosea 2000, Riley et al. 2007, McMillin et al. 2008, Gabriel et al. 2012, Serieys et al. 2015, 2018)

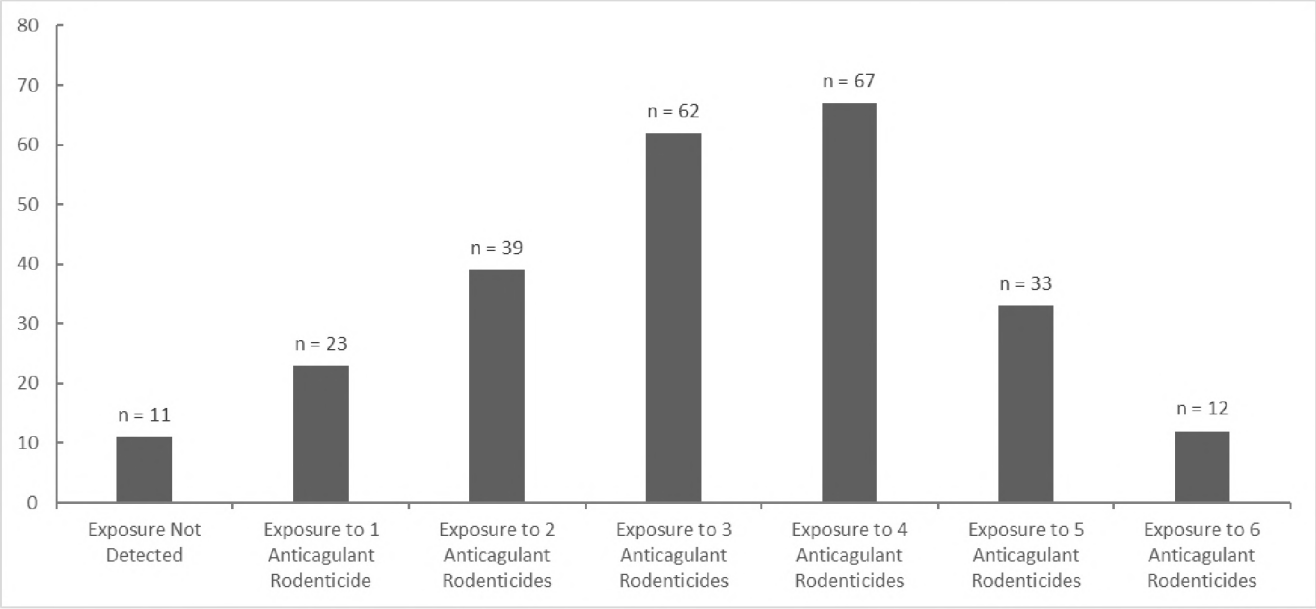
Mountain lions use diverse habitats—including residential, periurban, suburban, and urban—where their diet may include native, exotic, invasive and domestic prey (Moss et al. 2016, Smith et al. 2016), exposing them to ARs otherwise used to control vertebrate pests. Further, mountain lions may also utilize public and private agricultural, industrial, and forested areas throughout the state, including remote locations on public lands where prohibited rodenticides are often used to protect illicit cannabis plantations (Gabriel et al. 2012). Previous and ongoing work by the Department's Wildlife Health Lab detected AR exposure in 96% (237/247) of tested mountain lion livers submitted between 2016 and 2018 (Fig. 9; Rudd and Rogers 2021). Second-generation ARs are more commonly detected than first-generation ARs, despite a 2014 California regulatory change restricting second-generation AR use to certified pesticide applicators (Rudd et al. 2018, Rudd and Rogers 2021). Seventy percent of the mountain lion livers (174/247) tested had three or more different ARs present at the time of death (Fig. 10). To date, there is no observable pathological condition consistent with AR exposure in necropsied mountain lions (Rudd et al. 2018).



1240

1241 Figure 9. Anticoagulant rodenticide residues detected in 247 livers of mountain lions submitted to the
1242 Wildlife Health Laboratory for postmortem examination 2016–2018 (Rudd and Rogers 2021)

1243



1244

1245 Figure 10. Number of different anticoagulant rodenticides analytes detected in 247 individual mountain
1246 lion livers analyzed from January 1, 2016–March 31, 2018 (Rudd and Rodgers 2021).

There is a high degree of variability among species and individuals in their vulnerability to AR exposure. Felids are relatively resistant to the coagulopathic effects of ARs (Kopanke et al. 2018). In the absence of a universal threshold value that could be indicative of AR toxicosis (i.e., poisoning), the diagnosis of AR-related toxicosis and coagulopathy (i.e., impaired clot formation leading to excessive bleeding) requires both the presence of one or more AR in the appropriate sample (e.g., liver or serum) and antemortem or postmortem evidence of a coagulopathy unrelated to another identifiable cause of hemorrhage (e.g., trauma, disease, or infection). It is important to note that exposure in the absence of toxicosis should not be ignored (van den Brink et al. 2018). The uncertainties about the magnitude and drivers of chronic exposure and/or sub-lethal levels of rodenticide exposure demonstrate the need for continued monitoring.

In the Santa Monica Mountains National Recreation Area (CC-S MU), the National Park Service has concluded the deaths of seven mountain lions since 2004 were associated with AR exposure and toxicosis (Riley et al. 2007, NPS 2021). Two mountain lions that died from AR toxicosis in 2004 also had infestations of notoedric mange (Riley et al. 2007, Uzal et al. 2007). Notoedric mange in felids, typically caused by the parasitic mite *Notoedres cati*, is assumed to be non-fatal in bobcats and mountain lions; however, AR exposure may make felids more susceptible to advanced mange disease (Riley et al. 2007).

Of particular interest, AR exposure was detected in the liver of a pregnant female mountain lion from Santa Barbara County and in the livers of her two fetuses (Table 4; Rudd et al. 2020). Many toxic substances, including ARs, can adversely affect fetal development and survival at doses that may not produce toxic effects in the mother (Gupta 2012). Fetuses are also typically more susceptible to AR toxicity because the placenta is the only source of vitamin K for the fetus (Gupta 2012). AR-related coagulopathy and toxicity was not observed in the two fetuses with exposure to brodifacoum and diphacinone (Rudd et al. 2020).

Table 4. Anticoagulant rodenticide detection in maternal and fetal mountain lion livers. BRD: brodifacoum, BRM: bromadiolone, CHL: chlorophacinone, COU: coumachlor, DIF: difethialone, DIPH: diphacinone, WAR: warfarin, DFN: difenacoum. An asterisk (*) indicates that the samples were pooled together for qualitative and quantitative analyses (i.e., samples too small to be evaluated individually).

ID	Mortality by cause	County	ARs detected in pregnant adult (ppb)	# of fetuses	ARs detected in fetal tissue (ppb)
Z16-1126	Depredation	Tuolumne	BRD (230), BRM (trace)	4*	Not detected
Z17-0199	HBC	Santa Barbara	BRD (71), BRM (130), CHL (trace), DIF (trace), DIPH (830)	2	1. BRD (trace), DIPH (150) 2. BRD (trace), DIPH (160)
Z17-0281	Depredation	Trinity	BRD, BRM, DIF, DIPH (all trace)	4*	Not detected
Z17-0328	Depredation	Yuba	BRD (trace), BRM (120), DIPH (trace)	3*	Not detected
Z19-0793	Depredation	Amador	BRD, BRM, DIPH (all trace)	3*	Not detected

Additionally, exposure to ARs may predispose animals to excessive hemorrhage following an otherwise non-lethal traumatic injury or increase sensitivity to additional exposure (van den Brink et al. 2018).

The Petition cited Rudd et al. (2019) to state that mountain lions in California are exposed to dangerously high levels of illegal pesticides, such as carbofuran. However, this citation is incorrect; the Department has not documented any cases of carbofuran toxicity to date. Further research is needed to investigate the lethal and sub-lethal effects of anticoagulants and other toxicants on wildlife in terrestrial environments (Riley et al. 2007, Gabriel et al. 2015, Rudd et al. 2018).

4.5.2 Mercury

Mercury is hypothesized to contribute to reproductive, endocrine, and immunosuppression issues documented in Florida panthers (Roelke 1991, Facemire et al. 1995). While morbidity and mortality resulting from mercury toxicity have not been documented in mountain lions in California, elevated mercury concentrations have been found in the fur and whiskers of mountain lions from the coastal region of the Santa Cruz Mountains (Weiss-Penzias et al. 2019).

4.6 Infectious Diseases

Mountain lions are afflicted by various viral, bacterial, and parasitic pathogens. It is not known if these pathogens and their respective diseases alone could imperil the species in California. However, small, isolated mountain lion populations are at greater risk from a catastrophic disease outbreak which could reduce their ability to persist into the future, especially when combined with other threats. Following is a list of the most common pathogens that could potentially affect mountain lion populations.

4.6.1 Viral Diseases

Feline leukemia virus (FeLV). FeLV is a common immunosuppressive viral pathogen in domestic cats known to cause morbidity and mortality. While infection is seemingly rare in non-domestic felids, FeLV is considered a disease of potential epidemic concern for small populations. Researchers have found infection prevalence in mountain lions to be low, ranging from 0–5.4% (Paul-Murphy et al. 1994, Foley et al. 2013). More recently, the Department, in collaboration with Colorado State University, documented a similar FeLV infection prevalence of 2.4% in lymph nodes collected from 130 necropsied CA mountain lions tested from 2016–2018 (J. Rudd, CDFW, pers. comm.). To date, the Department has documented only two mountain lion mortalities due to suspected FeLV-related infections (e.g., opportunistic bacterial and fungal infections and anemia)—one in 1993 (Jessup et al. 1993) and another in 2020 (J. Rudd and Q. Martins, unpublished data).

Puma lentivirus (PLV). PLV is a genus of immunosuppressive lentivirus that infects domestic and wild felids with some degree of species specificity (Lee et al. 2014) and includes feline immunodeficiency virus (FIV). PLV (type B) infection was recently detected in 46 necropsied mountain lion carcasses from California (35.4%; J. Rudd, CDFW, unpublished data) and is thought to be the cause of death for a 16-month-old male mountain lion that died in April 2018 in Modoc County (J. Rudd and D. Garcelon, unpublished data). However, the remainder of necropsied animals in which PLV infection was detected were aclinical and did not exhibit signs of pathology (J. Rudd, CDFW, unpublished data).

Rabies virus. Striped skunks (*Mephitis mephitis*) are the primary terrestrial wildlife reservoir for rabies in California, but other mesocarnivores, including raccoons, gray foxes (*Urocyon cinereoargenteus*), bobcats, and coyotes, can become infected and transmit the disease. Despite these species serving as potential sources of prey for mountain lions, there have been only two known cases of rabies in mountain lions in California—in 1909 in Santa Clara County (Storer 1923) and in 1994 in Mendocino County (CDFW 2000).

Pseudorabies virus (PrV). PrV is a highly transmissible porcine alphaherpesvirus whose natural hosts are members of the pig family Suidae (Pomeranz et al. 2005). The virus can cause respiratory, reproductive, and neurological symptoms in young piglets, while adult pigs show little to no clinical illness (Pomeranz et al. 2005, Müller et al. 2011). Infection of PrV into non-native hosts is typically fatal with mortalities documented in several carnivore species after consuming wild and domestic pigs, including bears *(Ursus arctos)* (Zanin et al. 1997), wolves (Verpoest et al. 2014), coyotes (Raymond et al. 1997), foxes (Bitsch et al. 1969), lynx (Lynx sp.; Masot et al. 2017), and Florida panther (Glass et al. 1994). In California, pseudorabies has been detected in wild pigs from 13 counties (McDougle 2017). Although PrV has not been detected in California mountain lions to date (Wisely et al. 2018), the high

prevalence of the virus and overlapping distribution of wild pigs and mountain lions in significant parts of California suggest that PrV could be a hazard to lions in California.

Feline Panleukopenia Virus (FPV). FPV belongs to a family of parvoviruses that are closely related to canine parvovirus and mink enteritis virus (Truyen and Parrish 2013). FPV primarily infects felids and has a high mortality rate, although individuals that do survive infection generally have life-long immunity. In natural domestic cat populations, FPV has the potential to regulate population sizes due to its high mortality rate, especially in young animals. In California, FPV was the most common pathogen detected in wild mountain lions from California, with an antibody prevalence of 36% in tested blood samples from 1991–2008 (Foley et al. 2013). Infection with FPV resulted in the morbidity and death of two six-week-old mountain lion siblings from Ventura County in 2021, and was the cause of morbidity in an ataxic, emaciated 11-month-old mountain lion from Nevada County that was euthanized in July 2022 (J. Rudd, CDFW, pers. comm.). Pathological findings for all three mountain lions demonstrated viral-associated encephalitis.

Highly Pathogenic Avian Influenza (HPAI). Since October 2021, outbreaks of H5N1 HPAI belonging to Eurasian lineage, clade 2.3.4.4 have been detected in wild birds and domestic poultry throughout Europe and North America. The majority of H5 HPAI virus detections in both wild and domestic birds have overlapped with annual fall migration and large aggregations of overwintering waterbirds (Verhagen et al. 2021). In addition to causing disease outbreaks in domestic poultry, currently circulating H5N1 HPAI appears to be persisting in wild bird reservoirs with multiple reports of spillover causing illness (e.g., lethargy, inappetence, neurologic signs) and death in a higher diversity of wild bird species than during previous avian influenza outbreaks, affecting raptors and avian scavengers such as turkey vultures and ravens (APHIS 2023). In the United States, similar illness and death have also been reported in mammals, primarily carnivores, including seals, red foxes (*Vulpes vulpes*), raccoons, striped skunks, coyotes, bears, bobcats, and mountain lions (CDFW 2023b). In California, five mountain lions have been documented to have died from the virus: two from Mono County in December 2022 and January 2023 and three from Modoc County in March 2023 (J. Rudd, CDFW, pers. comm.). Occasionally, wild birds, including waterfowl, can make up a component of the natural diet for mountain lions, and at least three of the mountain lions that died had a history of hunting wild Canada geese (J. Rudd, CDFW, pers. comm.). While infection with H5N1 HPAI is considered uncommon in mammals, there is evidence suggesting that certain mutations in the H5N1 virus may lead to mammal-to-mammal transmission (Foley et al. 2013). Given the five documented H5N1 HPAI-related mortalities in California mountain lions over a four-month period and infections in mammals in general, this is an emerging infectious disease that should be closely monitored so that these mutations can be detected as they may increase the zoonotic potential of H5N1 HPAI viruses.

Other viral diseases. The recent emergence of another coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-II), which causes COVID-19 in humans, is of notable concern to wildlife, including free-ranging and captive felids (Martínez-Hernández et al. 2020, McAloose et al. 2020, Delahay et al. 2021, Giraldo-Ramirez et al. 2021). In 2021, the virus was reported in a captive mountain lion from a Texas zoo with signs of mild upper respiratory infection (e.g., coughing, wheezing);

however, to date, no mountain lions in California have tested positive for SARS-COV-II (J. Rudd and D. Clifford, CDFW, unpublished data).

In 2010, a feline coronavirus (FCV) was implicated as the cause of mortality in an emaciated young adult mountain lion that developed feline infectious peritonitis, a common disease associated with FCV infection (Stephenson et al. 2013).

Detection of other viral diseases in the mountain lion population also includes canine distemper virus (Foley et al. 2013), feline herpesvirus (Foley et al. 2013), gammaherpesvirus (Troyer et al. 2014), J. Rudd, CDFW, unpublished data), feline foamy virus (Kehl et al. 2013, Kechejian et al. 2019), and feline calicivirus (Foley et al. 2013). These pathogens and their associated diseases are not believed to cause significant population level morbidity or mortality.

4.6.2 Bacterial Diseases

Yersinia pestis. *Y. pestis* is the bacterial pathogen that causes plague. Plague exposure, either by flea bites or consumption of infected prey, is common in carnivores, and most species exhibit antibodies in areas where plague is endemic (Salkeld and Stapp 2006). Human plague infection can be acquired from animals, including mountain lions (Wong et al. 2009). The California Department of Public Health and the Department surveyed 92 mountain lion carcasses collected from 2016–2017 and detected *Y. pestis* antibodies in four mountain lions from plague endemic areas of the state—an overall antibody prevalence of 4.3%. The presence of antibodies demonstrates exposure to the pathogen at some time in the past. All four mountain lions, taken under depredation permits, were otherwise healthy on postmortem and histological examination with no evidence of active infection (J. Rudd, CDFW, unpublished data).

Leptospirosis. Leptospirosis is a potentially fatal zoonotic disease. Though there have been reports of exposure to, and infection by, *Leptospira* spp. in domestic cats (Ferris and Andrews 1965, Fenimore et al. 2012, Lapointe et al. 2013, Chan et al. 2014, Weis et al. 2017), there have been few studies of leptospirosis in wild felids. A study of necropsied mountain lions from California showed that 46% (63/136) of tested mountain lions were positive for *Leptospira* spp. exposure or infection (Straub et al. 2021). Nephritis (swelling of the nephrons in the kidneys) was a common comorbidity of necropsied mountain lions that had evidence of *Leptospira* spp. exposure or infection; however, nephritis alone was not a significant source of morbidity or mortality.

Other bacterial diseases. Other bacterial parasites that have been detected in the mountain lions include *Bartonella* sp. (Bevins et al. 2012) and *Erlichia equi* (Foley et al. 1999).

4.6.3 Parasitic Diseases

Mange. Notoedric and sarcoptic mange are skin diseases caused by highly contagious parasitic mites. Severe and sometimes fatal mange epidemics from these mites have been described worldwide, and wild felids in California have been infested with the mite *Notoedres cati* (Riley et al. 2007, Serieys et al. 2013). In wildlife, mange causes considerable suffering, predisposing the individual to secondary bacterial infections through open wounds, changes in behavior, emaciation, and death (Maehr et al.

1995, Bornstein et al. 2001, Serieys et al. 2013, Niedringhaus et al. 2019). Mange poses a considerable threat to wildlife species that are more social or have high spatial overlap, which can promote transmission (Rudd et al. 2020). Given mountain lions' largely solitary nature, the potential for disease spread is presumably low.

Other parasitic diseases. Other parasites have been detected in mountain lions including dermatophytosis (A. Herman, pers. comm.), *Toxoplasma gondii (*Bevins et al. 2012*), Trichonella sp.* (Reichard et al. 2016), J. Rudd, CDFW, unpublished data), *Sarcosystis sp.* (Greiner et al. 1989), and *Clicospirura sp*. (Ferguson et al. 2011). Mortalities associated with these parasites have not been reported in California.

4.7 Wildland Fire and Fire Management

Fire is a natural disturbance in California ecosystems that historically benefitted many native wildlife species by encouraging the regeneration and growth of many plant species and creating landscape heterogeneity (Jennings et al. 2016). However, intense, high-severity burns can significantly disrupt natural ecosystems by changing vegetative and animal species compositions temporarily or long term (Williams et al. 2023). Wildfires in California may cause direct mortality to mountain lions in extreme conditions and result in temporary adverse modification of their habitats, however, deer populations typically respond favorably the resulting regeneration of vegetation.

In California's wildland-urban interface and in many habitats prone to fire, changes in temperature, humidity, and wind patterns attributable to climate change have led to more frequent wildfires that burn larger areas (Syphard et al. 2007, 2009, Jennings et al. 2016). Dennison et al. (2014), reviewing western U.S. fire data from 1984–2011, and Williams et al. (2019), reviewing California data from 1972–2018, reported an eight-fold increase in forest area burned in summer wildfires in the Sierra Nevada, Cascade, and North Coast ecoregions, but did not find significant trends in other ecoregions such as coastal chaparral in southern and central California. However, Jennings et al. (2016) found that fires have become more frequent in the shrubland ecosystems of southern California. Wildfires can also accelerate the impacts of climate change through the emission of short-lived climate pollutants like black carbon (soot) and methane that are tens to thousands of times greater than carbon dioxide (the focus of many greenhouse gas reduction efforts) in terms of warming effect and are responsible for 40% or more of global warming to date (CNRA 2016).

Keeley and Syphard (2021) distinguished fuel-dominated and wind-dominated fires and considered the latter type more dominant in the grasslands, shrublands, and woodlands of California's central and southern coast. They pointed out that wind-dominated fires rely on both an extreme wind event and an (usually human-caused) ignition source. The authors considered the major driver of wind-dominated fire impacts to be more frequent ignitions associated with human population growth and the expansion of residential developments into the wildland-urban interface (Keeley and Syphard 2021). Shifting weather patterns resulting from climate changes have further altered fire regimes in southern California. Climate models predict increasing temperatures and decreasing humidity under future climates (Miller and Schlegel 2006), and strong, dry easterly winds (i.e., Santa Ana winds) may become

more frequent and extend into the late fall and early winter when fuel loads are highest and fuel moistures lowest—suggesting extreme fire events will become more frequent in the future (Jennings et al. 2016).

Since 2000, a substantial proportion of the mountains in southwestern California where undeveloped mountain lion habitat remains have burned in wildfires (Fig. 11). Fire-return intervals (the number of years between successive fires in the same location) in southern California shrublands historically ranged from 30–100 years but are now 33% more frequent (Keeley et al. 1999, Lombardo et al. 2009, Safford et al. 2011, Jennings et al. 2016). This shortened interval between fires can interrupt vegetative community successional cycles, reduce plant diversity, favor the establishment of non-native species, and shift shrublands to grass-dominated landscapes (Keeley 2005, Jennings et al. 2016). Jennings et al. (2016) found that fire return frequencies in parts of southern California have increased to the point that the ecosystem is no longer resilient. They warn that if trends continue, mountain lion habitat may be lost as dominant vegetation communities convert to homogenous non-native annual grasslands, which are typically avoided by mountain lions.

The central coast of California has similarly experienced a succession of large, severe wildfires in the last two decades. Major fires in the year 2020 alone included the 160,508 ha (396,624 acres) SCU Complex Fire in the interior of the CC-N MU, the 35,009 ha (86,509 acres) CZU Lightning Complex Fire in the Santa Cruz Mountains, the 50,555 ha (124,924 acres) Dolan Fire in Big Sur, and the 19,461 ha (48,088 acres) River Fire on the eastern slopes of the Santa Lucia Mountains in Monterey County (https://www.fire.ca.gov/incidents/2020). In the central coast region, the annual distribution of fire sizes has trended toward larger fires in the last 75 years, although trends in the frequency of large fires in the same region over the same period are less clear (Keeley and Syphard 2021). Trends in annual area burned differ by responsibility area, with U.S. Forest Service (USFS)-managed areas experiencing an approximately ten-fold increase between 1940–2000, from 5,000 ha/million ha to nearly 50,000 ha/million ha. By contrast, within the California Department of Forestry and Fire Protection (CAL FIRE) responsibility area (largely private lands and state lands), the annual area burned decreased from approximately 15,000 ha/million ha in 1920 to less than 2,000 ha/million ha in 2010 (Keeley and Syphard 2017). Making predictions about future trends in this region is complicated by the interplay between precipitation levels and fuel accumulation. Within the Central Coast zone, projections indicate precipitation levels may increase in the north in coming decades, resulting in less frequent, but high severity fires; while in the south, precipitation is project to decrease, potentially limiting fuel accumulation thereby limiting fire severity, although fires may become more frequent due to prolonged dry periods (Langridge 2018). In the redwood (*Sequoia sempervirens*) forests of the Santa Cruz Mountains, burned areas likely continue to be used by mountain lions as redwoods are adapted to wildfire and trees commonly survive most wildfires and trees that succumb remain standing for decades. Additionally, redwood sprouts and seedlings are prolific following fires, numbering in the tens of thousands per hectare, and canopies develop rapidly (Lazzeri-Aerts and Russell 2014). Consequently, dense cover favored by mountain lions for hunting and travel develops within a few years following severe wildfire. In more xeric forests and shrublands of the CC-N and CC-S, fire effects on mountain lion habitat are similar to those described for southern California.

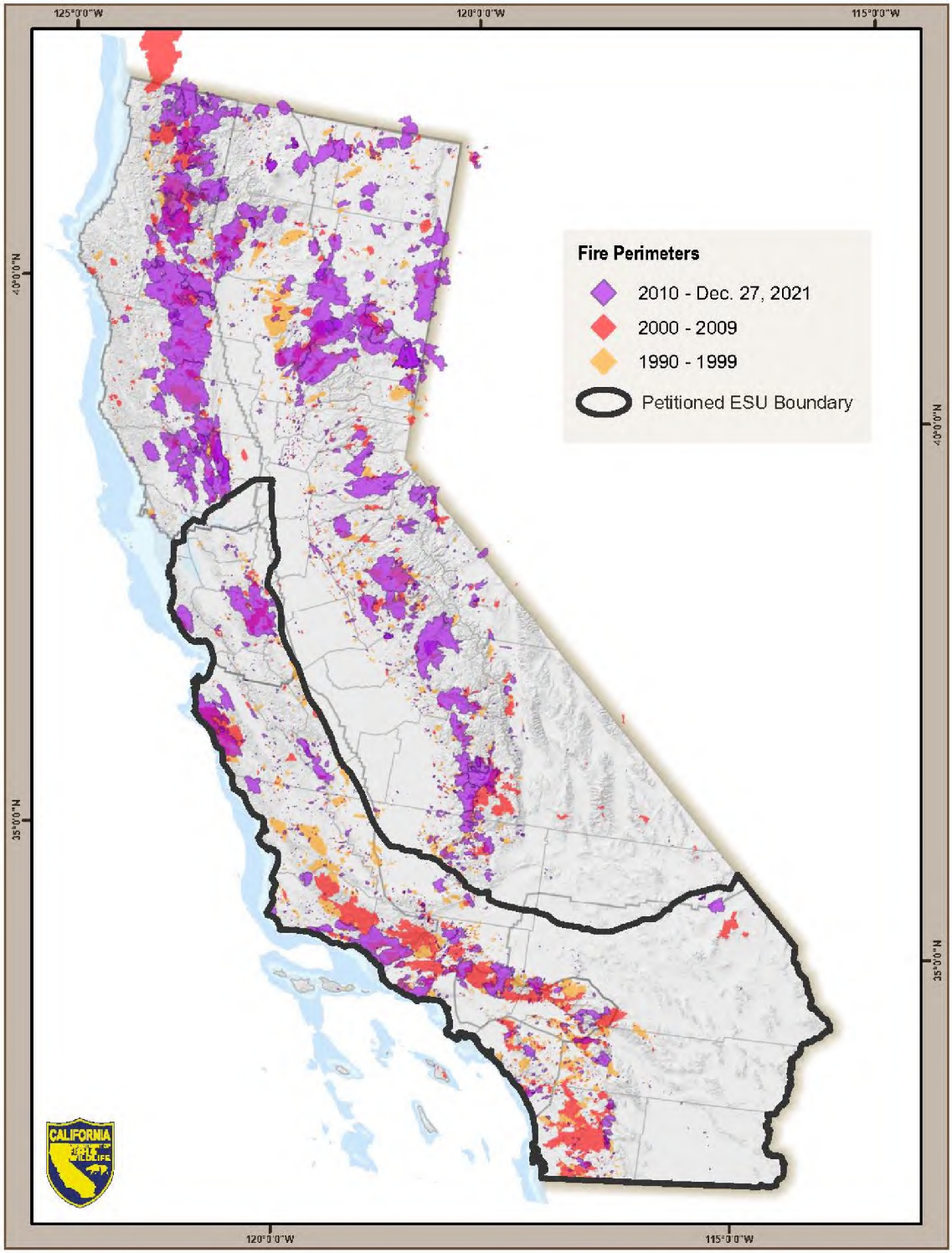


Figure 11. Wildfire perimeters in California by fire year.

While highly mobile mountain lions are likely able to escape most wildfires, quickly moving wind-driven catastrophic wildfires described by Keeley and Syphard (2021) are capable of overtaking fleeing mountain lions. When large fires with multiple heads develop, fleeing wildlife may become trapped between fire fronts (Fig. 12). Vickers et al. (2015) documented one death of a collared mountain lion in the SA and one in the EPR due to human-caused wildfires. The death of a collared mountain lion in the CC-S population found severely emaciated with burned feet following the 2018 Woolsey Fire can reasonably be attributed to wildfire-related injuries. A young lion found with burned paw pads following the 2018 Tomas Fire in the CC-C was treated and placed into captivity. An adult lion found unable to walk due to burned paw pads found in the 2020 Bobcat Fire in the San Gabriel Mountains was cared for and released to live another 10 months before dying of unknown causes. In northern California, one three-month-old male kitten suffering burn injuries to the feet and face from the 2020 Zogg Fire in Shasta County was treated and placed into captivity. The same year, the August Complex Fire in Colusa, Glenn, Mendocino, Tehama, Trinity, and Humboldt counties was likely responsible for the death of one adult female lion and the orphaning of her two kittens which were rescued and placed in captivity (D. Clifford, CDFW, pers. comm.).

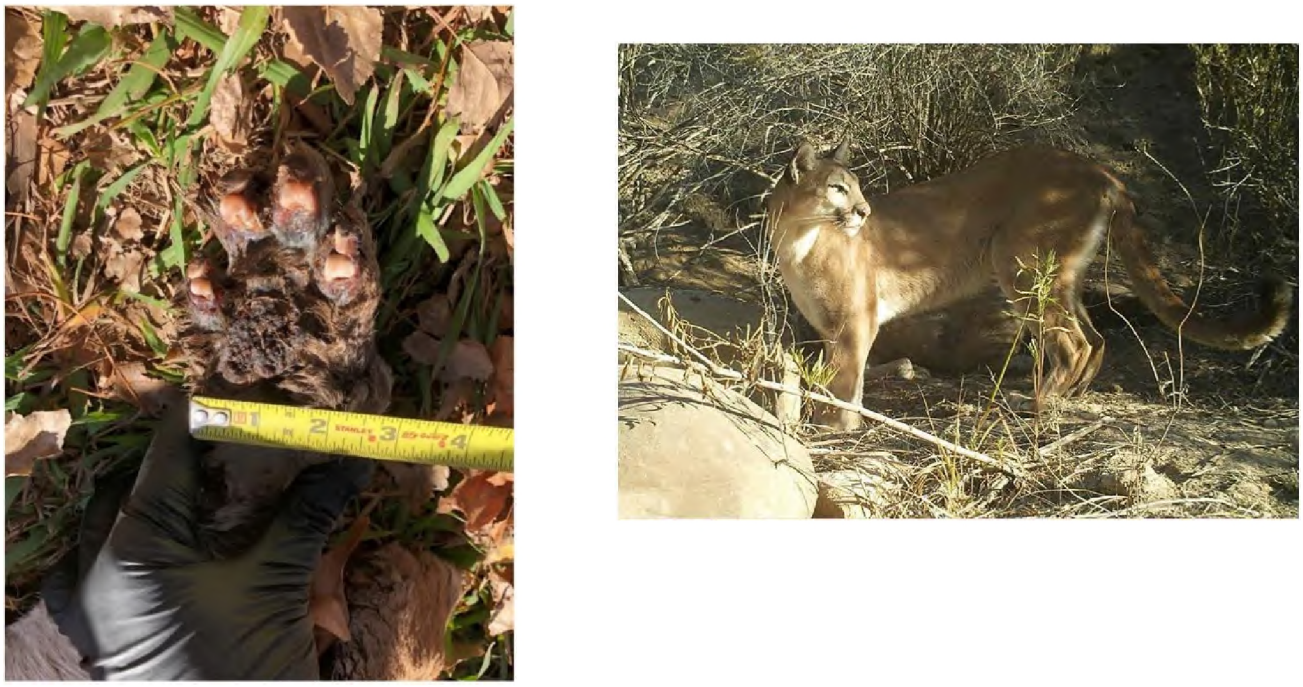


Figure 12. Left: Burned paw of female lion F121 (L) with phalanges showing, found deceased following the Bond Fire in Orange County, California. (Phot Credit: Nick Molsberry, CDFW). Right: F121 prior to the fire (Photo Credit: UC Davis Wildlife Health Center).

Additionally, wildfires temporarily displace mountain lions, increasing the distances they move and amount of area they use (Blakey et al. 2022). Their increased movement leads them to cross over roads more often exposing them to vehicle strikes, and brings them in contact with other mountain lions, increasing the chance of intraspecific aggression (Jennings et al. 2016, Blakey et al. 2022). Benson et al. (2019) noted that additional mortalities associated with catastrophic events such as wildfires, disease, or other unpredictable events could substantially increase extinction probabilities for small mountain lion populations.

Research on mountain lions occupying shrub-dominated habitat south of Los Angeles documented that mountain lions can respond opportunistically to burned areas, suggesting that they may benefit in the short-term from fire disturbance (i.e., within 9 years after a fire; Jennings et al. 2016). The overall pattern was greater use of burned areas by mountain lions than would be expected by their availability on the landscape (Ibid.). Additionally, of the 9,598 kill or cache sites analyzed by Jennings et al. (2016), far more than expected were in or near recent burns (≤ 6 years old), likely reflecting intensive use of recent burned areas by mule deer taking advantage of quickly growing fresh forage. Some researchers have speculated that dense, mature chaparral stands may be avoided by mountain lions because they are too dense for their main prey (mule deer) to navigate (Burdett et al. 2010), suggesting periodic disturbance from wildfires may be necessary to sustain lion populations. However, a study in the Santa Monica Mountains and Simi Hills after the 2018 Woolsey fire showed that, in general, mountain lions avoided the burn areas up to 15 months post fire (Blakey et al. 2022). These apparently contradictory results may be attributable to differences in the dominant vegetation communities and differences in burn frequency and severity between study sites.

Traditional fire suppression is evolving into fire management with a greater understanding of its importance in ecosystem health (Keeley and Syphard 2016). Several strategies are employed including prescribed burns and mechanical fuels reduction. Like wildfires themselves, fire management strategies have the potential to benefit or harm mountain lions and their prey. Prescribed fires and mechanical fuels removal lessen the likelihood of catastrophic wildfires, but they can also result in the temporary loss of riparian vegetation and the shrub and tree cover favored by mountain lions.

4.8 Climate Change

Climate change resulting from human-caused impacts (Bedsworth et al. 2018) threatens biodiversity through both direct effects and interrelated indirect threats (Garcia et al. 2014, González-Orozco et al. 2016). A species' vulnerability to the direct effects of climate change is a function of its level of exposure and its sensitivity to such effects mediated by its ability to adapt physiologically or behaviorally (Dawson et al. 2011). Indirect effects of climate change are ecosystem changes that affect organisms—including increased frequency and severity of drought, wildfires, flooding, and landslides—which in turn can lead to shifts in vegetation patterns, changes in habitat quality, and modified predator-prey relationships (Williams et al. 2008, Keeley and Syphard 2016). North America has already experienced climatic effects from increases in greenhouse gas emissions (U.S. Global Change Research Program 2017).

There has been a consistent trend in recent decades of warming temperatures in California. Average state temperatures have increased by about 1.67°C (3°F) (Frankson et al. 2022); four of the warmest years on record occurred in the last decade (OEHHA 2018), and 2021 was the warmest summer on record in the state (Frankson et al. 2022). Climate model projections for annual temperature in California in the 21st century range from 1.5–4.8°C (2.7–8.8°F) greater than the 1960–2005 mean (Bedsworth et al. 2018).

Rises in temperature have not been consistent across California. Rapacciuolo et al. (2014) found that while temperatures generally warmed in California between the historical period (1900–1939) and modern period (1970–2009), increases in mean annual temperature were greatest in southern California, an area roughly corresponding to the extent of the SC genetic group in Gustafson et al. (2022). The mean annual maximum temperature also increased in southern California, while decreasing in much of central and northern California (Rapacciuolo et al. 2014). Projections of future temperature conditions at specific locations in California are available from the State of California's Cal-Adapt program (https://cal-adapt.org/). Table 5 presents results for a representative location in each of the four broad mountain lion genetic cluster areas described in Gustafson et al. (2022) from Cal-Adapt's Local Climate Change Snapshot (https://cal-adapt.org/tools/local-climate-change-snapshot/). Three measures of change in environmental temperature are presented: Annual Average Maximum Air Temperature (AAT_{MAX}), Annual Average Minimum Temperature (AAT_{MIN}), and Number of Extreme Heat Days per Year (EHD)[2]. For each measure, a baseline value modeled from measurements recorded from 1961–1990 is presented, along with modeled future values for the end of the 21st century (2070–2099). Averaged modeled values for the High Emissions scenario (known as Representative Concentration Pathway 8.5)—which most closely tracks current emissions trends—are presented, along with the range of averages from all the model runs. The sites chosen as representative of the broad-scale genetically discernable populations are Willits, CA (NC), Placerville, CA (SN), Atascadero, CA (CC), and Fallbrook, CA (SC). Models for all temperature metrics of the four representative sites suggest substantial warming will occur at the sites during the 21st century.

Table 5. Baseline and projected changes in Annual Average Maximum Temperature (AAT_{MAX}), Annual Average Minimum Temperature (AAT_{MIN}), and Number of Extreme Heat Days (EHD) per Year for four representative sites in the North Coast (NC), Sierra Nevada (SN), Central Coast (CC), and Southern Coast (SC) mountain lion genetic cluster areas identified by Gustafson et al. (2022). Model data are derived from Cal-Adapt's Local Climate Change Snapshot tool, accessed November 2021. The CC cluster incorporates CC-N, CC-C, and CC-S, and the SC cluster is made up of SA, EPR, and SGSB. (For more detail, see Fig. 1.)

[2] AATMAX is calculated as the average of the maximum daily air temperatures recorded at a site over the entire year. AATMIN is likewise calculated as the average of all minimum daily temperatures for the year. The number of extreme heat days per year (EHD) is the modeled number of days when the daily maximum temperature is above a location-specific threshold temperature for the site. The threshold for a site is defined as the 98th percentile value of historical daily maximum temperatures (from 1961–1990, between April and October) observed at the location.

Metric	Model/Projection Years	NC	SN	CC	SC
AAT_{MAX} (°F)	Modeled Average (1961–1990)	68.4	71.6	71.7	74.6
AAT_{MAX} (°F)	Projected Average (2070–2099)	75.8	80.3	79.3	82.4
AAT_{MAX} (°F)	Projected Range	70.8–78.3	76.8–83.9	76.6–82.7	79.3–85.7
AAT_{MIN} (°F)	Modeled Average (1961–1990)	38.9	47.7	41.9	50.5
AAT_{MIN} (°F)	Projected Average (2070–2099)	46.1	55.7	49.1	58.1
AAT_{MIN} (°F)	Projected Range	42.2–48.7	52.5–58.9	46.4–51.6	55.4–60.5
EHD (Days/Yr)	Modeled Average (1961–1990)	3	3	5	4
EHD (Days/Yr)	Projected Average (2070–2099)	27	53	42	45
EHD (Days/Yr)	Projected Range	2–48	29–79	22–73	24–94

Precipitation change projections are less consistent than those for temperature, but recent studies indicate increasing variability in precipitation in California, with a greater number of "atmospheric river" storms in the valleys and leeward side of mountain ranges and an increased likelihood of extreme drought in other regions of the state primarily due to rising temperatures (Cayan et al. 2005, Williams et al. 2015, OEHHA 2018, Huang et al. 2020). Similar to temperature rises, changes in precipitation and water availability have also not been distributed equally across California. In the past century, southern California experienced a decline in total annual precipitation, while much of central and northern California had an increase in precipitation (Rapacciulo et al. 2014). With increased temperatures and decreased precipitation in southern California, the southern third of the state, including the southern Sierra Nevada, experienced a severe increase in mean climatic water deficit—the amount of water plants would use if it were available in the soil (Ibid.).

Increasing severity and frequency of drought is another consequence of climate change in California. The state recently (2011–2017) experienced the longest drought since the U.S. Drought Monitor began reporting in 2000 (NIDIS 2022*a*) and went through another serious drought from 2020–2022 (Fig. 13; NIDIS 2022b). A recent modeling effort using data on historical droughts indicates the mean state of drought from 2050–2099 in the southwestern U.S., inclusive of California, will likely exceed the Medieval-era megadrought between 1100–1300 CE, under both moderate and high greenhouse gas emissions models (Cook et al. 2015). The probability of a multidecadal (35-year) drought occurring during the late 21st century is greater than 80% in all models (Ibid.). This would represent a climatic shift that not only falls outside of contemporary variability in aridity but also be unprecedented in the past millennium (Ibid.).

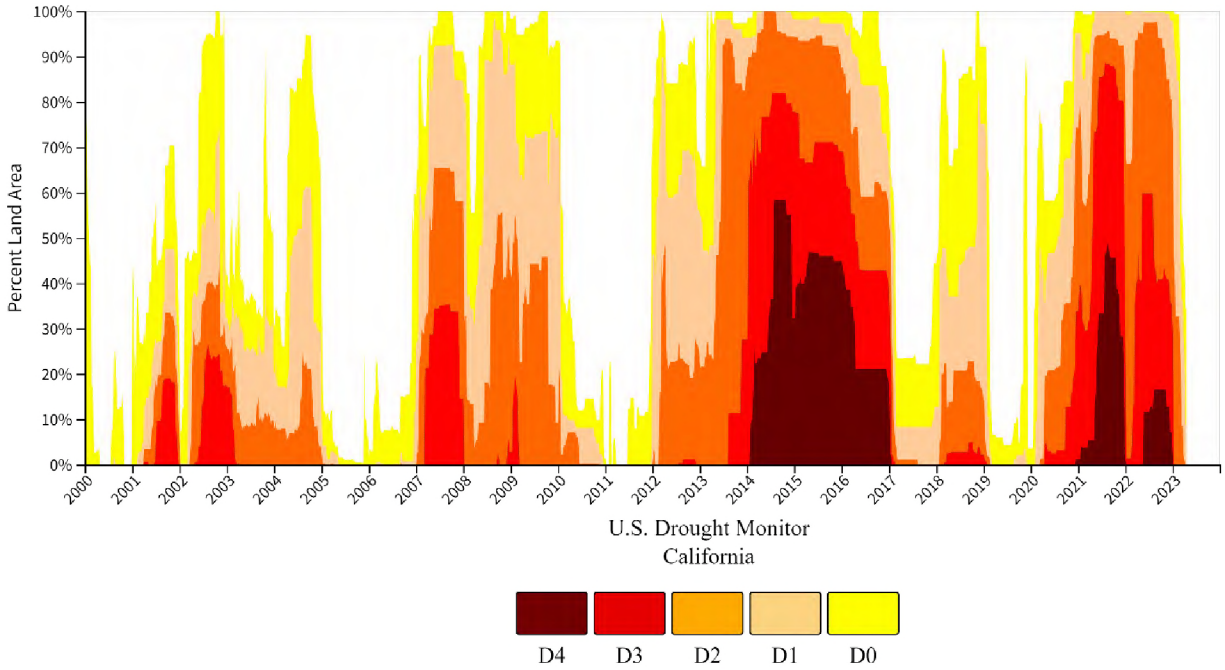


Figure 13. Percent of California land area in each Palmer Drought Index category, Jan 2000–April 2023. DO = Moderately Dry, D1 = Moderate Drought, D2 = Severe Drought, D3 = Extreme Drought, D4 = Exceptional Drought. (Source: NIDIS 2022)

Drought can also exacerbate the effects of other environmental stressors. During the recent severe drought, tree mortality increased dramatically; approximately 129 million trees died in California from 2012–2017 (OEHHA 2018). Multiple years of high temperatures and low precipitation left them weakened and more susceptible to pathogens and parasites (Ibid.). Vast areas of dead and dying trees are also more prone to severe wildfires (CNRA 2016)).

The frequency and extent of wildfire is influenced by temperature, fuel loads, and fuel moisture (Climate Change Science Program 2008). Increasing periods of drought combined with extreme heat and low humidity that stress or kill trees and other vegetation create ideal conditions for wildland fires (Ibid). As temperatures have warmed and snow melts earlier, large-wildfire frequency and duration has increased, and wildfire seasons lengthened (Westerling et al. 2006, OEHHA 2018). The years 2018, 2020, and 2021 were California's biggest recorded fire years, and the 7 largest fires ever recorded in California also occurred during those years (Wikipedia 2023). For more discussion of the impacts of fire on mountain lions, see section 4.7.

Climate change and its impacts on temperature, precipitation, and fire can also result in habitat modifications for wildlife species. Research suggests that most suitable mountain lion habitat in California is moderately vulnerable to climate change (Thorne et al. 2016, Dellinger et al. 2020*a*). Suitable mountain lion habitat could be lost in portions of southern California due to increased frequency and intensity of wildfires that would result in conversion to grasslands, which, as previously stated, are generally avoided by mountain lions (Jennings et al. 2016). Further, aspects of climate change, such as changing drought and wildfire regimes, may impact mountain lions via influences on prey populations.

For example, low rainfall has been found to negatively influence mule deer doe and fawn survival in desert regions of the western U.S., likely because there is less food available (Marshal et al. 2002, Bender et al. 2007, Monteith et al. 2014). With precipitation levels expected to become increasingly variable as the climate continues to change, mountain lion populations could be adversely impacted if there is a reduction in the amount and/or carrying capacity of suitable habitat available to them. Reductions in the area and quality of suitable habitat and carrying capacity could negatively influence gene flow and population sizes.

As large-bodied mammals, both mountain lions and deer may be sufficiently large to not be strongly affected directly by moderate increases in environmental temperature, which more drastically affect small-bodied mammals (Naya et al. 2018, Fuller et al. 2016). The generally nocturnal habits of mountain lions and their prey may mitigate impacts from warmer environments. As mountain lions in California currently occur across a variety of ecoregions and climatic conditions ranging from deserts to montane and coastal forests, broad near-term shifts in their distribution from the direct effects of a warming climate seem unlikely.

4.9 Risks to Small, Isolated Populations

Small, isolated mountain lion populations—such as the CC-N, CC-S, SA, and SGSB, which are each estimated to number ≤ 66 individuals (Table 3)—are inherently vulnerable to extinction due to multiple factors. These factors may include demographic stochasticity[3], genetic drift[4], or inbreeding, which can eventually lead to inbreeding depression[5]. Genetic drift and inbreeding both reduce genetic variation which can diminish the ability of a population to respond to changes in the environment (Primack 1993, Reed and Frankham 2003).

4.9.1 Demographic and Environmental Stochasticity

Reproduction and survival rates vary among individuals and between years in wildlife populations. This variation leads to demographic stochasticity, which tends to average out in large populations but has a much greater effect on the rate of growth or decline in small populations. If a small population declines, subsequent generations become even more susceptible to demographic stochasticity. Unpredictable changes in the natural environment can cause the size of small populations to vary dramatically while larger, more widely distributed populations would remain more stable because these changes normally occur only in localized areas of the entire population's geographic range (Primack 1993). For example, changes in the vegetation community, abundance of resources, or disease and parasite exposure can

[3] Population changes resulting from random variation in birth and death.

[4] The variation in the relative frequency of different genotypes (allele frequencies) in a small population, resulting from the chance disappearance of particular genes as individuals die or do not reproduce.

[5] Reduced biological fitness (health and fertility) resulting from the concentration of deleterious alleles in the population from the mating of closely related individuals.

cause the size of small, isolated populations to fluctuate wildly, possibly leading to local extinction (Primack 1993). Additionally, natural disasters such as droughts, fires, and severe storms can lead to dramatic population changes such that the disaster impacts most or all individuals in small populations. As populations get smaller, they become more vulnerable to demographic variation, environmental variation, genetic drift, and inbreeding depression. Each of these effects can amplify the impact of the other effects, further reducing population size and accelerating local extinction in what has been termed an extinction vortex (Primack 1993).

While the statewide population of mountain lions is large enough that demographic and environmental stochasticity is unlikely to be an issue, the smaller and more isolated populations (CC-N, CC-S, SA and SGSB) are potentially vulnerable to its impacts. Of specific concern are the increasingly large and severe fires leading to direct death or injury (see section 4.7). For example, the Woolsey Fire in 2018 burnt about 36,800 ha (91,000 acres) in the center and west of the Santa Monica Mountains Recreation Area (in the CC-S). According to the National Park Service, two of the 13 mountain lions with working radio-collars in and around the Santa Monica Mountains at the time of the Woolsey Fire succumbed to the fire or its impacts (NPS 2023). In such a small population (Table 3), the impact of just one event like the Woolsey Fire on the population could be strong, especially if the dead animals were breeding adults.

4.9.2 Inbreeding and Genetic Drift

Inbreeding and genetic drift can both result in decreased genetic variation in wildlife populations. Deleterious alleles (maladaptive genes) can be present at low frequency in even large, healthy populations. As populations become small, these maladaptive genes can increase in frequency, and populations may suffer the effects of inbreeding depression, resulting in offspring with a reduced ability to survive and reproduce (Frankham 2005, Harding et al. 2016). Genetic drift may also lead to the loss of beneficial alleles or the fixation of detrimental alleles in a small population due to a limited breeding pool (Hedrick and Kalinowski 2000). Detrimental fixed alleles can result in decreased fitness for all individuals and lead to population declines (Hedrick and Kalinowski 2000, Frankham 2005)

Multiple genetic studies have shown that certain mountain lion populations along the southern coast of California have particularly low genetic variation (Ernest et al. 2003, Gustafson et al. 2019, 2022) which may be the result of habitat fragmentation and genetic isolation. Analysis at the fine scale (10 genetic clusters) conducted by Gustafson et al. (2022) (called linkage decay analysis) showed evidence of inbreeding between closely related[6] individuals in at least four of the populations (see details in section 4.9.4 below). Saremi et al. (2019) investigated mountain lion genomes and found additional evidence of recent inbreeding among closely related individuals (i.e., runs of homozygosity) in some central and southern California populations.

However, the results of Gustafson et al. (2022) suggest the problems of inbreeding and homozygosity are not universal throughout California. Several California populations (e.g., Sierra Nevada) display little

[6] "A common ancestor less than three generations ago" (Saremi et al. 2019) i.e., first-cousins or closer

evidence of inbreeding (see section 4.9.4 below for details). Additionally, the analysis of genetic variation in the broad-scale groups suggests there is potential for the genetic variation remaining in the broad-scale groups to reduce the impacts of inbreeding depression in many of the fine-scale groups to negligible levels if gene flow can be enhanced. This finding also aligns with the results of Saremi et al. (2019) that indicated even though inbreeding had reduced variation in a considerable proportion of the genomes of individual mountain lions, these low-heterozygosity genome regions were generally not shared between populations. This suggests genetic restoration is possible even among genetically depauperate populations. When considering that genetic variation is high in multiple California populations when compared to a limited number of populations along the central and southern coasts, there is potential for long-term persistence of mountain lions throughout much of the state if adequate habitat can be protected and if habitat connectivity can be restored and/or enhanced in key locations.

4.9.3 Loss of Genetic Variation

The genetic variation of wildlife populations is fundamental to their risk of extinction—high levels of genetic variation have been shown to be positively correlated with survival and reproduction rates and decreased extinction risk (Hedrick and Kalinowski 2000, Reed and Frankham 2003). The concept of effective population size[7] (N_e) is fundamental to conservation genetics as it impacts the rate at which a population will lose genetic variation through genetic drift or inbreeding. Though N_e is determined by several factors, it is generally significantly less than the census population (i.e., the number of animals actually breeding in a population is usually significantly fewer than the total number of animals in the population; Palstra and Ruzzante 2008). The estimated statewide census mountain lion population size is 3,242 (95% CI 2,826-3,742) animals (CDFW Unpublished data), however, the estimated N_e of the 10 genetic clusters is approximately 483 (427.9–549.1) animals, which includes mountain lions from parts of Nevada (Gustafson et al. 2019) making the estimated N_e at least 8–12 times smaller than the census population. Furthermore, the population estimates of all but one of the fine-scale genetic clusters identified by Gustafson et al. (2019) are far below the several hundred reproductive individuals experts theorize are required to ensure long-term population viability (Traill et al. 2007, 2010, Flather et al. 2011), with several thousand individuals being the goal (Primack 1993). Observations of wild populations indicate that it is possible for small populations to persist, at least in the short term, in the face of low genetic variation; however, this does not imply that small populations will ultimately maintain long-term viability (Harding et al. 2016).

Gustafson et al. (2022) found that among the 10 fine-scale genetic populations, only the WSN had an estimated $N_e \geq 50$. An N_e above 50 is a long-standing, though controversial, threshold for whether a population is at risk of extinction via the harmful effects of inbreeding depression on demography (Franklin 1980). Yet, true extinction risk is often the result of the complicated interaction of both genetic and demographic factors. Recent analyses reveal that anywhere from 792,300–1,59,100 ha (1,957,816–

[7] The number of individuals in a population that are contributing to the next generation (i.e., reproducing and passing on their genes).

3,605,515 acres) of well-connected suitable habitat might be necessary to allow mountain lions to maintain an $N_e \geq 50$ (Dellinger et al. 2020*b*). Currently, five of the six Management Units in the petitioned ESU occupy areas with less suitable habitat than the thresholds mentioned above, suggesting long-term viability of mountain lions in these areas may be reduced unless management actions increase connectivity and/or habitat availability.

An important metric of genetic variation is heterozygosity (H_E)[8]. Adequate genetic variation is important for maintaining evolutionary potential, as this variation is the raw material that allows populations to adapt to changing conditions over generations. The amount of heterozygosity in California lion populations is highly variable (Gustafson et al. 2019; range of H_E = 0.33–0.53; based on microsatellite loci) but lower on average than other western states, including Wyoming, Nevada, Arizona, Utah, Colorado, and New Mexico (range of H_E = 0.49–0.59; (Anderson et al. 2004, McRae et al. 2005, Andreasen et al. 2012) Unlike California, these other states show less population genetic structure due to higher rates of gene flow, which in turn counteracts the effect of genetic drift in reducing heterozygosity (Anderson et al. 2004, McRae et al. 2005). The lower overall heterozygosity, as well as the large variance in heterozygosity among local populations, observed in California is most likely driven by the state's unique landscape and compounded by contemporary patterns of urban and transportation development (Ernest et al. 2003, Gustafson et al. 2019, 2022).

Gustafson et al. (2022) found that among the four broad-scale populations, California mountain lions have retained substantial heterozygosity, particularly in the Sierra Nevada region with its large stretches of undeveloped contiguous habitat (Dellinger et al. 2020*b*). Multiple genetic investigations have now demonstrated the importance of the Sierra Nevada region as a reservoir of genetic variation (Ernest et al. 2003, Gustafson et al. 2019). Bi-directional migration rate models based on genetic data indicated the WSN population serves as a significant source of migrants into other regions of California, importantly the EPR, CC-N, and SGSB (Fig. 1; Gustafson et al. 2019).

A population bottleneck is an event that greatly reduces the size of a population, and these events can have significant impacts on genetic variation as the resulting reduction in N_e increases both the strength of genetic drift and the probability of inbreeding among closely related individuals. Gustafson et al. (2019) found all of the fine-scale genetic populations appear to have gone through genetic bottlenecks within the last $2N_e$–$4N_e$ generations, except for the Modoc Plateau and North Coast. Assuming a mountain lion generation time of 5 years (Saremi et al. 2019), this suggests that the genetic populations with smaller N_e could have experienced bottlenecks within the last few decades, a timeframe consistent with anthropogenic effects. However, for some of the larger, more genetically diverse populations, interpretation of the potential cause of the genetic bottleneck event becomes more challenging (e.g., WSN bottleneck within the past 1,560–3,120 years). Large variance in the estimates of time-since-bottleneck suggest demographic declines of mountain lions in California cannot be associated with any one event or period, and the biological meaning of these findings should be interpreted cautiously.

[8] Heterozygosity refers to having inherited two different alleles for a particular trait compared to homozygosity, in which the inherited alleles are identical at a given location of the genome.

Gustafson et al. (2022) found no evidence for local adaptive differences among the four broad-scale geographic mountain lion populations (i.e., best-supported model of population structure). Though the appropriateness of using reduced representation genome sequencing data (in this case, restriction site-associated DNA sequencing data) to detect local adaptation has been questioned within the scientific literature (Lowry et al. 2017), this approach has been employed successfully in other studies (Catchen et al. 2017). Mountain lions are long-distance dispersers and inhabit all major mountain ranges in California (Dellinger et al. 2020*b*) suggesting local adaptation may be unlikely. The results of Gustafson et al. (2022) provide no evidence for locally adapted ecotypes warranting specific conservation status, nor risk of outbreeding depression resulting from the mixing of genetic populations as a result of active management (e.g. translocations) (Frankham et al. 2011). However, some unique alleles were identified in the SC genetic group which should be conserved to help preserve statewide genetic variation (Gustafson et al. 2022).

While genetic risks may significantly increase a small population's risk of extinction, it is important to note that a small population size alone is not necessarily predictive of reduced population viability. Implementation of a well-planned conservation strategy can substantially mitigate risks associated with small populations. A comprehensive plan for long term viability should include the principles of representation, resiliency, and redundancy (Shaffer and Stein 2000, Wolf et al. 2015).

4.9.4 Genetic Impacts on the Petitioned ESU and Related Management Units

Genetic variation within the petitioned ESU is highly variable. The analysis of genome-wide single-nucleotide polymorphisms conducted by Gustafson et al. (2022) elucidates evidence of retained genetic variation within California mountain lion genetic groups. Some of the four broad-scale genetic populations identified by the authors (figure 4) have relatively low genetic variation, while others have retained sufficient variation to be capable of serving as sources of genetic rescue under various management scenarios (i.e., assisted gene flow). Maintaining and enhancing connectivity within and among broad-scale groups, particularly with the SN and the CC, has the potential to counteract the effects of genetic drift and inbreeding to at-risk coastal populations. Gustafson et al. (2022) also found the broad-scale SC population shares little gene flow with other regions and yet has higher genetic variation and more unique alleles than the CC or NC broad-scale populations. Whether this variation is adaptive is unknown, but as a principle of biological conservation, genetic variation should be conserved to maximize genetic diversity in populations.

Sierra Nevada Group. This population is of critical importance to sustaining statewide gene flow as it is located at the intersection of dispersal corridors connecting the SN, CC, and SC groups. Enhancing connectivity through the Transverse Ranges including the Tehachapi, Sierra Pelona, San Gabriel, and San Bernardino mountains, represents a critical conservation priority.

Central Coast Group. The three management units of the CC group vary significantly in their levels of genetic variation. The CC-N and CC-S Management Units have low estimated N_e (CC-N: 15.1–18.2; CC-S: 2.5–2.9), limited habitat to retain a self-sustaining population of mountain lions (Gustafson et al. 2019, Dellinger et al. 2020b), and represent areas of genetic management concern. The analysis conducted by

Gustafson et al. (2022) in the CC-S and CC-N showed evidence of close inbreeding (note: the genetic clusters identified in Gustafson et al.'s 2022 report are not precisely analogous to the 10 genetic clusters identified in Gustafson et al. 2019). This finding is consistent with the whole genome sequencing results of Saremi et al. (2019) from the Santa Cruz and Santa Monica mountains which suggested close and recent inbreeding led to runs of homozygosity in the lion genomes.

The CC-S MU especially appears to have very low genetic variation and is exhibiting both genetic and phenotypic evidence of inbreeding (Ernest et al. 2014, Riley et al. 2014, Benson et al. 2019, Gustafson et al. 2019). This MU is one of two (see SA MU below) to have the lowest genetic variation observed for the species globally, apart from the endangered Florida panther (Riley et al. 2014). Phenotypic evidence of inbreeding depression in the form of kinked tails, failed descension of the testes, and abnormal sperm morphology have been observed, similar to Florida panthers (Huffmeyer et al. 2022, Ernest et al. 2014, Roelke et al. 1993). Freeway traffic is isolating the CC-S mountain lions (Ernest et al. 2014, Riley et al. 2014, Vickers et al. 2015), and contemporary gene flow has been severely limited. Projection models predict the extirpation of the CC-S population in 50 years without enhanced demographic dispersal and gene flow (Benson et al. 2016, 2019).

Conversely, the CC-C MU has ample habitat for maintaining a breeding population, a relatively large, estimated population size and exhibits little evidence of inbreeding (Dellinger et al. 2020b, 2021a, Gustafson et al. 2022). Bi-directional migration rate models indicate the CC-C serves as a significant source of migrants for the adjacent and more isolated areas of coastal California, including the Santa Cruz and Santa Monica mountains (Gustafson et al. 2019). This indicates that the CC-C will likely play a key role in efforts to increase connectivity and gene flow within the CC group in the petitioned ESU (Figs. 1,3). Given the apparent absence of gene flow across the Central Valley, this MU may be the only consistent source of migrants for CC-N and CC- S. Thus, maintaining connectivity to and within the CC-C MU is essential for the long-term viability of both adjacent MUs.

South Coast Group. The South Coast Group is comprised of 3 MUs: Santa Ana Mountains (SA), Eastern Peninsular Range (EPR), and the San Gabriel/San Bernardino ranges (SGSB). The SGSB Management Unit, in the South Coast group, has low observed genetic variation, a very small, estimated N_e (3.3–6.4 mountain lions), and exhibits evidence of inbreeding (Gustafson et al. 2019, 2022). Additionally, the SGSB mountain lions occupy small, isolated mountain ranges separated by urbanized areas and desert containing little shrub or tree cover which increases their risk for inbreeding depression (Gustafson et al. 2019). The area has a small amount of available suitable habitat and thus cannot support a large lion population (Dellinger et al. 2020b).

The SA MU has concerningly low genetic variation (Gustafson et al. 2019) and habitat availability (Dellinger et al. 2020b). The SA is the other MU to have the lowest genetic variation of any mountain lion population other than Florida panthers (Riley et al. 2014). Like the CC-S MU, genetic and phenotypic evidence of inbreeding depression in the form of kinked tails has been observed in the SA MU (Roelke et al. 1993, Ernest et al. 2014, Gustafson et al. 2022). Also, as with CC-S, the main isolation factor appears to be the freeways, which have limited gene flow in recent decades (Ernest et al. 2014, Riley et al. 2014, Vickers et al. 2015), and models similarly predict this population will be extinct in 50 years without intervention (Benson et al. 2016, 2019).

The EPR MU, on the other hand, shows little evidence of inbreeding and appears to have retained sufficient variation as to be capable of serving as a source of genetic rescue (Gustafson et al. 2019, 2022). Like the CC-C in the CC group, the EPR could perform an important role in increasing connectivity and gene flow in the SC group if connectivity is improved (Figs. 1,3). The EPR is the only MU known to exchange migrants with the SA MU, and management actions which enhance gene flow between these areas remain critical to the viability of the mountain lion population in the Santa Ana Mountains. Gene flow between EPR and the adjacent SGSB MUs appears limited. Further, the degree of dispersal from Arizona, Nevada, Mexico remains unknown (Gustafson et al. 2019). Connectivity between these MUs and adjacent populations in Mexico and Arizona may be curtailed by border barriers and the damming and major channelization of the Colorado River. Immigration and emigration patterns of mountain lions in the eastern area of the EPR have not been studied, and mountain lion density may be low in that area. Some gene flow may occur across the Colorado River from the Kofa National Wildlife Refuge into California, and some movement of mountain lions has been documented between the EPR and Mexico (Vickers et al. 2015; W. Vickers, unpublished data).

In summary, the recent results of Gustafson et al. (2022) demonstrate that genetically at-risk populations are nested within a broader-scale group of interconnected populations that collectively retain high genetic variation. This suggests that if connectivity can be maintained and enhanced at the broader scale, genetic variation within smaller MUs can be restored.

5. EXISTING MANAGEMENT

5.1 Land Ownership within the Petitioned Central Coast/Southern California ESU

Based on a GIS analysis of the petitioned ESU boundary, the total area is 15,273,700 ha (37,742,134 acres) (Table 6). Approximately 52% of that amount is public land and 48% is private. The Bureau of Land Management (BLM) owns the largest amount of land at 21%, followed by the U.S. Forest Service (9%), the National Park Service (6%), the Department of Defense (5%), and the California Department of Parks and Recreation (3%). Local (city or county) and Nonprofit Special Districts combined are 4% of the government agencies, while tribal lands total 167,700 ha (414,396 acres), which is 1% of the non-private land within the petitioned ESU (Table 6, Fig. 14).

Public (and private) lands are managed for many different purposes including recreation, extractive uses (timber harvest and mining), grazing, and wildlife habitat. Thus, a property's management would not necessarily benefit mountain lions, and many lands—particularly BLM lands in desert regions—likely support low densities of mountain lions.

Table 6. Land ownership within the petitioned Southern California/Central Coast ESU and the percentage of total land and public land in the petitioned ESU.

Land Ownership within Petitioned Evolutionarily Significant Unit	**Hectares**	**Acres**	**% of total land**	**% of public land**
Total Public Land	7,905,421	19,534,644	51.8%	—
Total Private Land	7,368,327	18,207,458	48.2%	—
U.S. Bureau of Land Management	3,183,887	7,867,525	20.8%	40.3%
U.S. Forest Service	1,430,387	3,534,548	9.4%	18.1%
U.S. National Park Service	928,264	2,293,781	6.1%	11.7%
U.S. Department of Defense and Camp Roberts	781,100	1,930,132	5.1%	9.9%
California Department of Parks and Recreation	435,636	1,076,476	2.9%	5.5%
Nonprofit, Special District, and Joint	383,076	946,597	2.5%	4.8%
Local (City or County)	231,070	570,984	1.5%	2.9%
Tribal Land	168,135	415,469	1.1%	2.1%
California Department of Fish and Wildlife	111,462	275,428	0.7%	1.4%
California State Lands Commission	97,683	241,379	0.6%	1.2%
U.S. Bureau of Reclamation	57,731	142,656	0.4%	0.7%
U.S. Fish and Wildlife Service	39,090	96,594	0.3%	0.5%
Other State	32,864	81,207	0.2%	0.4%
California Department of Water Resources	15,183	37,518	0.1%	0.2%
Other Federal	9,853	24,348	0.06%	0.1%

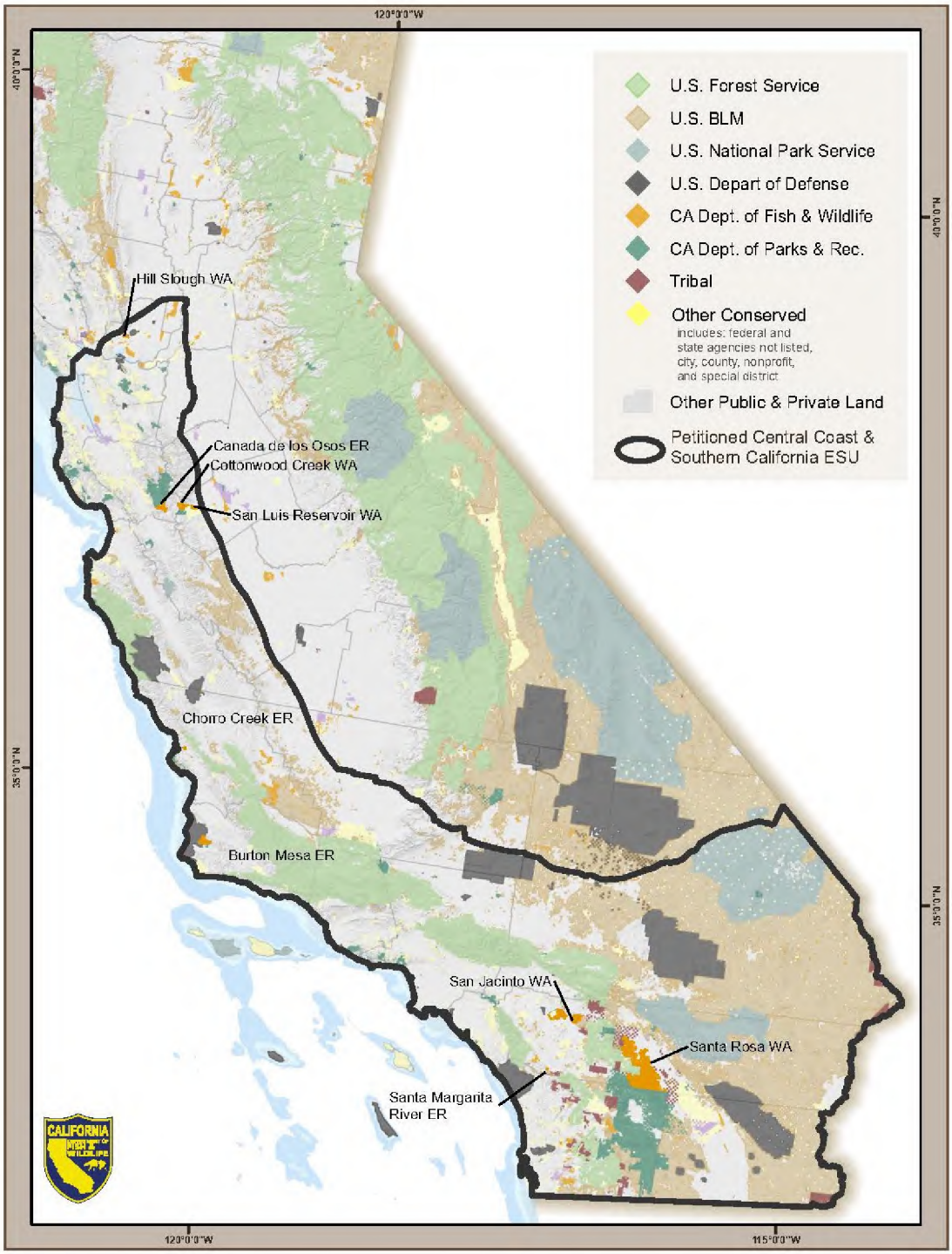


Figure 14. Public and tribal lands within the petitioned Southern California/Central Coast ESU for mountain lions with larger Department Wildlife Areas and Ecological Reserves labeled.

5.2 California Wildlife Protection Act

California voters through Proposition 117 adopted the California Wildlife Protection Act (CWPA) of 1990. Among other things, the CWPA specifically called out the loss of deer, mountain lion, and other wildlife habitat within California's mountain ranges and foothills, including the Simi Hills, and the Santa Lucia, Santa Susana, Santa Monica, San Gabriel, San Bernardino, San Jacinto, and Santa Ana mountains in southern California as well as the need to preserve habitat corridors to maintain the genetic integrity of California's wildlife. The CWPA, through the establishment of the Habitat Conservation Fund, included an ongoing annual appropriation of $14,500,000 for the acquisitions of deer and lion habitat in those areas. More generally, the CWPA emphasized the use of funds to acquire habitat needed to maintain connectivity between isolated or fragmented habitats to promote the genetic integrity of wildlife populations. The act also designated mountain lions as specially protected mammals and prohibited their taking, injury, possession or sale, except for instances where a lion represents an imminent threat to public safety or has damaged livestock or other property damage.

5.3 State, Federal, and Local Land Planning and Land Use Laws

The laws and regulations governing actions within the mountain lion's range vary by ownership. Several state and federal environmental laws apply to activities undertaken in California, and while they may not specifically address mountain lions, may indirectly provide some level of protection for the species and its habitat. The primary environmental laws are summarized below.

5.3.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires state and local agencies to identify, analyze, and consider alternatives to, and to publicly disclose environmental impacts from, projects over which they have discretionary authority (Pub. Resources Code § 21000 et seq.). CEQA requires an agency find that projects may have a significant adverse effect on the environment if they have the potential to substantially reduce the habitat, decrease the number, or restrict the range of any rare, threatened, or endangered species (Cal. Code Regs., tit. 14, §§ 15065(a)(1), 15380). CEQA establishes a duty for public agencies to avoid or minimize such potentially significant adverse effects where feasible (Cal. Code Regs., tit. 14, § 15021), and it differs substantially from NEPA in requiring potentially significant adverse effects be mitigated to a less than significant level unless overriding considerations are documented. In practice, implementation of CEQA by state and local governing bodies typically results in projects incorporating impact avoidance, minimization, and mitigation measures into project design and construction. A lead agency is not required to make a mandatory finding of significance conclusion for a project unless it determines on a project-specific basis that the project has the potential to: substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare or threatened species. Under CEQA, a lead agency should identify and evaluate potential impacts to mountain lions, and if the impacts are found to

be significant, mitigate or justify them under the Biological Resources section of an environmental document prepared pursuant to CEQA.

Another important component of CEQA is the requirement that governing bodies disclose and consider project-related impacts that when considered alone may not be significant, but when viewed in concert with other past, present, and foreseeable related projects cumulatively results in a significant impact to the environment (i.e., cumulative impacts; Cal. Code Regs., tit. 14, § 15355). This requirement often results in the incorporation of wildlife movement corridors in local development and infrastructure projects (e.g., open space setbacks along stream corridors and property lines) which can provide opportunities for mountain lions to pass through urban and suburban landscape, although such corridors not always wide enough or vegetated with adequate shrub and tree cover to encourage use by mountain lions.

Section 21080.5 of the Public Resources Code provides that a regulatory program of a state agency shall be certified by the Secretary for Resources as being exempt from the requirements for preparing EIRs, negative declarations, and initial studies if the Secretary finds that the program meets the criteria of CEQA. A certified regulatory program (CRP) remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible. These CRPs include the regulation of timber harvest by CAL FIRE and the State Board of Forestry through the Forest Practice Act; the regulation of coastal development permits by the California Coastal Commission through the California Coastal Act of 1976, Division 20 (commencing with Section 30000) of the Public Resources Code and the preparation, approval, and certification of local coastal programs as provided in Sections 30500 through 30522 of the Public Resources Code; and the pesticide regulatory program administered by the Department of Pesticide Regulation and county agricultural commissioners. While these CRPs are exempt from some of the procedural requirements of CEQA, courts have consistently held that they remain subject to the broad policy goals and substantive standards of CEQA, including requirements to consider feasible alternatives and cumulative impacts and to recirculate environmental review documents in certain circumstances.

5.3.2 Z'Berg–Nejedley Forest Practice Act

The Z'Berg–Nejedley Forest Practice Act was originally enacted in 1973 to ensure that forest practices, including timber harvesting, are undertaken in a manner that will also preserve and protect California's fish, wildlife, forests, and streams. CAL FIRE disseminates regulations, known as the Forest Practice Rules, that support the statutes of the Forest Practice Act. The Forest Practice Rules implement the provisions of the Act in a manner consistent with other laws, including CEQA, Porter-Cologne, CESA, and the Timberland Productivity Act of 1982. CAL FIRE enforces these laws and regulations governing logging on private land. The only area within the petitioned ESU where commercial timber harvest commonly occurs is the redwood forest zone of Santa Cruz County and nearby minor areas of San Mateo and Santa Clara counties (CDTFA 2021).

5.3.3 Natural Community Conservation Plans and Habitat Conservation Plans

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) are federally and state authorized conservation plans that permit incidental take of species listed under the federal Endangered Species Act (ESA) or CESA, respectively. Take authorization may be applied to species not currently listed but which may become listed as threatened or endangered over the term of the plan, which is often 25–75 years. Non-federal entities can obtain authorization for federally threatened and endangered species incidental to otherwise lawful activities through development and implementation of an HCP pursuant to Section 10 of the ESA. California's companion law, the Natural Community Conservation Planning Act of 1991, takes a broader approach than either CESA or ESA. An NCCP identifies and provides for the protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. There are currently four HCPs in California that include mountain lions as a covered species; all four are also NCCPs, but only three include mountain lion as a covered species.

The 1998 San Diego Multiple Species Conservation Program (MSCP) is a 50-year NCCP/HCP that covers 233,099 ha (576,000 acres) in the southwestern portion of San Diego County and includes mountain lion as a covered species. The Program includes coverage for mountain lions as 81% of the core areas (± 42,492 ha, ± 105,000 acres) that will be conserved contain lion habitat, and the core areas have multiple connections to help maintain ecosystem balance. While the MSCP generally notes linkage areas were designed to accommodate "large animal movement," it does not identify linkages designed for mountain lions or contain specific measures designed to protect them. While the MSCP addresses specific design criteria for linkages and road crossings/under crossings are included in subarea plans, not all subarea plans are complete.

The San Diego Water Authority NCCP/HCP also includes mountain lion as a covered species. The Plan Area encompasses 401,448 ha (992,000 acres) in western San Diego and southwestern Riverside counties. The plan estimates that approximately 139 ha (344 acres) of potential mountain lion habitat could be impacted over the 55-year permit term with approximately 284 ha (702 acres) of potentially suitable habitat provided within the existing Preserve Area. The plan includes general conditions to avoid and minimize impacts to habitat linkages and wildlife movement corridors and includes habitat-based mitigation for unavoidable impacts.

The Orange County Transportation Authority NCCP/HCP (OCTA Plan) lists the mountain lion as a covered species for purposes of the federal HCP, but not for purposes of the NCCP permit. The OCTA Plan contains four "Species Goals" intended to offset impacts to mountain lions, including (1) acquiring 410 ha (1,013 acres) of suitable habitat; (2) realigning fencing near the Highway 241 toll road; (3) funding of the North Coal Canyon Restoration Project; and (4) a "wildlife crossing policy" requiring pre-construction surveys to ensure existing crossings "maintain or improve functionality" if modified by new freeway projects. However, the OCTA Plan does not require the construction of specific wildlife crossings.

A Western Riverside County Multiple Species HCP/NCCP, which covers approximately 510,227 ha (1,260,800 acres) in western Riverside County and proposes to set aside 202,343 ha (500,000 acres) for habitat, also lists the mountain lion as a covered species. Plan implementation is expected to result in

the loss of 53,418 ha (132,000 acres) of suitable mountain lion habitat and includes three biological objectives to mitigate these impacts related to the Conservation Area, Conservation Area Linkages, and maintaining or improving dispersal route functionality.

5.3.4 National Environmental Policy Act

Most federal land management actions must undergo National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. § 4321, et seq.) analysis. NEPA requires federal agencies to document, consider alternatives, and disclose to the public the impacts of major federal actions and decisions that may significantly impact the environment. The Department is not aware that the mountain lion is afforded any federal special status, and as such, impacts on the species are not required to be considered during NEPA analysis. The law directs federal agencies to adopt all practical means to minimize or mitigate adverse effects when selecting preferred alternatives or justify not doing so.

There are three local ordinances within the petitioned ESU that are relevant to mountain lions.

5.3.5 Ventura County Habitat Connectivity and Wildlife Movement Ordinances

A Ventura County Wildlife Connectivity Ordinance was adopted by the Ventura County Board of Supervisors in 2019 (the "Connectivity Ordinance") to facilitate wildlife connectivity and minimize habitat fragmentation for mountain lions, mule deer, California gnatcatchers (*Polioptila californica)*, bobcats, least Bell's vireos (*Vireo bellii pusillus)*, California red-legged frogs (*Rana draytonii)*, and other species. Two of the linkages targeted in the Connectivity Ordinance are the Santa Monica Mountains—Sierra Madre Mountains connection and the Sierra Madre Mountains—Castaic Connection, which connect wildlife habitat in the Santa Monica Mountains, Santa Susana Mountains, Simi Hills, and Los Padres National Forest. While implementation of the Connectivity Ordinance should help allow wildlife to move more easily through private lands between core habitat areas, it would not address connectivity across major roads and highways which is outside its jurisdiction (https://vcrma.org/habitat-connectivity-and-wildlife-movement-corridors).

5.3.6 Los Angeles County Significant Ecological Areas Plan

The Los Angeles County Significant Ecological Areas Program is currently in the process of updating its Significant Ecological Areas (SEAs) Ordinance. The draft ordinance is intended to protect biodiversity in SEAs from incompatible development and ensure that projects reduce habitat fragmentation and edge effects by providing technical review of impacts and requiring mitigation. Like the Ventura County ordinance, the SEAs designations can lead to compact development and allow wildlife to move across private lands more easily between core habitat areas. However, the SEA ordinance is not specifically designed to protect mountain lions (https://planning.lacounty.gov/long-range-planning/significant-ecological-areas-program/).

5.3.7 City of Los Angeles Draft Wildlife Ordinance

The City of Los Angeles Department of City Planning has developed draft regulations for the protection of wildlife within the city limits, including the promotion of wildlife movement corridors. One stated goal of the draft regulations is to improve wildlife mobility and connectivity opportunities along waterways, ridgelines, and natural open spaces. The Wildlife Pilot Study is intended to result in regulations that will help to preserve wildlife and promote habitat connectivity on small to medium size residential developments in a pilot study area in the Santa Monica Mountains between the 405 and 101 freeways (LACP 2023).

5.4 Management on Federal Lands

5.4.1 National Forest and Bureau of Land Management Resource Management Plans

The U.S. Department of Agriculture's Forest Service is responsible for developing forest management plans consistent with the National Forest Management Act requirements. These plans guide land use and development within national forests and grasslands in a way that balances use and protection of natural resources to support ecological, social, and economic sustainability. Within the petitioned Southern California/Central Coast ESU, the USFS has adopted Forest Management Plans for the Los Padres, Angeles, San Bernardino, and Cleveland National Forests. These plans identify conservation strategies for mountain lion related to land acquisition, preventing habitat fragmentation, monitoring, and fire management.

The U.S. Department of Interior's Bureau of Land Management prepares Resource Management Plans to provide broad-scale direction for managing public lands in accordance with the principles of multiple use and sustained yield, as mandated by the Federal Land Policy and Management Act. These plans establish goals, objectives, and decisions for air quality, biological resources, cultural resources, lands with wilderness characteristics, paleontological resources, visual resources, water resources, fire ecology and management, trail and travel management, lands and realty, land use authorizations, livestock grazing, minerals management, recreation and visitor services, and areas of critical environmental concern. Within the petitioned Southern California/Central Coast ESU, adopted BLM plans include the Southern Diablo Mountain Range, the central coast of California, the Carrizo Plain National Monument RMP, the Clear Creek RMP, the South Coast RMP, the West Mojave RMP, the Eastern San Diego County RMP, the Santa Rosa and San Jacinto Mountains National Monument RMP, the Northern and Eastern Colorado Desert Coordinated Management Plan, and the Desert Renewable Energy Conservation Plan. While these plans may not specifically address mountain lions, they aim to balance resource conservation and ecosystem health with commodity production and public use of the land and may indirectly provide some level of protection for mountain lions and their habitat.

5.4.2 Military Bases

The Sikes Act was established in 1960 to ensure conservation and protection of natural resources used by the Department of Defense. The U.S. Congress amended the Sikes Act in 1997 requiring the Department of Defense to develop and implement Integrated Natural Resources Management Plans. These plans outline how each military installation will manage its significant natural resources holistically while maintaining military readiness. Since these lands are often protected from access and use by the public, they may contain some of the more significant remaining large tracts of undeveloped land and thus be an important tool for species conservation and habitat connectivity. Military bases within the petitioned Southern California/Central Coast ESU include Fort Hunter Liggett, Camp Roberts, Camp San Luis Obispo, Vandenberg Space Force Base, Marine Corps Base Camp Pendleton, Naval Weapons Station Seal Beach, March Air Reserve Base, Marine Corps Air Station Miramar, Naval Air Facility El Centro, Chocolate Mountain Aerial Gunnery Range, and other installations.

5.4.3 National Recreation Areas, National Monuments, and National Preserves

The guiding principles for managing biological resources on the U.S. Department of the Interior's National Park Service lands include maintenance of animal populations native to park ecosystems (NPS 2006). The NPS also commits to work with other land managers on regional scientific and planning efforts. NPS management plans provide direction and guidance on a variety of issues including resource preservation, visitor use, development, and boundary management. These plans generally specify management objectives and may vary in the type of plan, ranging from a general management plan to wilderness plans to strategic facility investment plans. For example, the Santa Monica Mountains National Recreation Area General Management Plan (GMP) provides a framework for the area's management, administered by the National Park Service, California State Parks, and the Santa Monica Mountains Conservancy. The GMP includes mountain lions as a "park species of concern" and includes construction best management practices, facility siting, fire management, vegetation, and habitat connectivity strategies intended to mitigate project impacts. However, the GMP does not include specific actions for mountain lions.

Other federally managed lands such as Carrizo Plains National Monument, Fort Ord National Monument, Pinnacles National Park, Mojave National Preserve, Death Valley National Park, and the Golden Gate National Recreational Area, Muir Woods National Monument, provide habitat and important habitat corridors for mountain lions.

5.5 Management on State Lands

5.5.1 California Department of Fish and Wildlife

The Department is responsible for over 445,000 ha (1,100,000 acres) of fish and wildlife habitat, managed through 749 properties throughout the state, including 111,462 ha (275,428 acres) within the petitioned ESU. These properties provide habitat for a rich diversity of fish, wildlife, and plant species

and include representatives of most major ecosystem in the state. In addition, several private land conservation programs assist landowners with the management of wetlands, riparian habitats, native grasslands, and wildlife-friendly farmlands.

Most Department lands are classified as either Wildlife Areas or Ecological Reserves. Wildlife Areas are acquired for the conservation of wildlife and the habitats on which they depend, and to provide opportunities for recreational uses that are compatible with those conservation goals (Fish & G. Code §§ 1525 -1530, 1745). Ecological Reserves are acquired primarily for the purpose of protecting rare and endangered native species and specialized habitat types (Fish & G. Code § 1580). Certain public uses, deemed compatible with those goals, are authorized for ecological reserves—typically this includes hiking on established trails to observe native plants and wildlife (Fish & G. Code, § 1584). The Department prepares land management plans for Wildlife Areas and Ecological Reserves which are subject to public review under CEQA prior to being finalized.

The 167 Department properties within the petitioned Southern California/Central Coast ESU range from a fishing access property of less than 1 acre to the 117,197-acre Santa Rosa Wildlife Area in Riverside County. Of particular interest are Department properties in the coastal mountains of San Diego County, including Rancho Jamul Ecological, Sycuan Peak, Crestridge Ecological Reserve, and Hollenbeck Canyon Wildlife Area. Mountain lion densities appear to be high in these areas as indicated by the large number of vehicle strikes. The Santa Margarita River Ecological Reserve was rated as the best potential site for a wildlife crossing over Hwy 15 within the habitat linkage from the Santa Ana Mountains to the Palomar Mountains in the Eastern Peninsular Range (Riley et al. 2018). Other significant Department properties within the petitioned ESU include the Hill Slough Wildlife Area in Solano County; the Cottonwood Creek, Cañada de Los Osos and San Luis Reservoir Wildlife Areas in Merced and Santa Clara counties; the Chorro Creek Ecological Reserve in San Luis Obispo County; the Burton Mesa Ecological Reserve in Santa Barbara County; and San Jacinto Wildlife Area in Riverside County.

5.5.2 California State Parks

California's State Park System encompasses more than 607,000 ha (1.5 million acres) in approximately 280 parks. These parks are managed for public use and enjoyment and species and habitat protection through an integrated program of planning, restoration projects and evaluation, ongoing maintenance, and long-term monitoring. California Public Resource Code section 5019.53 declares:

> "The purpose of state parks shall be to preserve outstanding natural, scenic, and cultural values, indigenous aquatic and terrestrial fauna and flora and the most significant examples of ecological regions of California, such as the Sierra Nevada, northeast volcanic, great valley, coastal strip, Klamath-Siskiyou Mountains, southwest mountains and valleys, redwoods, foothills and low coastal mountains, and desert and desert mountains. Each state park shall be managed as a composite whole in order to restore, protect, and maintain its native environmental complexes to the extent compatible with the primary purpose for which the park was established."

A state park must have an approved general plan before major park facilities can be developed. These general plans direct the long-term management of the park. Some parks may also develop a more specific resource management plan. Big Basin Redwoods State Park in Santa Cruz County designates mountain lions as a species of special management concern, and the Park's Management Guidelines call for the Protection of known wildlife habitat linkages to permit movement of wildlife, increase species abundance and diversity, and monitor the functionality of core wildlife habitat areas and wildlife linkages (CA Parks 2013). Big Basin Redwoods State Park and surrounding parks including The Forest of Nisene Marks, Año Nuevo, Henry Cowell Redwoods, Wilder Ranch, Portola Redwoods, and Castle Rock State Park encompass over 22,250 ha (55,000 acres) of the Santa Cruz Mountains in the CC-N. Anza-Borrego Desert State Park in the EPR is the largest park in the state system at over 240,000 ha (600,000 acres) and contains over 161,000 ha (400,000 acres) of land managed as wilderness. Park-wide management goals include being proactive in biological conservation and managing for subspecies, evolutionary units, ecologically functional units, populations, or other levels of biological organization to conserve biodiversity; and management that encourages natural ecological process such as hydrologic processes, wildfire, and biotic community interactions to continue. Other wildlife-related goals and guidelines include species inventory and monitoring programs, protection of special status plants and animals, control of non-native plants and animals, and the protection of habitat buffers and movement corridors (CA Parks 2005). Other notable parks within the petitioned Southern California/Central Coast ESU boundary include Butano, Garapata, Andrew Molera, Julia Pfeifer Burns, Portola, Henry W. Coe, Henry Cowell, Castle Rock complex, Montaña de Oro, Point Magu, Malibu Creek, Topanga, Chino Hills, Lake Perris, and Cuyamaca Rancho.

5.5.3 Management on County and City Lands

Although generally smaller in size than conserved state and federal land units, city and county owned and managed lands conserve many key linkage areas or expand and buffer adjacent conservation lands. For example, a series of properties owned by the City of Los Angeles—including Runyun Canyon Park, Franklin Canyon Park and Stone Canyon and Encino Reservoirs—conserve the easternmost extant of the CC-S and provide partial linkage to Griffith Park (also owned by the City of Los Angeles). And Ventura County's Happy Camp Canyon Regional Park conserves an important part of the southern Santa Susanna Mountains that may serve as a key piece of future linkages between the Santa Monica Mountains/Simi Hills and the Santa Susannas. In the SA MU, parks and preserves owned and managed by Orange County serve as linkages and buffers to larger conserved areas in the Sana Ana Mountains. Important units include Whiting Ranch and Irvine Ranch Open Space Preserves and the Ronald Casper Wilderness Park. In the coastal EPR of San Diego County, the county's open space preserves in the Otay area and mitigation bank in Marron Valley complement the Department's Rancho Jamul Ecological Reserve and the BLM's Otay Wildlife Management Area to create a large block of contiguous conserved lands in the San Ysidro Mountains adjacent to the Mexican border.

5.6 Management in Neighboring States and Nations

5.6.1 Arizona

Mountain lions are found throughout Arizona in desert and forested mountain habitat. They are not considered endangered or threatened in Arizona and are classified as a big game species by the Arizona Game and Fish Department with regulated hunting zones throughout the state (AGFD). The population was recently estimated at 1,166 to 1,175 (95% CI = 622-2,558) adults and subadults statewide exclusive of tribal lands (Howard et al. 2020). Mountain lions have recently expanded into previously unoccupied areas in western Arizona near the California border where they were previously thought to be transient including the Kofa, Castle Dome, New Water, Palomas, and Eagle Tail mountains, where no evidence of mountain lions was detected during surveys in 1987 (Thompson, R. et al. 2008, Naidu et al. 2011).

The AGFD collects age and sex information and genetic material from harvested mountain lions to monitor populations and to evaluate metapopulations, connectivity and dispersal. Mountain lions are regulated by several statutes and Arizona Game and Fish Commission Order. It is unlawful to harvest a female lion with kittens or to harvest a spotted kitten. AGFD has established several mountain lion management zones in the state with harvest thresholds that require closing the season when the threshold is reached. Five different zones exist on the western border of Arizona abutting the California boundary, with a total of eight separate harvest units within those zones. For the 2022–2023 harvest season, the threshold quota for these units ranges from 3–17 mountain lions. The harvest data suggests that the mountain lion population is stable to increasing in many parts of Arizona. The current population estimate is 2,000–2,700 mountain lions statewide, with their annual average population estimate from 2004 to 2020 equal to 2,876 animals (AZGFD 2022).

5.6.2 Nevada

Mountain lions are classified as a game mammal in Nevada and both sexes can be hunted under special regulations. A tag is required to hunt mountain lions, and a resident or nonresident can obtain up to two tags a year. Hunting is allowed statewide, except for on the Sheldon National Antelope Refuge and a few hunt zones in the Las Vegas area. Andreasen et al. (2012) found that mountain lion populations in western Nevada commonly interbreed with individuals in the Sierra Nevada of California, and those populations are somewhat isolated from other Nevada populations by inhospitable playas in the Lahontan Basin. The authors also found that the Sierra Nevada population appears to receive more mountain lions from central and eastern Nevada than it contributes. In contrast, Gustafson et al. (2019) found more lions emigrate from the Western Sierra Nevada and Eastern Sierra Nevada genetic groups to Nevada than from Nevada to the Sierra Nevada groups.

5.6.3 Mexico

Mountain lions are distributed throughout Mexico along both coasts, in mountainous areas, deserts, sub-tropical and tropical forests, and deciduous dry, conifer, and oak forests (Valdez and Ortega-Santos 2019). Populations are found in most states except in areas with large human populations, including central Mexico and much of the Mexican Altiplano (Chávez and Ceballos 2014). Although, individuals

can live near human settlements and have been seen near large cities including Guadalajara, Mexico City, and Monterrey (del Castillo 2009). The great plasticity of this species, specifically in its diet (Núñez et al. 2000, Rosas-Rosas et al. 2003, 2008, Monroy-Vilchis et al. 2009) has facilitated its survival in almost all habitat types in Mexico. However, it is being extirpated regionally, mainly in those areas that have been transformed by agricultural development and urbanization (Valdez and Ortega-Santos 2019).

Threats to mountain lion survival in Mexico include habitat fragmentation, prey depletion, and illegal hunting(Valdez 1999, Rosas-Rosas et al. 2003, 2008). Additionally, widespread cattle ranching, agriculture expansion, and unlawful human settlement in protected natural areas threaten their survival in the long term (Galindo et al. 2016). The extensive past and present expansion of human-dominated landscapes and the concomitant habitat conversion are the major threats. Mountain lions are a major management concern where there are conflicts with livestock interests and where UMAs (Unidades para la Conservacion, Manejo y Aprovechamiento Sustentable de la Vida Silvestre or units for the conservation, management, and sustainable use of wildlife) have fenced in prey species for sport hunting (Rosas-Rosas et al. 2008, Ávila-Nájera et al. 2011). Because cattle ranching is the main economic activity in areas where mountain lions and jaguars (*Panthera onca*) occur, livestock losses from predation by these felid species are one of the most important economic factors affecting ranch owners (Rosas-Rosas and Valdez 2010). In most regions where trophy hunting is practiced on game ranches, owners believe mountain lions to be a threat to their investments in raising and maintaining game species (Rosas-Rosas et al. 2003), and predator control is considered necessary. However, trapping and poisoning large cats has not been common, even in areas with large livestock enterprises, at least in the last decade, but poisoning does occur (Rosas-Rosas, personal observation; Zarco-González et al. 2012, Rodríguez-Soto et al. 2013).

The status of the mountain lion in Mexico is tenuous because persistent predator control programs are indiscriminately removing individuals (Chávez and Ceballos 2014). In most states where predation on livestock is severe, ranchers resort to predator control without following a scientific management plan because there is a lack of federal and state conservation intervention programs (Rosas-Rosas et al. 2008, Rosas-Rosas and Valdez 2010). In addition to the mismanagement of livestock enterprises, increased narco-violence throughout the country may hamper conservation efforts. Despite this, larger-sized jaguar populations throughout Mexico have bounced back over the last 10 years indicating a growing population(Ceballos et al. 2021, 2022) which may impact co-occurring mountain lions in areas they co-occur. While some contemporary connectivity appears to exist between Californian and Mexican EPR lion populations where there is not a US Border Fence, gene flow has never been examined in close detail, and future studies are warranted to better understand this. While mountain lion conservation efforts are tenuous in northern Mexico, continued genetic contributions from Mexico in the absence of concerted mountain lion conservation efforts in northern Mexico are not assured. Cooperative international wildlife conservation efforts should be explored to ensure the persistence of this important linkage.

6. ASSESSMENT OF LISTABLE MANAGEMENT UNITS

6.1 Assessment of Evolutionary Significant Units

The petitioners propose listing the petitioned area, consisting of six identified genetic populations, as a single ESU. Alternatively, they request the Commission consider whether any of the six populations, individually or in combination, comprise one or more ESUs and meet the criteria for listing under CESA (see Fig. 1).

To determine whether a population could be considered an ESU under CESA, the Department has previously followed the approach used by the federal government for ESA (Waples 1991) which consists of two main criteria:

1) The population must be substantially reproductively isolated from other conspecific population units.
2) It must represent an important component in the evolutionary legacy of the species.

For criterion 1, isolation does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in the different population units., it must also be of substantial ecological/genetic importance to the species as a whole (criterion 2). To make the determination for criterion 2, the following questions are relevant:

a) Is the population genetically distinct from other conspecific populations?
b) Does the population occupy unusual or distinctive habitat?
c) Does the population show evidence of unusual or distinctive adaptation to its environment?

Waples (1991) highlights the following types of information as useful for answering the above questions (Note: his examples are written to be specifically relevant to Pacific Salmon, so we have altered the language to make them more applicable to terrestrial organisms):

1) Genetic traits. Examples include presumably neutral characters detected by protein electrophoresis or DNA analyses as well as other genetically based traits that are more difficult to quantify.
2) Phenotypic traits. Examples include morphological and meristic characters, occurrence of parasites, and disease and parasite resistance.
3) Life-history traits. Examples include time, size, and age at reproduction; reproductive behavior; fecundity; migration patterns; and timing of emergence and outmigration.
4) Habitat characteristics. This category includes such physical characteristics of habitat encountered during the entire life cycle.

Waples (1991) notes:

> "The existence of substantial genetic differences from other conspecific populations based on protein electrophoresis or DNA analyses would strongly suggest that evolutionarily important, adaptive differences also exist. The failure to find such differences (or the absence of genetic data) would not rule out the possibility that such adaptive differences exist, but it would place a greater burden of proof on data for other characters. Data for habitat characteristics should be interpreted in a similar fashion: habitat differences suggest (but do

> not prove) the possibility of adaptive differences, whereas the inability to detect habitat differences constrains the scope of possible local adaptations but does not prove they do not exist. In evaluating data for phenotypic and life-history traits, every effort should be made to account for environmental effects that are manifested in periods shorter than one generation (and therefore do not reflect adaptations)."

When evaluating the petition, CDFW's first consideration was whether the petitioned ESU(s) meet the criteria for being considered an ESU. The second consideration was whether any of the populations within the petitioned ESU area meet the definition of an ESU, singly or in combination. We used several lines of genetic and ecological evidence to evaluate these potential ESUs.

As discussed in section 2.4, genetic evidence at the broadest geographic scale shows that there is only one recognized subspecies of mountain lion in North America (*Puma concolor cougar*; Culver et al. 2000, Caragiulo et al. 2014, Kitchener et al. 2017), indicating insufficient adaptive localized genetic, physiological, or behavioral variation has been found within North American mountain lion populations for taxonomists to recognize local subspecies.

It is important to understand the adaptive differences described in the ESU criteria are unlikely to develop when populations are isolated over short time scales (i.e., decades, or even hundreds of years). To explore potential adaptive differences among California populations, Gustafson et al. (2022) used several methods to evaluate genetic evidence of local adaptation among the genetic clusters. They found no outlier loci, which, when present, suggest local adaptation (Ibid.). Though detection of outlier loci can be limited when used in conjunction with a reduced representation of the genome, it has often been shown to be an effective approach (Catchen et al. 2017).

Mountain lions occupy much of California, except for heavily urbanized areas, intensively farmed areas of the Central Valley, and low elevation areas of the southern deserts. As noted earlier, when the landscape is permeable, they can disperse over long-distances (Sweanor et al. 2000, Hawley et al. 2016) and inhabit all major mountain ranges in California (Dellinger et al. 2020*b*). This widespread distribution and dispersal potential suggest local adaptation is unlikely and there is little evidence of morphological, mitochondrial, or adaptive genomic differences between mountain lions within the petitioned ESU or any of the petitioned populations and the broader statewide lion population to suggest the presence of distinct evolutionary lineages (Gustafson et al. 2022). While gene flow between the petitioned ESU and the NC and SN populations is limited, it does still occur (Gustafson et al. 2019, 2022).

The Management Units identified at a regional scale do have boundaries that in many areas correspond to anthropogenic barriers to dispersal (Gustafson et al. 2019), suggesting they have developed in recent decades or perhaps 100–200 years as land use has changed significantly within the petitioned ESU. Some of these Management Units represent small and somewhat isolated populations in areas where connectivity to the statewide population has been drastically reduced in the last 50–100 years due to expanding human development. However, there are no populations of mountain lions within the petitioned ESU boundary that have been isolated for much longer periods and, based on current scientific information, represent important portions of the evolutionary legacy of the mountain lion species.

Taken as a whole, the genetic evidence does not support applying the ESU concept to the overall petitioned area or any of the Management Units individually, as a subspecies or ESU for the following reasons:

1. There is only one recognized subspecies of mountain lion in North America (Puma concolor cougar) based on mitochondrial DNA data (Culver et al. 2000, Caragiulo et al. 2014, Kitchener et al. 2017), suggesting little potential for adaptive localized genetic variation among North American mountain lion populations. This would in turn make adaptive genetic variation among mountain lion populations within California even less likely.
2. Genetic investigations conducted by Gustafson et al. (2022) failed to detect distinct ecotypes or local adaptation, suggesting that the identified California genetic populations and Management Units do not represent an important component of the evolutionary legacy of the species.
3. Genetic data indicate habitat fragmentation and dispersal barriers have recently limited the ability of mountain lions to move freely between certain geographic areas and local populations in southern California and the central coast area (Gustafson et al. 2019). However, this fragmentation has mostly occurred within the last 200 years and has not yet resulted in genetic differentiation sufficient to represent an important component of the evolutionary legacy of the species. The most recent genetic study, which used SNPs to characterize variation across more of the genome, suggests many of these local populations separated by barriers have considerable shared ancestry and are more genetically similar than previously thought (Gustafson et al. 2022).

However, the Department recognizes that several of the populations/Management Units in the petitioned ESU are imperiled due to small populations sizes and isolation, and that populations considered distinct based on reproductive isolation and genetic differences may warrant specific conservation measures. In the sections below we further evaluate whether the six populations/Management Units, singly or in combination, warrant potential listing under CESA.

6.2 Assessment of Distinct Population Segments

While the petition is focused on ESUs and the Department has recommended listing ESUs in the past, its assessment of what may constitute a listable entity is not limited by federal ESU policy. The USFWS and NMFS (the Services) have also identified and listed Distinct Population Segments (DPS) pursuant to the ESA and have developed a policy for evaluating DPSs pursuant to the ESA. A DPS is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. DPSs have been used 137 times by USFWS to list imperiled populations rather than listing a species across its full range. Examples from California include the Southern Sierra Nevada fisher (85 Fed. Reg. 29532-29589 (May 15, 2020)), the Peninsular bighorn sheep (63 Fed. Reg. 13134-13150 (March 18, 1998)), and the Sierra Nevada bighorn sheep (64 Fed. Reg. 19300-19309 (April 20, 1999)). While the ESU designation and supporting policy has primarily been applied to fish

populations, the DPS designation has been more widely applied to, and policy is more relevant to terrestrial species.

To guide its evaluation of whether a possible DPS might warrant listing as threatened or endangered, the Services first evaluate two elements to determine if the population segment should be considered a DPS:

1) Discreteness of the population segment in relation to the remainder of the species.
2) Significance of the population segment in relation to the remainder of the species.

If the population segment being considered is a DPS, then the Services evaluate its conservation status (i.e., is the population segment, if treated as if it were a species, endangered or threatened?) (61 Fed. Reg. 4722-4725 (February 7, 1996)).

The elements are interpreted as follows:

Discreteness: a population segment may be considered discrete if it meets either of two conditions:

a) It is markedly separated from other populations of the same taxon because of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.
b) It is delimited by an international government boundary, and there are significant differences between the countries in control of exploitation, management of habitat, conservation status, or regulatory mechanisms.

Significance: If a population segment is found to be discrete under one or more of the above conditions, its biological and ecological significance will then be considered. This consideration may include, but is not limited to, the following:

a) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.
b) Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon.
c) Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range.
d) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Imperiled Status: If a population segment is found to be both Discrete and Significant, and if treated as a species, could it be found to be threatened or endangered based on the listing factors established in the ESA?

Using this approach, we evaluated the following Management Units and groups to determine if they should be considered DPSs and if any of those DPSs meet the standards for listing presented in the federal policy:

1. Central Coast North (CC-N) Management Unit
2. Central Coast Central (CC-C) Management Unit

3. Central Coast South (CC-S) Management Unit
4. The Central Coast Group. Consists of three Management Units—CC-N, CC-C, and CC-S and is identified as a broad scale genetic cluster in Gustafson et al. (2022) within the petitioned ESU.
5. Santa Ana (SA) Management Unit
6. Eastern Peninsular Range (EPR) Management Unit
7. San Gabriel/San Bernardino (SGSB) Management Unit
8. Southern Coast Group. Identified as a broad scale genetic cluster in Gustafson et al. (2022) that is within the petitioned ESU. It is significantly isolated from the other Management Units in California. Consists of three Management Units—SA, EPR, and SGSB.

Table 7 summarizes our evaluation and decision process. For each Management Unit and Group considered for potential listing, its discreteness, significance, and impereled status are evaluated (consistent with federal DPS policy, for details of criteria, see above). Additional information about each MU and Group is presented in text below.

Table 7. Decision matrix summarizing evaluations of whether Management Units may be considered a Distinct Population Segment (DPS) and potentially warrant listing under CESA (based on federal DPS policy). For a unit to be considered a DPS, at least one "yes" is needed from each of the orange and green columns. To be potentially listed under CESA, that DPS must be imperiled.

Management Unit(s)	Discreteness		Significance				Qualifying DPS?	Imperiled?	Recommendation
	Markedly Separated	International Border	Unique Ecological Setting	Gap in Range	Only surviving natural occurrence	Markedly different genetic characteristics	Does the MU or Group Constitute a DPS?	May be Threatened or Endangered?	Could the DPS Warrant Listing as a Threatened or Endangered DPS?
CC-N (Includes Santa Cruz Mountains)	Yes	No	No	No	No	No	No	Yes	No
CC-C	No	No	No	Yes	No	No	No	No	No
CC-S (Includes Santa Monica Mountains)	No	No	No	No	No	No	No	Yes	No
Central Coast Group (CC-S, CC-C, CC-N)	No	No	No	Yes	No	Yes	No	No	No
SA	Yes	No	No	No	No	No	No	Yes	No
EPR	No	Yes	Yes	Yes	No	No	Yes	Yes	**Yes**
SGSB	No	No	No	Yes	No	No	No	Yes	No
South Coast Group (SA, EPR, SGSB)	Yes	Yes	No	Yes	No	Yes	Yes	Yes	**Yes**

6.2.1 Details of Assessment

To determine whether a mountain lion MU (or group of several MUs) is "markedly separate" from other MUs we relied upon genetic data from Gustafson et al. (2019, 2022), and when available, information from mountain lion movement studies. The federal DPS policy lists a variety of factors that can cause separateness (i.e., physical, physiological, ecological, or behavioral factors). For mountain lions, we considered that physical separateness was likely the strongest factor due to limits on connectivity caused by recent human development. We have genetic data that can shed some light on the extent of separateness, though there are several important limitations to the data that we discuss below.

Using microsatellite data from Gustafson et al. 2019, each sample from a mountain lion can tell us some information about the relatively recent ancestry of that animal, which can be represented as a pie chart. The different colors show what percentage of their ancestry has been assigned to different MUs. The SNP data from Gustafson et al. 2022 represent more of the genome and reveal ancestry further back in time. The 2022 study informs questions about the amount of genetic material historically shared between MUs and retained genetic variation within individuals and extant MUs. However, the effects of relatively recent (i.e. within the last few centuries) land use changes that restrict connectivity between MUs is not revealed by such data.

How to read the maps: Each pie chart represents the location where a genetic sample was obtained from an individual mountain lion and the genetic affinities of the lion. A pie chart that is fully or almost fully one color is good evidence that both parents were from the same MU. If the pie chart of a sampled lion is in the same MU as its parents (e.g., a fully gray sample in the Santa Cruz Mountains in Fig. 15), it means the sampled lion is unlikely to have moved from the MU of its parents. If it is found outside of the population of its parents (i.e., the fully gray sample near San Luis Obispo in Fig. 15), that is strong evidence that it is a first-generation migrant that moved to a new population during its lifetime. These individuals may have died without breeding or may have had offspring in the new location. A pie chart that is a 50/50 split is good evidence of a hybrid offspring among parents from two different MUs (i.e. likely the offspring of a migrant). As the pie pieces get smaller, MU hybridization occurred further and further back among more distant ancestors. Very small pie segments may represent statistical 'noise' in the ancestry calculation.

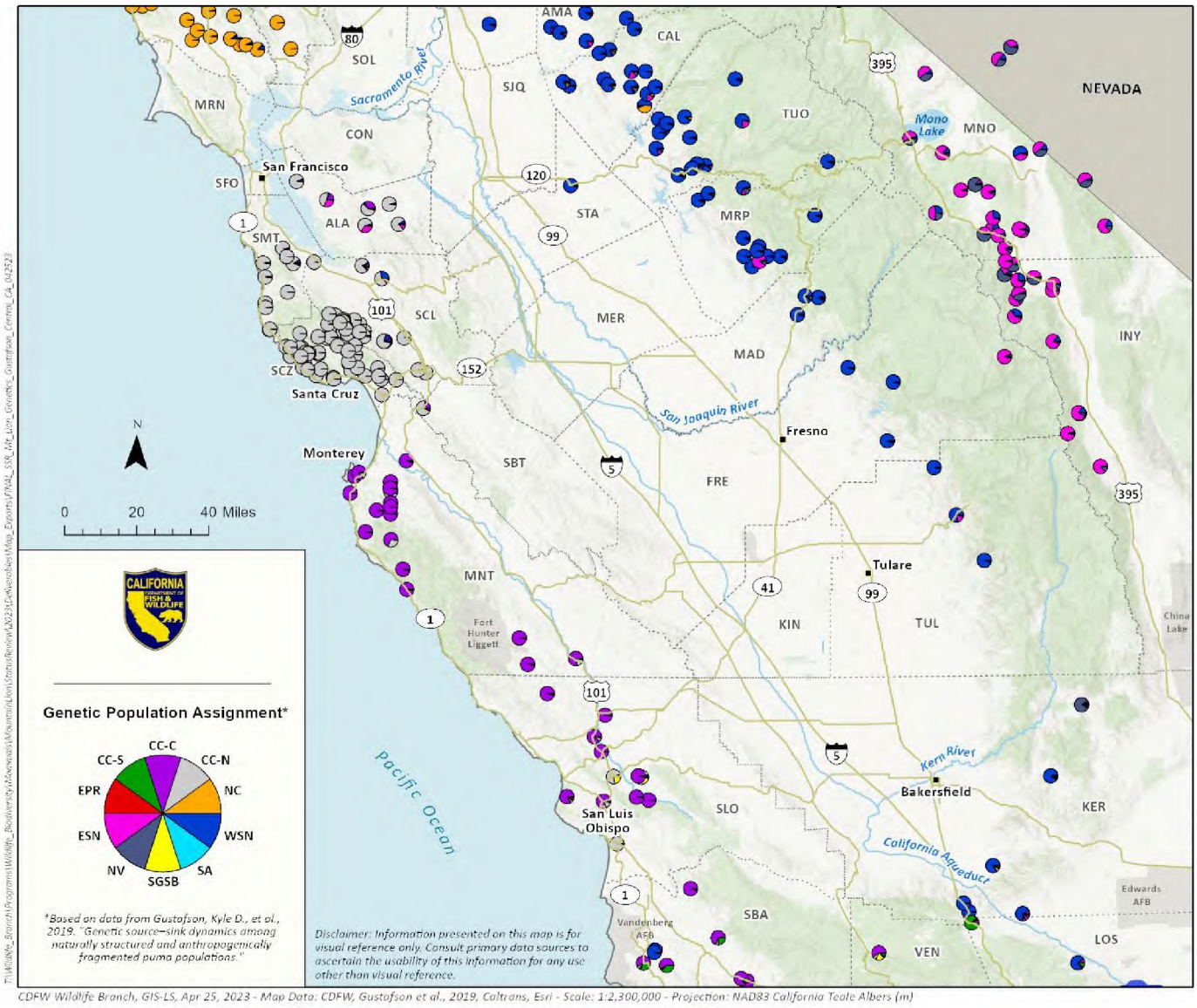


Figure 15. Assignment of individual mountain lions to genetic populations identified by Gustafson et al. 2019 using microsatellite DNA markers.

A solid pie chart outside of its parents' MU indicates the sampled animal was sampled outside its birth MU, but whether that animal was able to breed and have any lasting effect on the gene pool of the MU where it was sampled is unknown.

A mixed pie chart tells us gene flow (movement with breeding) occurred in the past; we do not know if it is still occurring. These mixed pie charts are an example of what is referred to as introgression (the transfer of genetic information from one population to another because of hybridization between them and repeated backcrossing).

Genetics can assess connectivity over longer time frames indicative of introgression and gene flow (mixed pie charts). However, it does not provide information about the extent of current connectivity.

In our discussion of markedly separate, we use the Gustafson et al. (2019) pie charts as part of the evidence to evaluate if there has been "recent" gene flow between populations (i.e., are they connected or are they 'markedly' separate from each other). To assess recent connectivity more adequately, we also consider anthropogenic barriers such as major roads and development. The pie charts from Gustafson et al. (2022) give additional information about gene flow further in the past, which provides historical context for the amount of gene flow seen in the Gustafson et al (2019) pie charts.

Central Coast-North

Discreteness

Markedly Separate: Yes. This MU is physically isolated from the NC cluster by the San Francisco Bay and Sacramento-San Joaquin Delta and heavily urbanized areas and future development is projected to exacerbate existing isolation. There is very little evidence of gene flow between the NC and CC-N in the 2019 ancestry assignment data. Most of the mountain lion pie charts in the Santa Cruz Mountains are almost fully gray, indicating little gene flow from outside CC-N into the mountains (Fig. 15). The samples collected from east of the San Francisco Bay show hybridization mainly with ESN, WSN, and CC-C. Ancestry from CC-N shows up in a few samples in CC-C, providing more evidence of some recent connectivity between CC-N and CC-C. However, the more solid grey and purple samples at the border of CC-N and CC-C in Fig. 15 (more recent ancestry) compared to more mixed samples at the same place in Fig. 16 (more historical ancestry) suggests the exchange of individuals between the CC-N and CC-C populations appears to be infrequent in recent times as compared to further in the past.

International Border: No.

Significance

Unique Ecological Setting: No. The coastal redwood and mixed conifer and hardwood forests that make up the Santa Cruz Mountains are also found in coastal mountains north of San Francisco Bay.

Gap in Range: No. The CC-N MU is effectively cut off to the north by San Francisco Bay and largely bounded on the east by development and agriculture in the Central Valley. The only major connection is south to CC-C. Losing this population would shrink the range but not create a new gap in the distribution of mountain lions in California.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. CC-N is a fine scale genetic cluster, and the SNP data analyzed by Gustafson et al. (2022) suggest there is shared ancestry with the other CC populations. There is no evidence of local adaptive genetics.

Imperiled?

Threatened or Endangered: Yes. This is a small, isolated population with an effective population size of 16.6 and an estimated 33–66 adult animals.

Conclusion: Evidence does not support a designation as a threatened or endangered DPS.

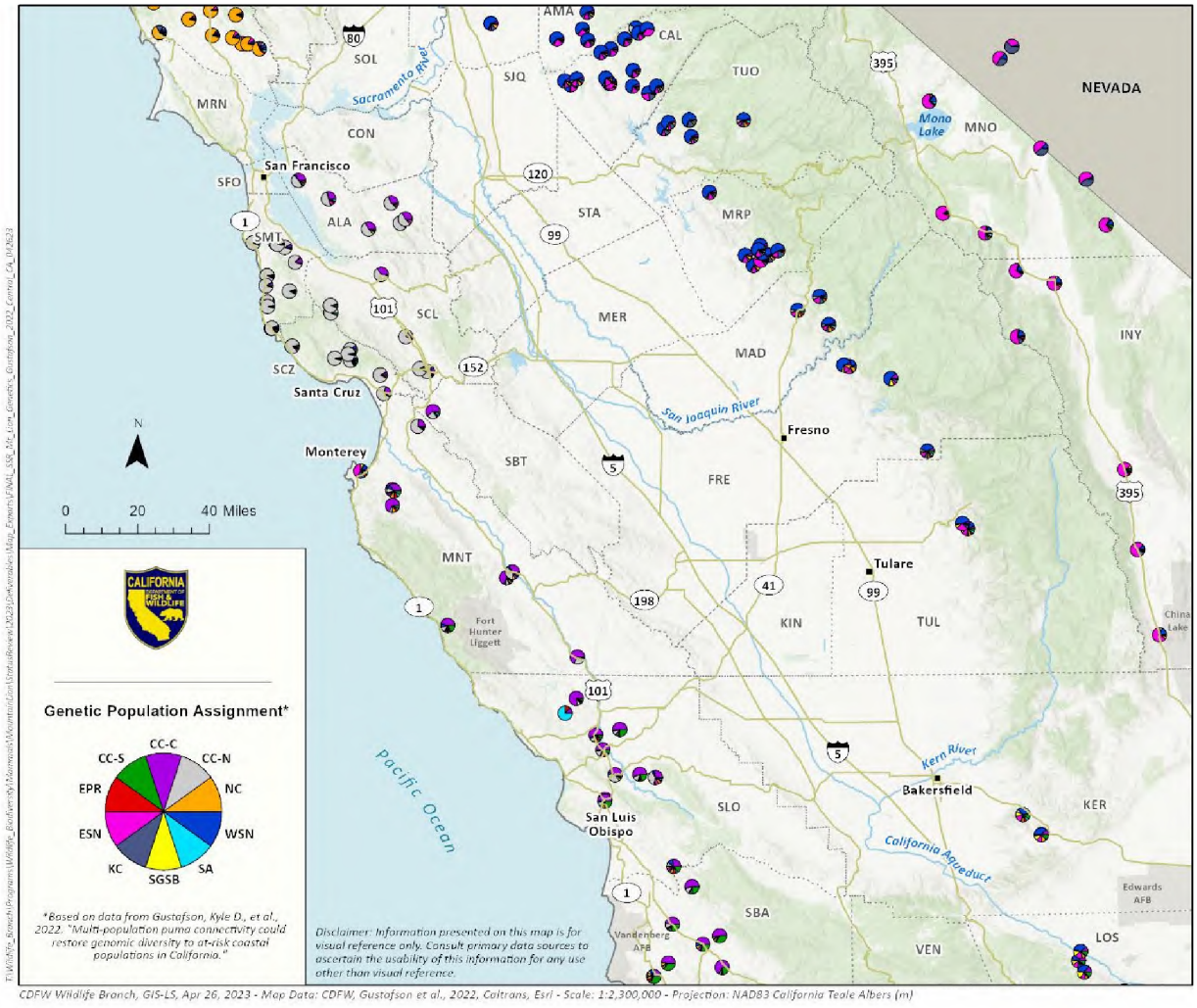


Figure 16. Assignment of individual mountain lions to genetic populations identified by Gustafson et al. 2022 using Single Nucleotide Polymorphisms.

Central Coast-Central

Discreteness

Markedly Separate: No. This MU is not delineated by major areas of human development. In consequence, there is some gene flow in from CC-N, and, especially in the south around Santa Barbara, samples show that there has been hybridization between CC-C and multiple other MUs. There is good representation of CC-C ancestry in CC-S, especially outside of the Santa Monica mountains, as would be expected if there were not major barriers to movement (Figs. 15–17).

International Border: No.

Significance

Unique Ecological Setting: No. The natural communities in CC-C are not unique.

Gap in Range: Yes. CC-C links the CC-N to the rest of the coastal populations. Losing CC-C would completely isolate the Santa Cruz Mountains, creating a gap in the range.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. The SNP data suggest there is shared ancestry with the other two Central Coast populations (Gustafson et al. 2022). There is no evidence of local genetic adaptation.

Imperiled?

Threatened or Endangered: No. The CC-C is a relatively large contiguous MU with an effective population size of 56.6 and an estimated 113–226 adult animals. CC-C serves as a source for many surrounding populations.

Conclusion: Evidence does not support designation as a threatened or endangered DPS.

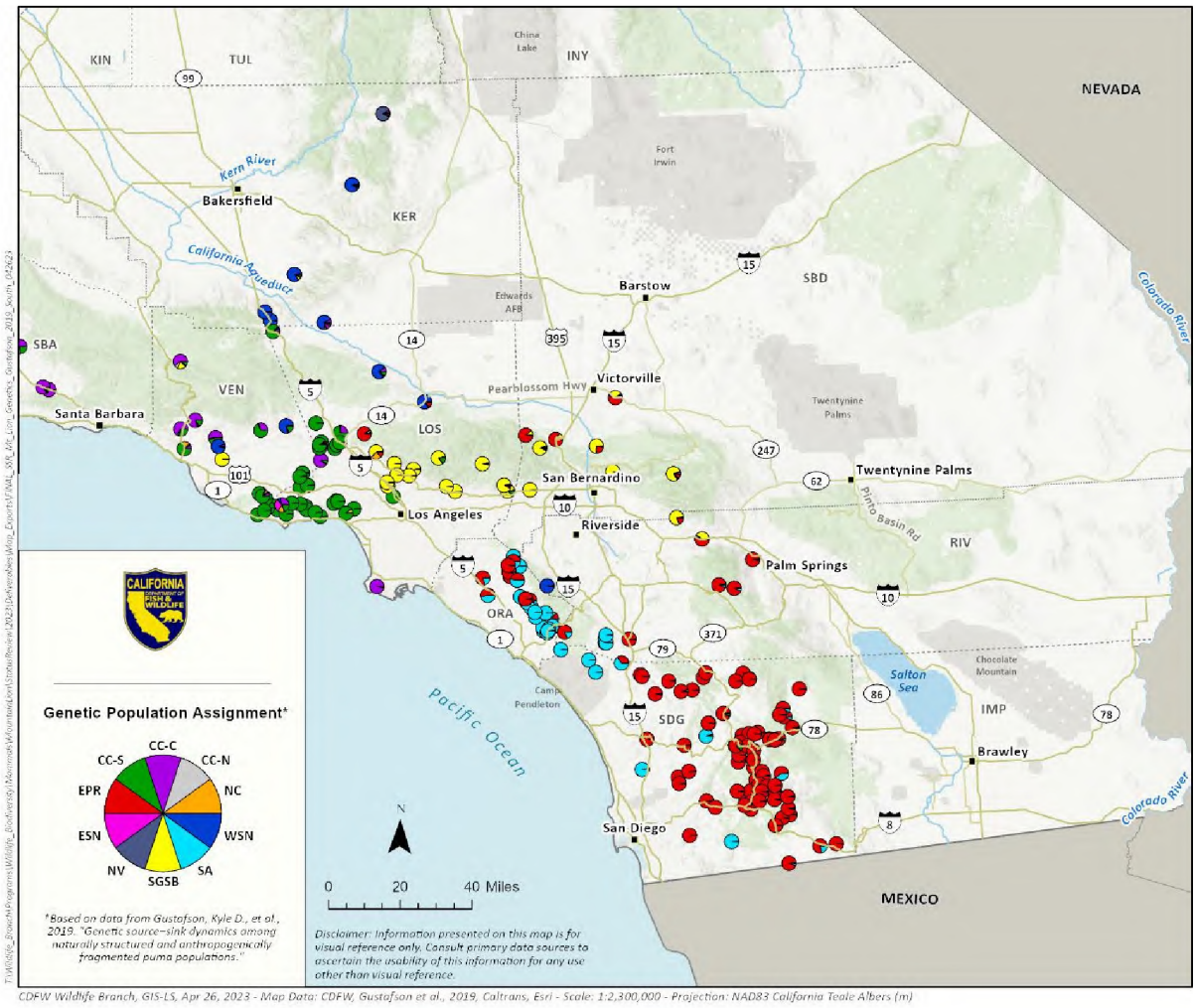


Figure 17. Assignment of individual mountain lions from southern Management Units to genetic populations identified by Gustafson et al. 2019 using microsatellite DNA markers.

Central Coast South

Discreteness

Markedly Separate: No. Although the Santa Monica Mountains have limited gene flow in and out and are bounded by heavy urbanization to the south and southeast, the larger MU still has connectivity to the central coast, the Sierra Nevada, and, to a much lesser extent, the southern California populations (Figs. 15–17). Most of the samples taken from northern CC-S show migration and hybridization in ways that suggest that area has connectivity to several MUs including CC-C and WSN.

International Border: No.

Significance

Unique Ecological Setting: No. The CC-S is composed of coastal plain, agricultural areas, chapparal, and montane woodlands and forests, all of which are represented elsewhere in the range of mountain lions in California.

Gap in Range: No. There is genetic evidence that this MU has some contemporary connectivity to the CC-C and WSN; however, if the CC-S MU were to become extirpated, the CC-C and WSN MUs would retain some connectivity via the Tehachapi Mountains and points west to the Santa Barbara area (Fig. 17). Connectivity to the SGSB is already very limited; therefore, loss of this MU would not create an additional gap between the South Coast group and MUs farther north. Connectivity across highway 101 linking the Santa Monica Mountains to the Simi Hills will be significantly improved following the completion of the Wallis Annenberg wildlife overpass, which will promote gene flow within the southern portion of this MU.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. Gustafson et al.'s (2022) SNP data suggest there is shared ancestry between CC-S and the other CC populations (Fig. 18). There is no evidence of locally adaptive genetics.

Imperiled?

Threatened or Endangered: Yes. This is a small, mostly isolated population of 5–10 adult animals and an effective population size of 2.7 (Gustafson et al. 2019) and projected future development will likely further isolate the population.

Conclusion: Evidence does not support designation as an imperiled DPS, because it is neither discrete nor biologically significant.

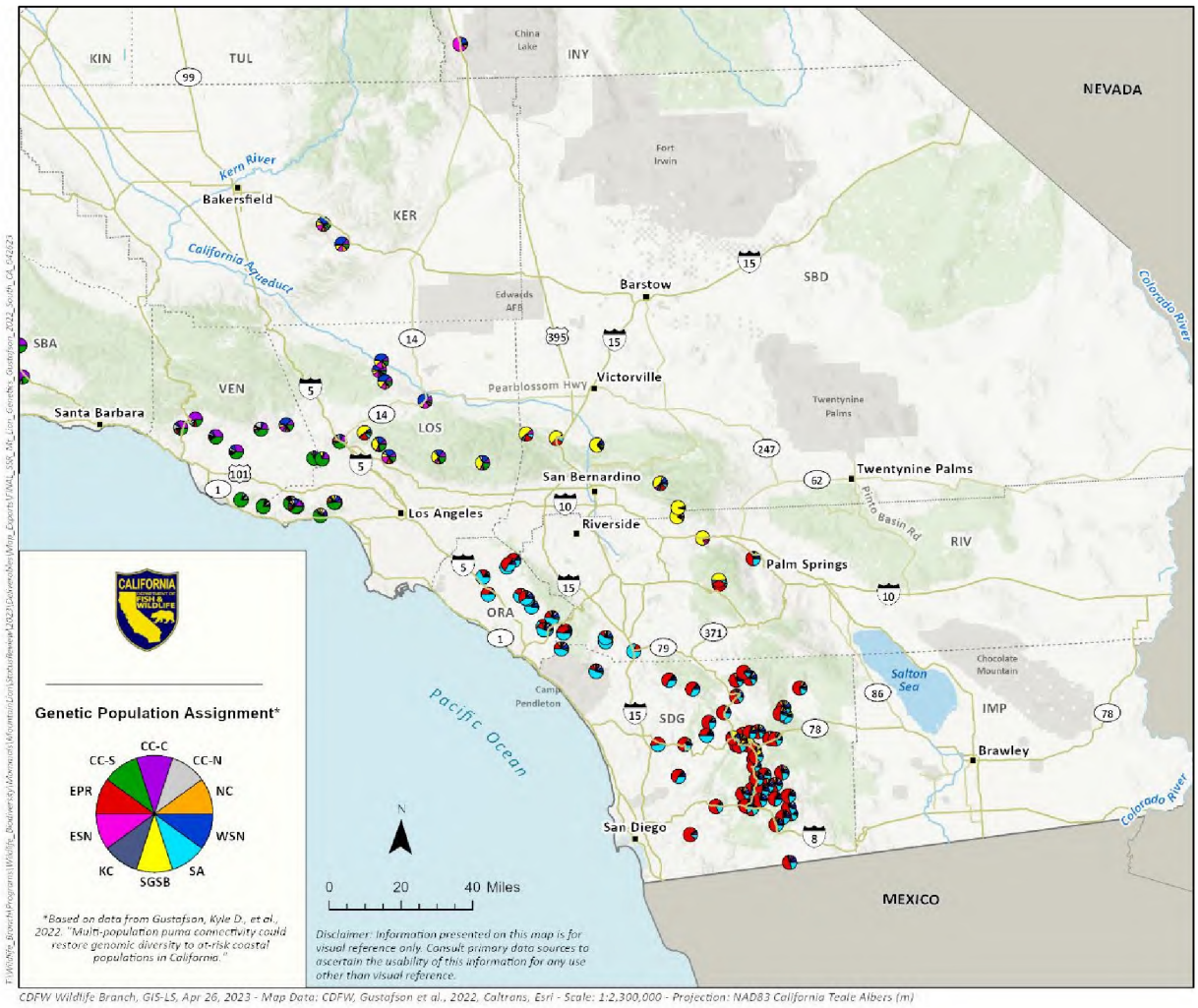


Figure 18. Assignment of individual mountain lions from southern Management Units to genetic populations identified by Gustafson et al. 2022 using Single Nucleotide Polymorphisms.

Central Coast Group

Discreteness

Markedly Separate: No. Genetic evidence shows that CC group is a distinct genetic group, distinct from the other three groups Gustafson et al. (2022) identified in California. However, there is evidence of gene flow and migration in the area from Santa Barbara through Ventura and towards the Tehachapi Mountains (Fig. 17), and it appears that there has been some genetic connectivity between the CC group and the SN group. There are areas of intense urbanization at the northern and southern edges (San Francisco and Los Angeles), and the intensive agriculture of the Central Valley forms a substantial barrier to the east. However, the Los Padres National Forest in the CC group is a large patch of public land that borders or approaches other large areas of public land in the SGSB and WSN, presenting broad interfaces that likely allow some mountain lions to move between neighboring groups and MUs (Fig. 16).

Therefore, the Central Coast Group does not appear to be markedly separated from other populations in California.

International Border: No.

Significance

Unique Ecological Setting: No. The Central Coast Group encompasses a wide range of vegetative types and ecological settings; however, no major ecosystems within its bounds are unique to the Central Coast Group, and though unique vegetative communities exist (e.g., Santa Lucia fir forest), their geographic scale is not large nor isolated enough to support uniquely adapted mountain lion populations.

Gap in Range: Yes. Loss of the Central Coast Group would considerably diminish the range of the mountain lion in California.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: Yes. The SNP data suggests the Central Coast Group has experienced some degree of restricted genetic exchange with the larger California population for some time and it is one of four broad scale genetic clusters in California and is genetically distinct from the SC group and the SN group (Gustafson et al. 2022; Fig. 4), suggesting unique genomic variation may be present within the group.

Imperiled?

Threatened or Endangered: No. The Central Coast Group contains the CC-C MU which is one of the few MUs in California with an effective population size of ≥ 50. Although the Santa Cruz Mountains and Santa Monica Mountains populations within this group are small and isolated, the group encompasses a relatively large area of contiguous habitat, and collectively the estimated effective population size is 76 with an estimated 151–306 animals.

Conclusion: As the Central Coast Group is not discrete nor threatened with extinction, there is no support for designation as a threatened or endangered DPS.

Santa Ana

Discreteness

Markedly Separate: Yes. This population is classified as a fine-scale genetic group by Gustafson et al. (2019), and the Santa Ana MU is surrounded by human development to the north and east with I-15 running along much of its eastern and southern boundary. There is evidence that individual mountain lions from the EPR have been able to move into the population and breed (full red and half red pie charts in Fig. 17). However, that connectivity may no longer be present. A thirteen-year study (2001–2013) that collared 74 mountain lions in the EPR observed only one mountain lion move in the opposite direction from the SA to the EPR, and that individual was killed for depredating sheep before it could breed and introduce genetic material to the population (Vickers et al. 2015). Vickers et al. (2015) points out the strength of I-15 as a barrier between SA and EPR as traffic and nearby development have increased in recent years. Additionally, Huffmeyer et al. (2021) documented physiological evidence of

inbreeding depression in the population. Interestingly, Gustafson et al. (2019) found relatively robust connectivity between the SA genetic group and the EPR genetic group by examining microsatellite loci. The conflicting evidence between Vickers et al.'s (2015) telemetry study and Gustafson's et al.'s (2019) genetic work may, in part, be explained by worsening fragmentation from recent land use changes as many of the tissue samples analyzed by Gustafson et al. (2019) were obtained prior to the onset of Vickers et al.'s (2015) study.

International Border: No.

Significance

Unique Ecological Setting: No. The SA MU is comprised of coastal mountains that provide habitats similar to those found in in the EPR and CC-S MUs.

Gap in Range: No. This is a very small population that is connected only to EPR, and recent studies suggest the current strength of that connection is weak. Its loss would slightly reduce the range of, but not create a significant gap in, California's lion distribution.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. The SA MU is a fine-scale genetic group, and SNP data suggest there is shared ancestry with the rest of the SC populations (Gustafson et al. 2022; Fig. 18). There is evidence of inbreeding in this population, but there is no evidence of adaptive genetic differentiation.

Imperiled?

Threatened or Endangered: Yes. This is a small, largely isolated population with an effective population size of 16 and an estimated 31–62 adult animals. Benson et al.'s (2019) demographic model of the SA population predicted a 15–17% chance of extirpation over a 50-year period with observed levels of immigration.

Conclusion: Although this MU is threatened with extinction and is discrete, it does not meet the criteria for significance; therefore, it does not meet the criteria for a listable DPS.

Eastern Peninsular Range

Discreteness

Markedly Separate: No. This population is classified as a fine-scale genetic group by Gustafson et al. (2019, 2022). Genetic evidence suggests historically there has been relatively robust connectivity between the EPR and SA MUs (Figs. 17 & 18), but Vickers et al. (2015) suggests that contemporary movement between these MUs is extremely limited. Historically there has been gene flow from the EPR to the SGSB MU, but the most recent genetic evidence suggests essentially no movement of mountain lions from the SGSB to EPR (Fig. 17). I-10 separates EPR from SGSB and is a busy interstate that likely creates a strong contemporary barrier. However, there are still potential areas where mountain lions can move in and out of the MU along its southern and eastern borders. Connectivity between mountain lions in the EPR and those in Baja California, Mexico and Arizona is poorly understood. Mountain lions

have been observed on the California–Baja California border in an unfenced/walled area suggesting the opportunity for the exchange of individuals (Vickers, UC Davis, unpub. data). And records suggest sporadic individuals in the mountainous regions of the Mojave (Dellinger et al. 2019) and Sonoran deserts which suggests some potential genetic exchange between mountain lions in the EPR and those living along the Colorado River in California and Arizona.

International Border: Yes. The EPR borders Baja California, Mexico. The international border is marked by walls and fences that attempt to manage human migration; although some significant sections of the border, including a large section of the Eastern Peninsular Mountains, remain open. However, the status of the mountain lion population in Baja California, Mexico and the frequency of lion movement across the border is unknown. Management of mountain lions is different in Baja California, Mexico compared to California; for example, trophy hunting is legal in Mexico. (See section 5.8.3 for details on differences between how California and Mexico manage mountain lions.)

Significance

Unique Ecological Setting: Yes. While the EPR is primarily characterized by coastal chapparal, woodland, and forest types which are represented elsewhere within the range of mountain lions in California, the habitat transitions in the east to more xeric creosote bush (*Larrea tridentata*) scrub, alluvial basins, and western Sonoran woodlands, basins, and scrub. These latter ecoregions are not represented elsewhere within the California range (Griffith et al. 2016).

Gap in Range: Yes. Loss of the EPR MU would isolate the SA MU and eliminate connections to lion populations in the peninsular ranges of Baja California, Mexico.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. The EPR MU is a fine-scale genetic group with genetic evidence of historic connection to other SC populations (Gustafson et al. 2019, 2022; Fig. 18).

Imperiled?

Threatened or Endangered: Yes. The EPR MU is the largest population within the SC group; however, the effective population size is 32, with an estimated 63–126 adults. While there is some evidence of remaining connection with mountain lion populations in Baja California, Mexico, the EPR MU population is likely too small to ensure its long-term persistence.

Conclusion: The EPR MU is appropriately considered a Distinct Population Segment and it is imperiled.

San Gabriel/San Bernardino

Discreteness

Markedly Separate: No. This population is classified as a fine-scale genetic group by Gustafson et al. (2019, 2022). There is significant urban development along most of its southern boundary in the San Fernando Valley and the Inland Empire. To the north is less dense development and desert, although residential development in this area is projected to increase significantly by 2050. Despite the barriers of I-15 and I-10, there is evidence of moderate gene flow from EPR into SGSB (Figs. 3 & 17). There has been

very limited historical gene flow out of SGSB into CC-S and CC-C. However, it is likely that Highway 14 and I-5 are fairly strong contemporary barriers to movement (Fig. 17).

International Border: No.

Significance

Unique Ecological Setting: No. The southern California montane shrub, woodland, and forest ecoregion types composing the SGSB are also represented in the CC-C, CC-S, and EPR MUs (Griffith et al. 2016).

Gap in Range: Yes. Genetic evidence suggests the SGSB historically received infrequent migrants from CC-S, although few mountain lions appear to have moved from the SGSB to neighboring MUs (Figs. 17 & 18). Although limited, the connectivity between SGSB and the EPR may be the only mechanism through which the EPR and SA are connected to other California lion populations, and loss of SGSB would potentially fully isolate the SA and EPR MUs creating a significant gap in the California range.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: No. SNP data suggest there is shared ancestry with the rest of the SC populations (Gustafson et al. 2022; Fig. 18).

Imperiled?

Threatened or Endangered: Yes. The SGSB MU is the smallest population within the South Coast Group with an effective population size of 5 and an estimated 10–20 adults.

Conclusion: While SGSB plays a significant role in facilitating genetic exchange between other MUs, it does not meet the criteria for discreteness, so the evidence does not support a designation as a DPS.

Southern Coast Group

Discreteness

Markedly Separate: Yes. Genetic evidence from Gustafson et al. (2022) shows that the SC group is a distinct genetic population, separate from other significant populations in California (Gustafson et al. 2019, 2022). Human development and roadways create significant barriers to movement and increase physical separation to the point where the San Gabriel and San Bernardino mountains are likely the only pathway of connectedness between the SC group and other California populations, and what connectivity there is, is likely tenuous. Consequently, the SC group is physically separated from other California populations.

International Border: Yes. The SC group borders Mexico. The international border is marked by walls and fences that attempt to manage human migration; although some significant sections of the border, including a large section of the Eastern Peninsular Mountains, remain open. However, the status of the mountain lion population in Baja California and the frequency of mountain lion movement across the border is unknown. Management of mountain lions in Mexico differs from management in California; for example, trophy hunting is legal in Mexico. (See section 5.8.3 for details on differences between how California and Mexico manage mountain lions.)

Significance

Unique Ecological Setting: Yes. The SC group encompasses desert and chaparral habitat on the eastern side of coastal mountain ranges that is unlike mountain lion-occupied habitat elsewhere in the state.

Gap in Range: Yes. While loss of the SC group would not bisect or isolate portions of the range of mountain lions within California, it could eliminate mountain lions from the entire southern fifth of the state (as mentioned elsewhere, the relationship of mountain lions in the EPR genetic group identified by Gustafson et al. (2019) to mountain lions in the eastern deserts and Colorado River corridor is poorly understood). Additionally, loss of the SC group would isolate coastal lion populations in California from those in Mexico.

Only Surviving Natural Occurrence: No.

Markedly Different Genetic Characteristics: Yes. Available SNP data from Gustafson et al. (2022) which are more reflective of longer-term separation of populations than the microsatellite analyses conducted by Gustafson et al. (2019) supports the South Coast group being a broad scale genetic group separated from other groups in California (Fig. 4), with higher genetic diversity and more private alleles than the Central Coast or North Coast broad scale genetic groups, suggesting the group retains unique genomic variations.

Imperiled?

Threatened or Endangered: Yes. Although the combined effective population size of the South Coast Group is about 53 with 101–208 adult animals (Gustafson et al. 2019), available habitat is limited in the Santa Ana, San Gabriel, and San Bernardino mountains. Also, those areas have limited connection with the Eastern Peninsular Mountains where most of the habitat lies. Three substantially disconnected populations exist in this group. Therefore, it is not meaningful to combine the effective population size estimates of the constituent MUs, and the group should be considered threatened. Additionally, projected future residential development will likely make movement of mountain lions between this group and the WSN and CC-S less frequent.

Conclusion: There is evidence supporting designation of the South Coast Group as a potentially threatened or endangered DPS.

6.3 Assessment of Significant Portion of Range

CESA requires that the Commission, in making its determination, consider whether mountain lions in California are in serious danger of becoming extinct throughout all or a significant portion of their range. While what comprises a "significant portion" of a species' range is not further defined in CESA, our analysis in the Assessment of Distinct Population Segments section above addressed whether the MUs, singly or in combination, could be considered discrete "significant portions" of the species' statewide range based upon whether those units are discrete from other populations, and whether they are ecologically or genetically significant. Only the EPR MU and the South Coast Group (composed of the SGSB, EPR, and SA MUs) were found to meet those criteria (they occupy discrete portions of the range

and are significant in terms of genetics, ecological setting, or range connectivity). Therefore, the Department considers the South Coast Group (and the EPR MU within) a significant portion of the mountain lion's range. The lion population in these areas is also imperiled.

7. SUMMARY OF LISTING FACTORS

CESA's implementing regulations identify key factors relevant to the Department's analysis and the Commission's decision on whether listing a species as threatened or endangered is warranted. A species will be listed as endangered or threatened if the Commission determines that the species' continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) present or threatened modification or destruction of its habitat; (2) overexploitation; (3) predation; (4) competition; (5) disease; or (6) other natural occurrences or human-related activities (Cal. Code Regs., tit. 14, § 670.1, subd. (i)).

This section provides summaries of information from the foregoing sections of this status review, arranged under each of the factors to be considered by the Commission in determining whether listing is warranted.

7.1 Present or Threatened Modification or Destruction of Habitat

The main threats affecting mountain lions in the petitioned ESU and MUs evaluated in this review are habitat loss and fragmentation from historical and ongoing transportation infrastructure expansion and development (including residential and commercial structures, intensive agriculture, HSR lines, canals, and reservoirs), and lack of sufficient connectivity between remaining habitat patches which has resulted in reduced genetic exchange between populations. The amount of suitable habitat available to mountain lion populations has been significantly reduced in and adjacent to areas such as the Central Valley, San Francisco Bay area, and the greater Los Angeles and San Diego urban areas. Over time significant barriers have developed which impede mountain lion movement and isolate populations and ongoing residential and commercial development is projected to exacerbate isolation. The lack of sufficient gene flow between isolated populations has resulted in inbreeding in some smaller populations which may reduce survival and reproductive fitness, as evidenced by physical abnormalities in some mountain lions in the small and isolated Santa Ana and Santa Monica populations.

Long-term maintenance of genetic variation within the two broad-scale genetic populations identified by Gustafson et al. (2022) and the six fine-scale genetic populations identified by Gustafason et al. (2019, 2022) in the petitioned area is reliant on habitat conservation and connectivity. Maintenance and enhancement of gene flow between the petitioned ESU and the larger, more genetically diverse mountain lion populations in the Sierra Nevada and through the Tehachapi Mountains, and the San Gabriel, and San Bernardino mountains is required to maintain viable populations in the petitioned area.

After evaluating the threat posed by the present and future modification and destruction of habitat to the statewide mountain lion population, the Department concludes that the remaining, relatively large

populations in the NC, SN, and portions of the CC are sufficient to preclude the threat of extinctions statewide, or in any of the four large-scale genetically discernable populations identified by Gustafson et al. (2022), presently and in the foreseeable future. As noted earlier in this report, some smaller fine-scale populations have well-documented significant risk factors at this time. In the most isolated habitat patches (e.g., Santa Monica Mountains, Santa Ana Mountains), it is conceivable that local extirpations may occur in the absence of efforts to improve habitat connectivity and remove barriers to movement. Management intervention to develop a broad wildlife crossing infrastructure, including the protection and enhancement of large blocks of suitable habitat on each side of crossing facilities, to link MUs would increase connectivity and potentially alleviate the genetic and stochastic risks associated with small populations. Such an effort will require adequate funding and concerted and sustained commitment by many parties to ensure proper design, placement, maintenance, and monitoring for effectiveness.

7.2 Overexploitation

Existing state laws and recent changes to the Department's approach to issuing mountain lion depredation permits have significantly reduced the risk of overexploitation in the petitioned ESU and statewide. Under current management, occasional take of individual mountain lions due to repeated depredations on a single property or for public safety in the petitioned ESU is foreseeable and may exacerbate the detrimental effects associated with small population size and limited genetic exchange in isolated mountain lion populations such as the Santa Monica Mountains (CC-S), SA, and EPR. Depredation take has been the leading cause of known mortality across the petitioned ESU and a major identified source of mortality in the EPR. Unauthorized take via shooting or trapping (i.e., poaching) is known to occur but is difficult to quantify. Overexploitation likely poses little threat to the statewide population nor to any of the four large-scale genetically discernable populations; however, for the MUs with small population sizes (SA, CC-N, CC-S, SGSB), the additive mortality from permitted take is a concern.

7.3 Predation

As large-bodied predators, adult mountain lions in California are subject to little predation pressure. Gray wolves sometimes kill both adult and juvenile mountain lions, and black bears are known to occasionally kill mountain lion kittens but rarely adults (Elbroch and Kusler 2018). However, predation by wolves and black bears is not known to be a significant cause of California mountain lion mortality or known to threaten the persistence of lion populations. Therefore, and given the current absence of gray wolves within the petitioned area, predation is not currently considered to present a significant threat to California mountain lion populations.

7.4 Competition

Black bears and gray wolves are known to displace mountain lions from their kills which potentially forces mountain lions to expend additional energy hunting to procure more prey (Elbroch et al. 2015,

Elbroch and Kusler 2018). Given the absence of wolves in the petitioned area, wolf competition would have no effect on central or southern coast lion populations. The potential impact of black bears in these areas remains unknown and warrants further study. Intraspecific conflict has been identified as the leading cause of mortality for the nearly isolated mountain lions in the Santa Monica Mountains within the CC-S (Riley et al. 2014). Intraspecific aggression appears to be a significant mortality factor where individual mountain lions occupy small patches of suitable habitat within habitat-limited landscapes, and therefore, this form of competition should be considered a significant threat to lion populations in the Santa Monica and Santa Ana mountains, and possibly within the SGSB MU. .

7.5 Disease

Mountain lions are susceptible to various viral, bacterial, and parasitic pathogens. Lions living near urban areas where the threat of domestic animals could play a role in disease transmission appear to be especially vulnerable. To the best of our knowledge, pathogens alone have not threatened large mountain lion populations (e.g., on the level of a state), and thus we do not think they represent a significant threat to the species in California. However, pathogens may be harmful to individuals and small populations, and, when combined with the serious threats of habitat loss and fragmentation, climate change, wildfires, and other threats, the possibility of a catastrophic disease outbreak further reduces the certainty that smaller, isolated, highly dense mountain lion populations will persist into the future.

7.6 Other Natural Occurrences or Human-related Activities

7.6.1 Vehicle-Related Mortality

Vehicle-related mortality is a major mortality factor for mountain lions in California. It is difficult to accurately assess the magnitude of the problem due to lack of systematic data collection. One estimate is that 100 mountain lions are killed every year by vehicle strikes (Pollard 2016), while a more recent report puts that number at 70 per year during the period from 2015 to 2022 (Shilling et al. 2023). Outside of the extensively studied populations of the CC-N and CC-S, it is difficult to quantify the impact of this threat on populations. Researchers have found that reported vehicle collisions are densest in the urban areas of the Bay Area, the central and south coasts, and the northern Sierra Nevada foothills. Dense clusters of reported vehicle strike mortalities also exist in more rural areas such as the I-5 corridor near the Oregon border and US 50, I-80, and SR-20 in the Sierra Nevada foothills (Shilling et al. 2023). Well-designed wildlife crossing structures and associated fencing to funnel animals to the crossing can reduce vehicle-related mortalities (Grilo et al. 2015, Villalobos-Hoffman et al. 2022). While such structures are extremely costly and require careful planning to be effective, there has been progress on the is front with the completion of the Highway 17 undercrossing in the Santa Cruz Mountains, construction of the Wallis Annenberg Wildlife Crossing underway in the CC-S, and several other structures in the planning stage. When such wildlife crossing structures and fencing become

widespread, lion mortality from vehicle strikes in the petitioned ESU and elsewhere in the state will likely be significantly reduced.

7.6.2 Toxicants

Mountain lions throughout California are exposed to toxic chemicals in their environment which can be lethal or debilitating, depending on the quantities ingested. Lions with toxicant-impaired functions may be more susceptible to other forms of mortality such as starvation and vehicle strikes. Lions can encounter ARs used to control vertebrate pests throughout the state, including remote locations where legal and prohibited rodenticides are used to protect illicit cannabis plantations. Necropsies have verified that nearly all tested mountain lions in California have been exposed to ARs. While toxicants are not known to directly cause significant mortality statewide, their effects may be additive to other sources of mortality. The population effects of toxicant exposure within smaller MUs is unknown.

7.6.3 Wildland Fire and Fire Management

The effect of wildfire on mountain lions is complex and understudied throughout their geographic range. Fire is a regular ecological process in many California vegetative communities, and many native plant species display adaptations to fire such as thick fire-resistant bark, post-fire crown-sprouting, and smoke-induced seed germination which can create better forage for deer, the main prey of mountain lions. Mountain lions have been documented using burned landscapes more frequently than expected based on availability during the first nine years post-fire. However, some areas of suitable shrub habitat have been converted to less suitable annual grasslands due to unnaturally frequent repeated burns in the same area resulting from increased human ignitions and the effects of climate change. Wildfires also cause mountain lion injury and direct mortality, which is likely additive to other sources of mortality. Fires are projected to become more frequent with climate change, resulting in the conversion of some preferred mountain lion woodland and shrubland habitat to grasslands, which are documented to be mostly avoided by lions. The impact of wildfire on the statewide mountain lion population, genetic groups or MUs is difficult to predict; however, some small patches of habitat such as the Santa Monica Mountains (CC-S) and Santa Ana Mountains (SA) may be vulnerable to large, severe fires (e.g., the Woolsey Fire Los Angeles and Ventura counties in 2018) that could modify most extant lion habitat in one or a few events, potentially threatening or even extirpating local populations.

7.6.4 Climate Change

Projections indicate the California climate will continue to warm, and precipitation events will become less predictable and droughts more frequent. These changes will influence the condition and distribution of vegetative communities and the animal communities that depend upon them. The Department is not aware of any study using bioclimatic modeling to project changes in the geographic range of the mountain lion or their main prey species (mule deer) based on climate variables. As large-bodied mammals, it may be that both mountain lions and mule deer are sufficiently large not to be affected directly by moderate increases or decreases in environmental temperature, which more

drastically affect small-bodied mammals with higher surface area to volume ratios. The generally nocturnal habits of mountain lions and their prey also help alleviate impacts from warmer environments. Mountain lions are known to occur across a wide variety of ecoregions ranging from deserts to temperate and coastal rainforests in California. The mountain lion's body size, foraging habits, and breadth of climates in the wide range of ecosystems the species occupies suggests the direct or indirect effects of climate change are unlikely to lead to near-term shifts in distribution of the species or population declines.

7.6.5 Risks to Small, Isolated Populations

Small, isolated populations are inherently vulnerable to extinction due to demographic stochasticity, inbreeding depression, and genetic drift which result in a loss of genetic variability and a reduced genetic capacity to respond to changes in the environment. A lack of immigration can also prevent isolated populations from recovering from stochastic extinctions or population declines, independent of genetic effects. In wildlife populations, genetic variation has been shown to be strongly correlated with high survival and reproduction rates, as well as decreased extinction risk. Genetic effects can amplify the impact of the other threats and random environmental effects to further reduce population sizes and accelerate populations towards extirpation in what has been termed an extinction vortex.

The estimated statewide mountain lion population estimate 3,242 (95% CI 2,826-3,742) animals is relatively robust for a large carnivore. In addition, there are the four major genetic population clusters in the state that contain high levels of genetic variation and exhibit little evidence of inbreeding depression (Gustafson et al. 2022). However, certain isolated populations, including the CC-N (Santa Cruz Mountains), CC-S (Santa Monica Mountains), SA, and SGSB (as delineated by Gustafson et al. 2022) are small enough that there are concerns about inbreeding and effective population size.

Certain small populations in southern California have particularly low genetic variation and the SA and CC-S populations exhibit high levels of inbreeding (Ernest et al. 2014, Riley et al. 2014, Benson et al. 2019, Gustafson et al. 2019). The SGSB and CC-N similarly have low observed genetic variation and effective population sizes. In contrast, the Klamath–Cascades, WSN, ESN, CC-C, and EPR populations show little evidence of inbreeding (Gustafson et al. 2019, 2022) and some level of genetic exchange between certain MUs appears to exist. As genetic variation is relatively high in multiple California populations compared to variation in several smaller central and southern coastal populations, there is high potential for long-term persistence of mountain lions throughout most of the state and all four broad-scale populations identified by Gustafson et al. (2022) if adequate habitat and connectivity can be protected.

8. PROTECTION AFFORDED BY LISTING

It is the policy of California to conserve, protect, restore, and enhance any endangered or threatened species and its habitat (Fish & G. Code, § 2052). If the Commission votes to list mountain lion

populations under CESA, the act would prohibit take[9] except under certain circumstances: 1) when authorized by the Department for scientific, education, or management purposes through research and management MOUs (Fish & G. Code, § 2081, subd. (a)); 2) when authorized by the Department through incidental take permits (ITPs) when take is incidental to otherwise lawful purposes and the impacts have been minimized and fully mitigated (Fish & G. Code, § 2081, subd. (b)); 3) under authority of Fish & Game Code section 2087 when take accidentally results from otherwise lawful routine and ongoing agricultural activities; 4) when take occurs on land covered by Voluntary Local Programs, NCCPs, or Safe Harbor Agreements (Fish & G. Code, §§ 2086, 2835, 2089.2, respectively); or 5) authorized take pursuant to the Wildlife Protection Act of 1990 (Fish & G. Code, § 4800, et seq.).

If mountain lion populations are listed under CESA, the impacts of any take caused by activities authorized through ITPs must be minimized and fully mitigated (Fish & G. Code, § 2081, subd. (b)). These conditions often include protection of habitat in perpetuity, development and implementation of a species-specific adaptive management plan, and funding through an endowment to pay for long-term monitoring and maintenance to ensure the mitigation land meets performance criteria. Obtaining an incidental take permit is voluntary. The Department cannot force compliance; however, any person violating the take prohibition may be criminally and civilly liable under state law.

Additional protection of mountain lions following listing would be expected to occur through state and local agency environmental review under CEQA. CEQA requires affected public agencies to analyze and disclose project-related environmental effects, including potentially significant impacts on wildlife species. The CEQA Guidelines require a mandatory finding of significant impact, thus requiring preparation of an Environmental Impact Report, when a project has the potential to substantially reduce the number or restrict the range of a threatened or endangered species (Cal. Code Regs. 14, §15065(a)(1)). In common practice, potential impacts to listed species are examined more closely in CEQA documents than potential impacts to unlisted species. Where significant impacts are identified under CEQA, the lead agencies must typically adopt project-specific avoidance, minimization, and mitigation measures to limit impacts to the species. State listing, in this respect, and consultation with the Department during state and local agency environmental review under CEQA would be expected to benefit mountain lions in the petitioned ESU in terms of reducing impacts from individual projects. Absent listing, such protection measures or mitigations might not occur.

CESA listing may also result in increased priority for limited conservation funds such as Wildlife Conservation Board, Local Assistance, and State Wildlife Grants, along with land acquisition assistance from non-governmental organizations (NGOs) such as The Nature Conservancy.

9. LISTING RECOMMENDATION

[9] "Take" is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86).

CESA directs the Department to prepare this report regarding the status of the mountain lion in the petitioned Southern California/Central Coast ESU based upon the best scientific information available (Fish & G. Code, § 2074.6). CESA also directs the Department based on its analysis to indicate in the status report whether the petitioned action (i.e., listing as threatened) is warranted (Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)).

Under CESA, an endangered species is defined as "a native species or subspecies…which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (Fish & G. Code, § 2062). A threatened species is defined as "a native species or subspecies…that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]" (Fish and G. Code, § 2067).

The Legislature left to the Department and the Commission, which are responsible for providing the best scientific information and for making listing decisions, respectively, the interpretation of what constitutes a "species or subspecies" under CESA. (*Cal. Forestry Assn. v. Cal. Fish and G. Com.* (2007) 156 Cal.App.4th 1535, 1548-49). Courts should give a "great deal of deference" to Commission listing determinations supported by Department scientific expertise (*Central Coast Forest Assn. v. Fish & G. Com.* (2018) 18 Cal. App. 5th 1191, 1198-99). The Commission's authority to list necessarily includes discretion to determine what constitutes a species or subspecies (*Id*. at p. 1237). The Commission's determination of which populations to list under CESA goes beyond genetics to questions of policy (Ibid.).

The Department evaluated the petitioned ESU as well as those populations within the petitioned ESU to determine if they singly or in combination should be considered threatened or endangered pursuant to CESA. The Department has determined, based upon the best available scientific evidence, that there is currently insufficient evidence that the mountain lions within the petitioned ESU and the populations within the petitioned ESU boundary meet the criteria to be listed as threatened or endangered ESUs. The petitioned ESU, or any combination of its populations, do not meet the criteria to be considered as ESUs—they are not both substantially isolated from other populations *and* important components of the evolutionary legacy of the mountain lion species. Although movement of individuals is increasingly restricted, there is limited gene flow between the petitioned ESU and other mountain lion populations, and neither the petitioned ESU nor the Management Units within it are totally reproductively isolated. Nor is the petitioned ESU sufficiently genetically or morphologically differentiated from the larger California population to suggest the presence of distinct evolutionary lineages or evolutionarily important differences. Therefore, there is insufficient scientific evidence to classify the portions of the California mountain lion population petitioned for listing as one or several ESUs as defined by Waples (1991).

The Department has also examined populations within the petitioned ESU through the lens of federal Distinct Population Segment policy in recognition of the Petitioner's intent to examine the viability of major genetic or otherwise significant groupings of mountain lions in California. The South Coast Group (as defined by Gustafson et al. 2022) consists of three MUs (EPR, SA, and SGSB) and meets the federal

criteria to be considered a Distinct Population Segment, as the best available scientific evidence shows that it is discrete and biologically significant. Further, scientific evidence indicates the South Coast Group DPS is not in imminent danger of extinction, but it is likely imperiled if management actions are not taken to conserve and restore habitat connectivity between MUs to allow the exchange of individuals and facilitate genetic connections to the larger statewide population. Therefore, the Department recommends that the South Coast Group DPS be listed as Threatened under California law.

The Department recommends the boundary for the threatened South Coast Group be as delineated in Figure 19. Unlike the boundary of the proposed ESU, we do not include the desert regions in eastern San Bernardino, Riverside, and Imperial counties in the South Coast Group DPS. The EPR genetic cluster depicted in Gustafson et al. 2019 has ambiguous boundaries and Figure 2 in Gustafson et al. 2019 clearly shows there are no sample points within the desert regions in question. No tissue from mountain lions in this region were included in Gustafson et al.'s (2019, 2022) genetic analyses. Thus, the spatial interpolation of genetic clusters in this area cannot be considered reliable and population membership of mountain lions occupying these eastern regions cannot be determined.

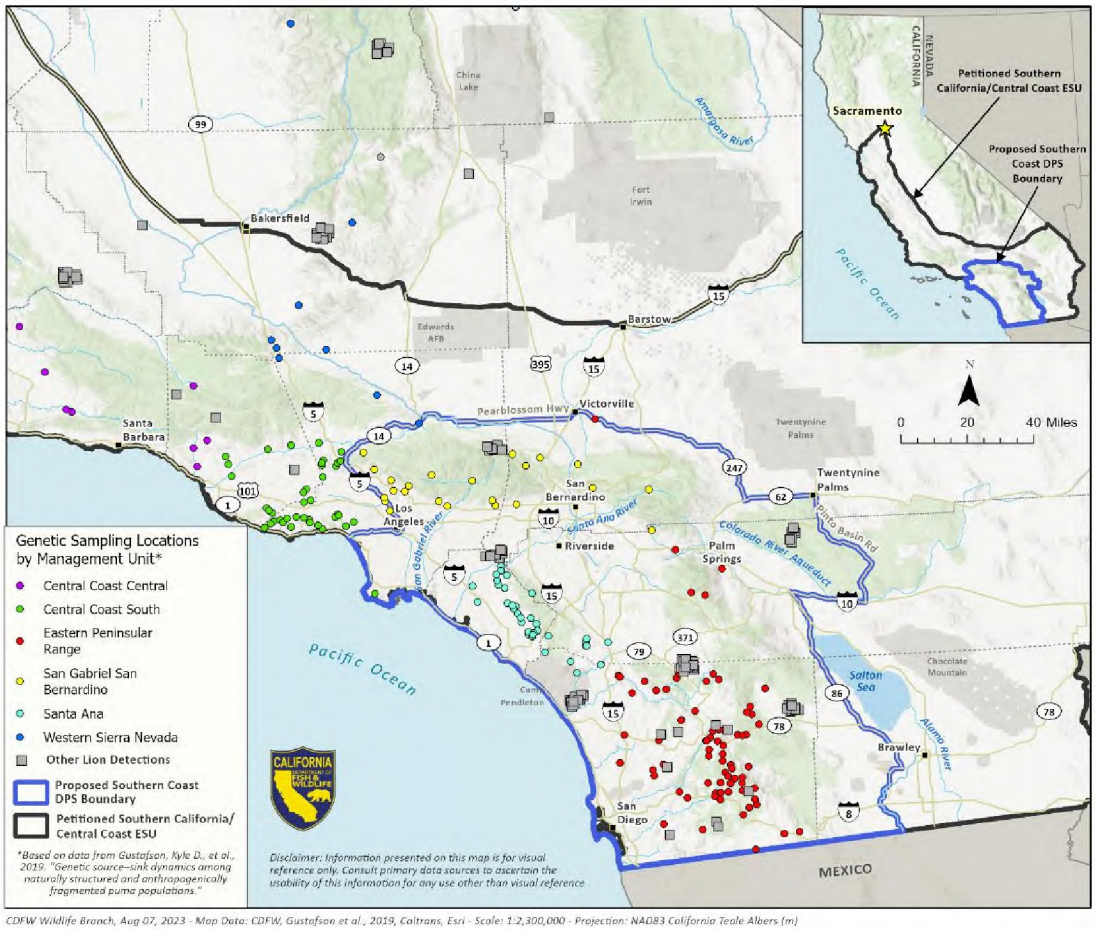


Figure 19. Proposed boundary of South Coast DPS recommended for threatened status. Points represent genetic sampling locations color coded by the Management Unit they lie within. Grey squares are confirmed locations of mountain lions from camera trap data (CDFW unpublished).

Mountain lions are known to occur in the desert regions of California and in Death Valley National Park (Lundgren et al. 2022), but camera trap data suggest they may exist at low densities (Dellinger et al. 2019). Genetic material from the eastern deserts has not been systematically collected, and, consequently, mountain lions in those areas have not been assigned to a genetic population nor has local gene flow been characterized. The nearest location for which genetic samples have been analyzed is the Mojave Desert region of Nevada (Andreasen et al. 2012). In a statewide genetic study of mountain lion population structure, Andreasen et al. (2012) found that animals from southern Nevada were genetically similar to individuals from the Great Basin and the Sierra Nevada region of California (Fig. 2, therein). Further, a doctoral dissertation found minimal evidence for gene flow between mountain lions from southwest Arizona and those from south coastal California and individuals sampled from the North Rim of the Grand Canyon were found to be more genetically similar to those from south coastal California (Naidu 2015). The results of these two studies suggest mountain lions from the desert regions of California may share more recent genetic ancestry with animals to the northeast—namely the Great Basin and Colorado Plateau—as compared to animals immediately across the lower Colorado River in southwest Arizona. A fuller understanding of the genetics of mountain lions from southeastern California would require additional study with a focus on sampling new locations of collecting scat or capture of individual mountain lions. This would be complicated by the fact that individuals in this region may occur at low density and likely have larger home ranges coupled with the hot arid conditions making samples difficult to obtain.

For the reasons stated above, we suggest it currently is not possible to assign population membership to mountain lions occupying the California deserts east of the samples examined by Gustafson et al. (2019, 2022) or to assess their current level of conservation risk. We therefore do not find it appropriate to include large portions of the Mojave and Sonoran deserts in the DPS area. Instead, we suggest the South Coast DPS be bounded by the foot of the eastern slope of the Peninsular Ranges (Fig. 19). We created a boundary that encompasses the areas where the genetic samples were found, as well as connected areas of suitable habitat with verifiable sightings of mountain lions via camera traps (GBIF 2023, CDFW, unpublished data).

10. MANAGEMENT AND RECOVERY ACTION RECOMMENDATIONS

California's statewide mountain lion population is complex and diverse. Large areas of the state appear to have robust, genetically diverse, and well-connected lion populations (e.g., NC and SN groups) while other populations show evidence of inbreeding depression and genetic isolation (e.g., SA, Santa Monica Mountains of the CC-S). Multiple genetic investigations have now demonstrated the importance of the Sierra Nevada region as a reservoir of genetic variation (Ernest et al. 2003, Gustafson et al. 2019). Bi-directional migration rate models based on genetic data indicated the western Sierra Nevada serves as a significant source of migrants into other regions of California (Gustafson et al. 2019). The overarching

goals of mountain lion management in the state should be maintaining and enhancing landscape connectivity between robust core populations and smaller, more isolated MUs within the CC and SC regions as well as enhancing and expanding remaining habitat patches and reducing mortality rates in those populations. Increased connectivity would help offset the risks to small populations that result from demographic and genetic factors. Benson et al. (2019) found that conserving mountain lions in isolated mountain ranges in greater Los Angeles (Santa Monica and Santa Ana mountains) is feasible with relatively modest increases in landscape connectivity.

Two MUs which may have significant relevance for restoring regional gene flow are the CC-C and EPR (Fig. 1). The CC-C MU has ample habitat for maintaining a breeding population (Dellinger et al. 2020*b*). Given the data indicating minimal gene flow across the Central Valley, this population may be the only consistent source of migrants for the CC-N and CC-S. Thus, maintaining connectivity to the CC-C MU may be essential for the long-term viability of both adjacent populations. Concurrently, maintaining connectivity and habitat quality within the CC-C population as the human population increases will be essential for that population to remain robust and a viable source for the CC-N and CC-S populations. The EPR is the only population known to exchange migrants with the SA population, and management actions which enhance gene flow between these areas will be critical to the sustainability and recovery of mountain lions in the SA. Dispersal in and out of the EPR is limited and the degree of dispersal across the border between the U.S. and Mexico remains unknown (Gustafson et al. 2019). While self-sustaining connectivity through a network of corridors and habitat patches with functional ecosystem processes would be ideal for long term sustainability, assisted gene flow between populations through targeted translocations should be considered as a short-term management action to augment the genetic variation of the most isolated small populations.

The specific recommendations below are compiled from sources including the Petitioners, mountain lion researchers, Gustafson et al. (2022), the Department, and others, and are designed to facilitate the above goals.

10.1 Connectivity

- Identify the most strategic locations for wildlife crossing structures, and design and build crossing infrastructure to improve wildlife connectivity and permeability at existing roads and highways, combined with protections of adjacent habitat to ensure perpetual wildlife access to the crossing structures and connections to the core protected habitat areas such as National Forests (South Coast Wildlands 2008). Crossing infrastructure should include, but is not limited to, overcrossings, underpasses, culverts, and exclusionary fencing that guides animals to safer crossing areas (Vickers et al. 2015). The following crossing locations have been identified by mountain lion experts and should be among the top priorities for the implementation of crossing infrastructure: (1) I-15 Freeway at Temecula Creek Bridge to enhance the Palomar Linkage and connect the Santa Ana and Eastern Peninsular Mountain Ranges (Ernest et al. 2014, Gustafson et al. 2017, Zeller et al. 2017, Riley et al. 2018) (2) I-15 Freeway at "Site 5" as

described in Riley et al. (2018) (3) I-280 between San Bruno and Cupertino, which is the "deadliest highway for mountain lions in California" according to Shilling and Vickers (2023).

- In recognition of the importance of the Sierra Nevada region as a reservoir of genetic variation and significant source of migrants into other regions of California (Ernest et al. 2003, Gustafson et al. 2019, 2022), acquire, maintain, and enhance corridors and patches of suitable habitat linking the SN, CC-S, SGSB, SA, and EPR populations, emphasizing the retention and expansion of protected habitat in the Santa Ana, Santa Monica, and San Gabriel mountains.
- Encourage land use and planning agencies at federal, state, county, and local levels of government to require analysis of regional wildlife connectivity in all new development proposals in primary travel corridors and habitat linkages, such as those in the Tehachapi and Sierra Pelona mountains (Gustafson et al. 2019) and between the SA and EPR (Vickers et al. 2015).
- Explore periodic assisted translocations of outbred animals (i.e., genetic rescues) to quickly increase genetic variation in small, isolated mountain lion populations such as the Santa Monica Mountains (CC-S) and SA (Johnson et al. 2010).
- Fund monitoring programs to evaluate the success of wildlife crossing structures, including monitoring the genetic variation and movements of mountain lion populations on either side.
- Dedicate sufficient funding from the Wildlife Conservation Board, Habitat Conservation Fund, and other state funding sources towards acquiring key mountain lion and wildlife habitat and for establishment of highway crossing infrastructure.
- Encourage the maintenance and restoration of riparian vegetation communities in the CC and SC regions to provide prey habitat, resting and feeding cover, and viable movement corridors between remaining patches of mountain lion habitat. This could include limiting water diversions in these areas.

10.2 Research and Monitoring

While the recommendations below apply statewide, priority should be given to projects that enhance understanding of mountain lion populations and behaviors in petitioned ESU area.

- Periodically replicate genetic analyses similar to Gustafson et al.'s (2019) work to monitor genetic variation within MUs and signals of mountain lion immigration and emigration.
- Investigate whether the wide range of environmental conditions (e.g., precipitation, temperature) across California, and/or localized areas of restricted gene flow, are associated with local adaptations or drift. Such information will be vital to choosing which populations to reconnect through the establishment of wildlife corridors or by translocation actions (i.e., assisted migration and genetic rescue).
- Determine mountain lion distribution, abundance, resource selection at multiple spatial scales, movements and dispersal patterns, foraging ecology, and to study landscape genetics in the Sonoran and Mojave deserts, and along the lower Colorado River region of the state. Work collaboratively with tribes, adjacent states, Baja California, Mexico, universities, other

government entities (e.g., Caltrans, BLM, NPS, State Parks, USGS, Military), IUCN and IUCN Species Survival Commission Cat Specialist Group, and other NGOs.

- Monitor responses to increasing fire frequency to assess how mountain lions, other carnivores, and their prey will be affected by large-scale changes that may pose a threat to landscape integrity and persistence of mountain lion populations in southern California ((Jennings et al. 2016).
- Evaluate trans-highway movements, resource selection, home range placement, and vehicle-related mortality of adult and subadult mountain lions (Cougar Management Guidelines Working Group 2005, McKinney 2011). Focus on interstates in the South Coast Group (i.e., I-5, I-10, I-15, 101, 405), and roadways throughout the state that contain priority barriers or history of mountain lion vehicle-inducted mortality (i.e., I-5 near Oregon border, I-80 and SH 50, 70, 49, 396, 89 in the Sierra Nevada.
- Investigate the influence of variation in black bear seasonal presence and density on mountain lion kill rates and prey selection, habitat use, and kitten and adult survival. Also investigate areas where bears and mountain lions overlap with gray wolves to understand interactions.
- Investigate the influence of gray wolf distribution and density on mountain lion abundance, habitat selection, prey selection and kill rates, kitten and adult survival, and movements at multiple spatial scales.
- Rapidly detect, diagnose, and determine the significance of disease outbreaks and emerging diseases such as avian influenza.
- Continue AR screening of livers from mountain lion carcasses to further enhance our understanding about the locations and effects that AR exposure has on mountain lion health and mortality. Continued monitoring should also measure the effectiveness of regulatory changes intended to reduce exposure of non-target wildlife to rodenticides (Rudd et al. 2018).
- Investigate potential correlations between habitat, genetics, and prevalence of health and disease issues.
- Determine conditions associated with human-mountain lion conflict hotspots.
- Assess efficacy of non-lethal measures for mitigating/deterring mountain lions from depredating domestic animals. Assess whether co-occuring carnivores and native ungulate populations impact the efficacy of non-lethal measures for mitigating human-mountain lion conflict.

10.3 Regulations and Policy

- Work with the California Department of Pesticide Regulation to improve the management of second-generation ARs such as brodifacoum, bromadiolone, difenacoum, and difethialone to reduce mountain lion exposure, with an emphasis on southern California and central coast mountain lion habitat areas and linkages and explore outreach efforts on this issue.
- Improve law enforcement for areas where use of second-generation ARs is restricted to ensure compliance with the state's regulations.

10.4 Partnerships and Coordination

- Continue to collaborate with Caltrans and others to analyze how projects in the State Highway Operation Protection Program and State Transportation Improvement Program can be designed to facilitate wildlife connectivity through wildlife passage features such as culverts, under crossings, overcrossings, bridges, directional fencing, scuppers, barrier breaks, roadside animal detection systems, signage, etc.
- Continue to collaborate with Caltrans and the Road Ecology Center at UC Davis to help collect and analyze roadkill data to identify hotspots where mountain lions, deer, and other animals are killed. Investigate funding channels for creating an open access statewide roadkill database for data download and analysis as needed by multiple interested parties. Encourage Caltrans to implement wildlife passage features to the greatest extent feasible and as expeditiously as possible.
- Continue to collaborate with external researchers, tribal members, agencies, universities, and NGOs to help solve habitat conservation, landscape connectivity, and vehicle-related and other mortality incidents in southern and central California.
- Encourage local governments to place conditions on new developments to minimize negative impacts on riparian systems and native vegetation by buffering the riparian areas to allow use by mountain lions and their prey. Promote efforts to restore riparian ecosystems and protected lands in the vicinity of wildlife crossing structures.

10.5 Public Education

- Continue to promote awareness and education regarding mountain lions, human safety, pet and livestock conflict prevention, pesticide exposure, and conservation messaging throughout southern California.
- Develop and implement outreach and education activities to promote use of predator-proof enclosures for domestic animals (Vickers et al. 2015).

11. ECONOMIC CONSIDERATIONS

The Department is charged in an advisory capacity to provide a written report and a related recommendation to the Commission based on the best scientific information available regarding the status of mountain lion in the petitioned Southern California/Central Coast ESU. The Department is not required to prepare an analysis of economic impacts (See Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)).

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APPENDIX A – Acronyms, Abbreviations and Definitions

CDFW - California Department of Fish and Wildlife

Central Coast (CC), one of four genetic populations presented in Gustafson et al. 2022 based on Single Nucleotide Polymorphism data. Includes coastal mountains south of San Francisco Bay to and including the Santa Monica Mountains.

CEQA – California Environmental Quality Act

CESA - California Endangered Species Act

Commission - Fish and Game Commission

DPS - Distinct Population Segment

Department - California Department of Fish and Wildlife

Distinct Population Segment (DPS) - A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species.

Effective Population Size (Ne) - The number of individuals in a population that effectively participate in producing the next generation.

Evolutionary Significant Unit (ESU) - A term related to the federal Endangered Species Act originally applied to anadromous fish populations that designates a population that is substantially reproductively isolated from conspecific populations *and* represents an important component of the evolutionary legacy of the species.

Genetic Groups / Broad-Scale Genetic Groups – The four genetic groups for which Gustafson et al. (2022) found the strongest support through SNP analysis. These groups include:

Central Coast Group – Lions from the San Francisco Bay and Sacramento-San Joaquin Delta south through the Santa Monica Mountains inclusive of Gustafson et al.'s (2019) Central Coast-North, Central Coast-Central, and Central Coast-South genetic populations.

North Coast Group – Lions north of San Francisco Bay through the Coast Ranges to border with Oregon. Largely coincident with Gustafson et al.'s (2019) North Coast genetic population.

Sierra Nevada Group – Lions from the Klamath, Cascades, and Sierra Nevada mountains from the Oregon border south through the Tehachapi Mountains inclusive of Gustafson et al.'s (2019) Western Sierra Nevada and Eastern Sierra Nevada genetic populations.

Southern Coast Group – Lions in the San Gabriel and San Bernardino, Santa Ana, and Eastern Peninsular mountains inclusive of Gustafson et al.'s (2019) San Gabriel-San Bernardino, Santa Ana, and Eastern Peninsular Range genetic populations.

Management Unit (MU) - Demographically independent populations of conspecifics whose growth rate depends predominantly on local births and deaths rather than immigration.

Management Units identified in this report:

- **Central Coast North (CC-N**) - A geographic area based upon the CC-N genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which

includes the Santa Cruz Mountains and east bay hills, extending south to approximately the Monterey County line.

- **Central Coast Central (CC-C)** - A geographic area based upon the CC-C genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which generally includes coastal mountain ranges from southern Monterey Bay to Ventura County.
- **Central Coast South (CC-S)** - A geographic area based upon the CC-S genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills.
- **Eastern Peninsular Ranges (EPR)** - A geographic area based upon the EPR genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes eastern San Diego County to the Colorado River and the border with Arizona and is bounded on the south by the border with Mexico.
- **Eastern Sierra Nevada (ESN)** - A geographic area based upon the Eastern Sierra Nevada genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which extends from the east side of the Sierra Nevada crest to the Nevada border from northern Mono County south to northern San Bernardino County.
- **Nevada (NV)** - A geographic area based upon the Nevada genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which encompasses most of the state of Nevada.
- **San Gabriel and San Bernardino Mountains (SGSB)** - A geographic area based upon the SGSB genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses and includes the San Gabriel and San Bernardino mountain ranges.
- **Santa Ana Mountains (SA)** - A geographic area based upon the SA genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that encompasses the Santa Ana Mountains.
- **Western Sierra Nevada (WSN)** - A geographic area based upon the Western Sierra Nevada genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that extends from the Oregon border through the Cascades and Sierra Nevada Mountains to the Tehachapi Mountains and includes the Sierra Nevada foothills and much of the Central Valley.

Microsatellite Markers - Repetitive segments of DNA scattered throughout the genome in noncoding regions between genes or within genes.

Principal Component Analysis (PCA) - A statistical multivariate technique which transforms a large number of correlated of variables into few uncorrelated variables which represents the whole data set.

Single Nucleotide Polymorphism (SNP) - a variation in nucleotides at a single position in a DNA sequence among individuals.

State Wildlife Action Plan (SWAP) – California's comprehensive plan for examining the health of wildlife populations and prescribing actions to conserve wildlife and vital habitat before they become more rare and more costly to protect.

USFS – U.S.D.A. Forest Service.

USFWS - United States Fish and Wildlife Service

APPENDIX C – Solicitations for Information

Tribal notice via email and hard copy mailing, statewide.

Fish and Game Commission's CESA Interested Parties list (Confidential list).

San Diego area USFWS biologist emailed solicitation letter to southern California biologists/land conservation planning group.

Heather Pert (CDFW) emailed a contacts group of biologists/land conservation planners.

Hard copy mailed to local Fish and Game Commissions and Board of Supervisors within and adjacent to the petitioned ESU counties.

State Parks, Caltrans, USFS, NPS, BLM notified via email.

Cattlemen's, BIA, Woolgrowers notified via email.

Additional contacts not yet listed; in process.

APPENDIX D – Public and Tribal Comments

CBD (also sent another set of comments later)

Vickers

Mountain Lion Foundation

Tribes, including Charley Dirk and his Tribe, from phone conversation.

Carmel area land manager (who sent pictures).

Escondido Conservancy

State Parks

Caltrans

Etc.

4058

4059

APPENDIX E – External Peer Review Invitation Letters

4062 APPENDIX F – External Peer Review Comments

4063 APPENDIX G - California Department of Fish and Wildlife Human-Wildlife Conflict and Depredation
4064 Policies
4065

4066



Status Review of the Southern California/ Central Coast Evolutionarily Significant Unit of Mountain Lion

Presentation to the California Fish and Game Commission

February 12, 2026

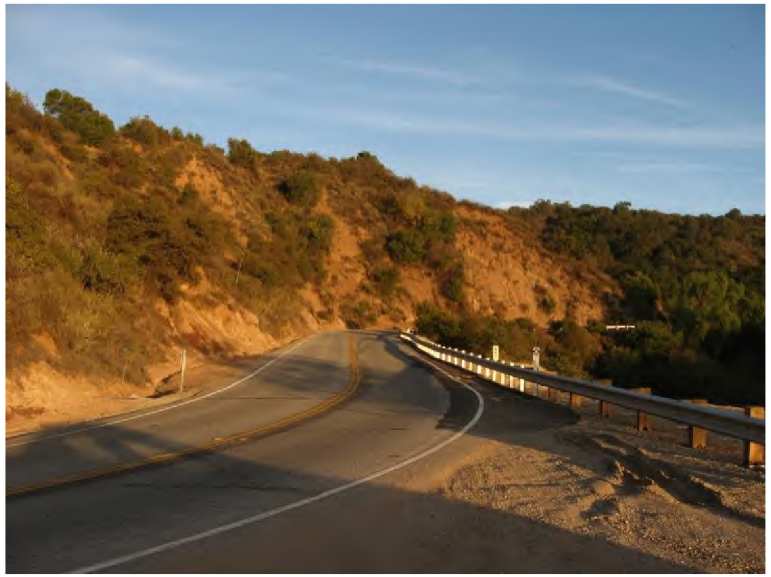
Daniel Applebee
Wildlife Branch

Presentation Overview

- Petition History
- Life History and Range
- Population Trends
- Threats
- Evaluation of Evolutionarily Significant Units (ESU)
- Department Recommendation

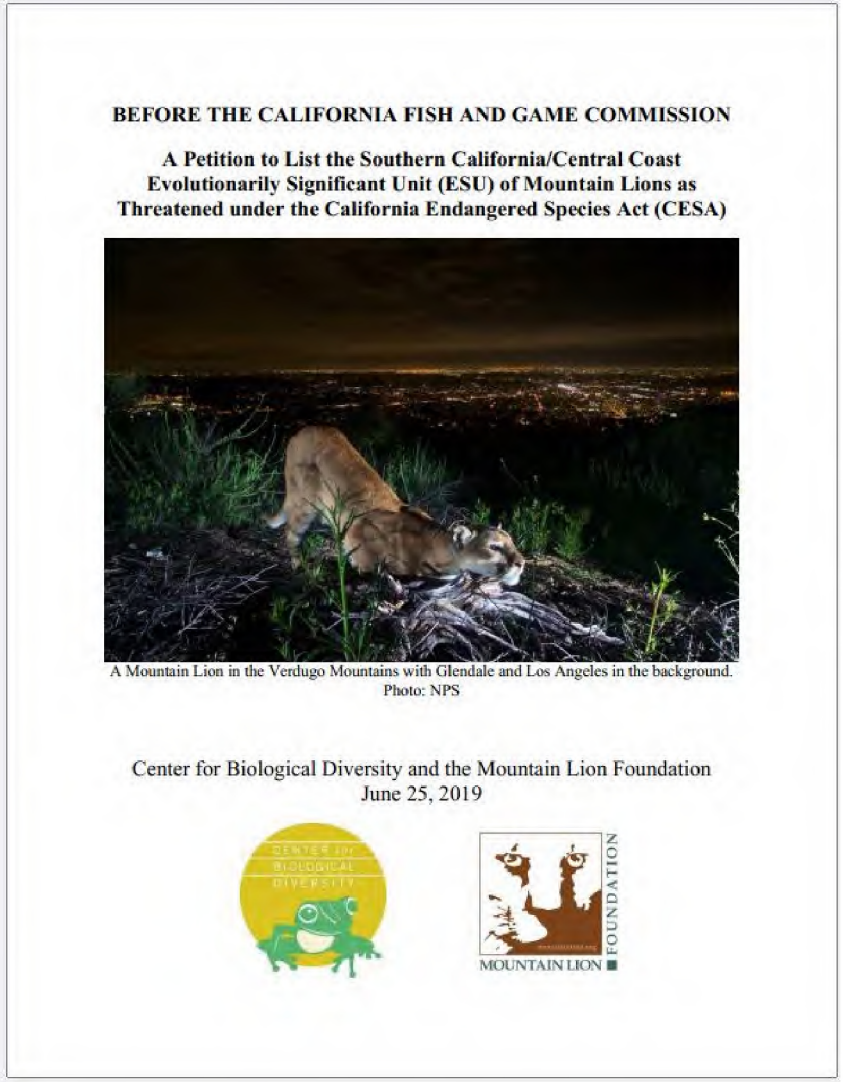






Ojai, California by Ken Lund

Petition History



BEFORE THE CALIFORNIA FISH AND GAME COMMISSION

A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA)

A Mountain Lion in the Verdugo Mountains with Glendale and Los Angeles in the background. Photo: NPS

Center for Biological Diversity and the Mountain Lion Foundation
June 25, 2019

- June 25, 2019 – The Center for Biological Diversity and the Mountain Lion Foundation petitioned FGC to list one or more Evolutionarily Significant Units of mountain lion as threatened or endangered

- April 16, 2020 – FGC found the petitioned action may be warranted initiating a Status Review

Petitioned Evolutionarily Significant Units

- A single Southern California/Central Coast ESU
- One or more populations, alone or in combination, if they comprise an ESU or ESUs
  - Central Coast – North (CC-N)
  - Central Coast – Central (CC-C)
  - Central Coast – South (CC-S)
  - San Gabriel and San Bernardino Mountains (SGSB)
  - Santa Ana Mountains (SA)
  - Eastern Peninsular Range (EPR)

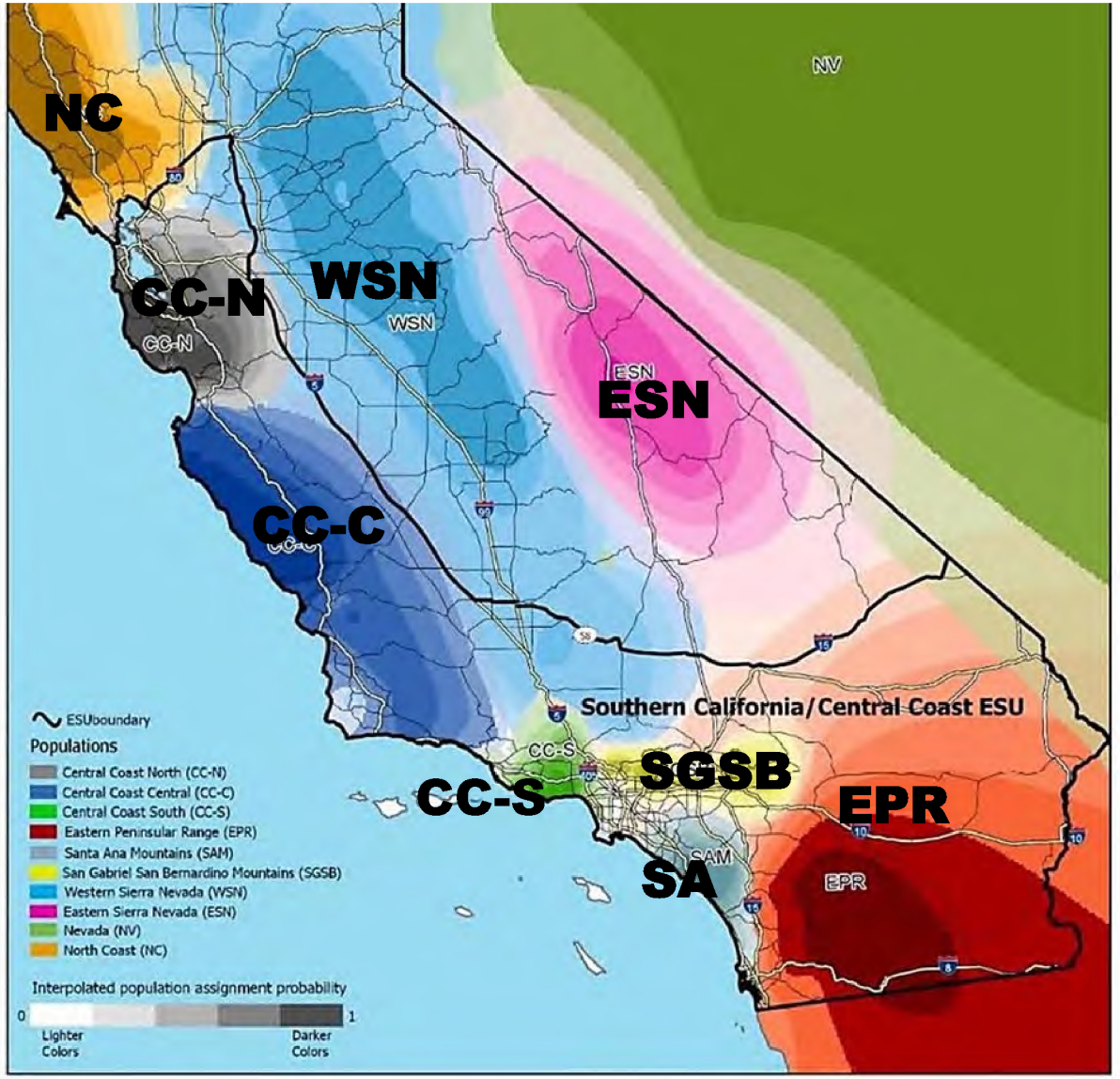


Figure derived from Gustafson et al. 2019

Mountain Lion Life History



- Large (77–143 lbs.), generally solitary carnivores
- Females breed every other year beginning at age two
- 1–6 kittens, independent at 12–18 months
- Young typically disperse tens to hundreds of miles from natal territory
- Home range size variable (16–192 $mi.^2$), varying by sex and season
- Compete with other carnivores for resources (e.g., bears, coyotes, and wolves)

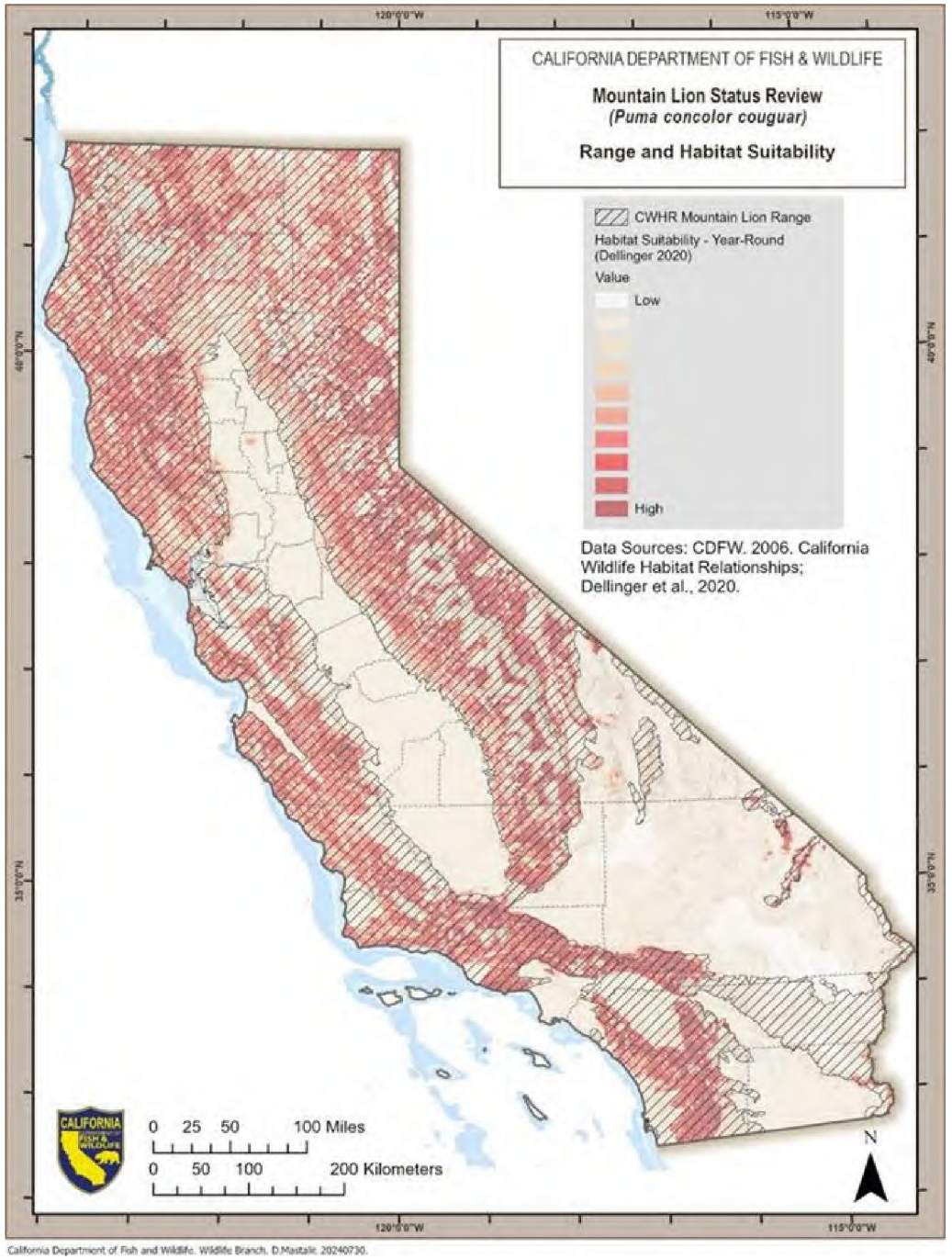
Mountain Lion Diet and Habitat

- Strongly linked to deer distribution (70% of diet in North America)
- Elk, burros, bighorn sheep, wild pigs, turkeys, domestic stock (primarily sheep and goats)
- Redwood coast to desert mountains
  - Prey
  - Cover
- Largely absent from urban and farmed areas

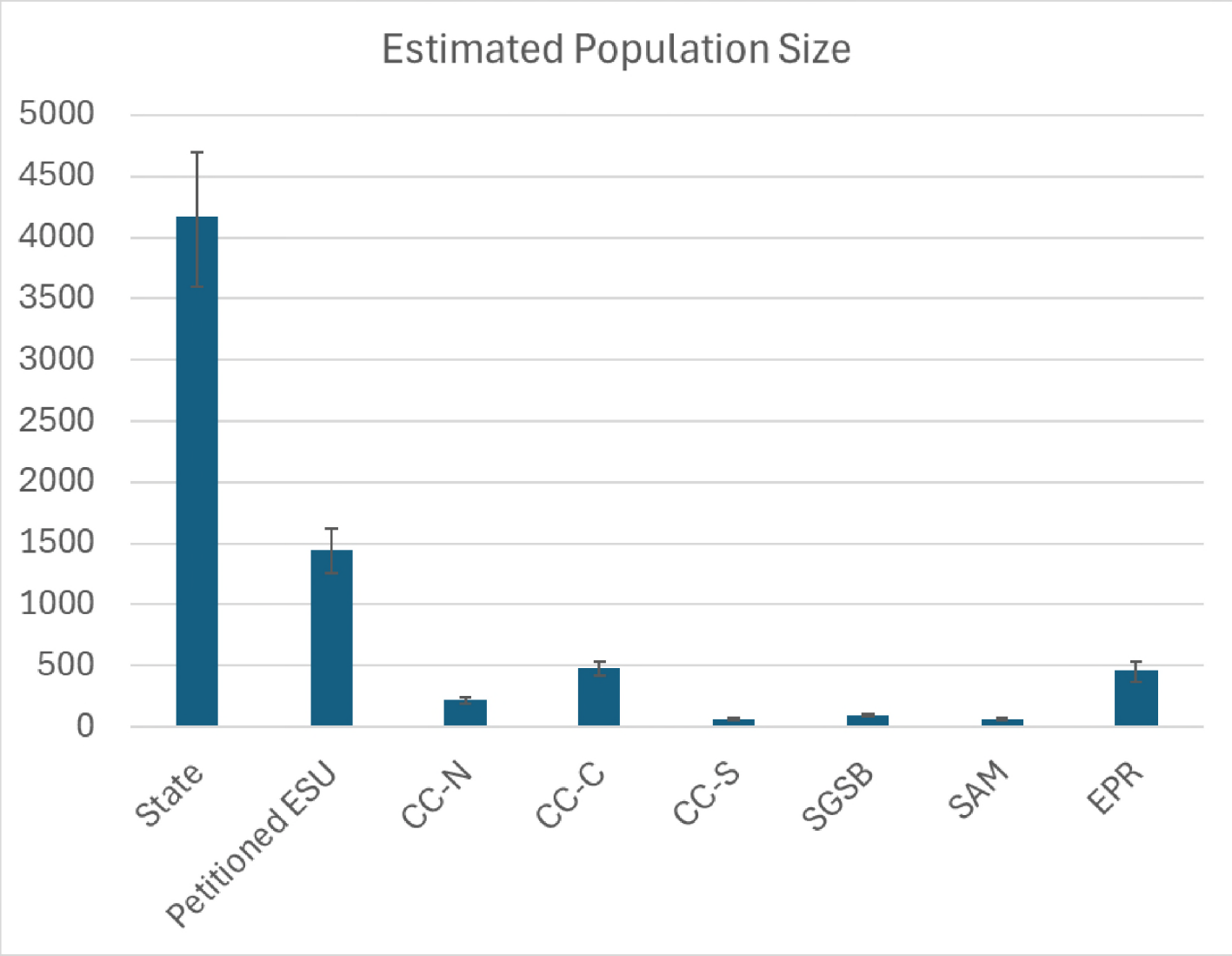


Mountain Lion Range in California

- Mountain lions inhabit much of California, especially areas of native forests, woodlands, and chaparral
- Urban and intensively farmed agricultural areas typically avoided
- Low densities in portions of the Mojave and Sonoran deserts



Mountain Lion Population



Statewide	**4,172**
Petitioned ESU	**1,449**
CC-N	**219**
CC-C	**480**
CC-S	**64**
SGSB	**94**
SAM	**67**
EPR	**459**

- Long-term trend unknown due to inconsistent methodologies
- Bountied 1906–1963
- Hunting suspended in 1972
- 1990 Proposition 117

Threats Evaluated



"Los Angeles" by Todd Jones Photography is licensed under CC BY 2.0

- Overexploitation
- Competition
- Wildfire
- Climate Change
- Diseases
- Toxicants
- Legal Removals
- **Vehicle Strikes**
- **Habitat Loss and Fragmentation**
- **Small, Isolated Populations**

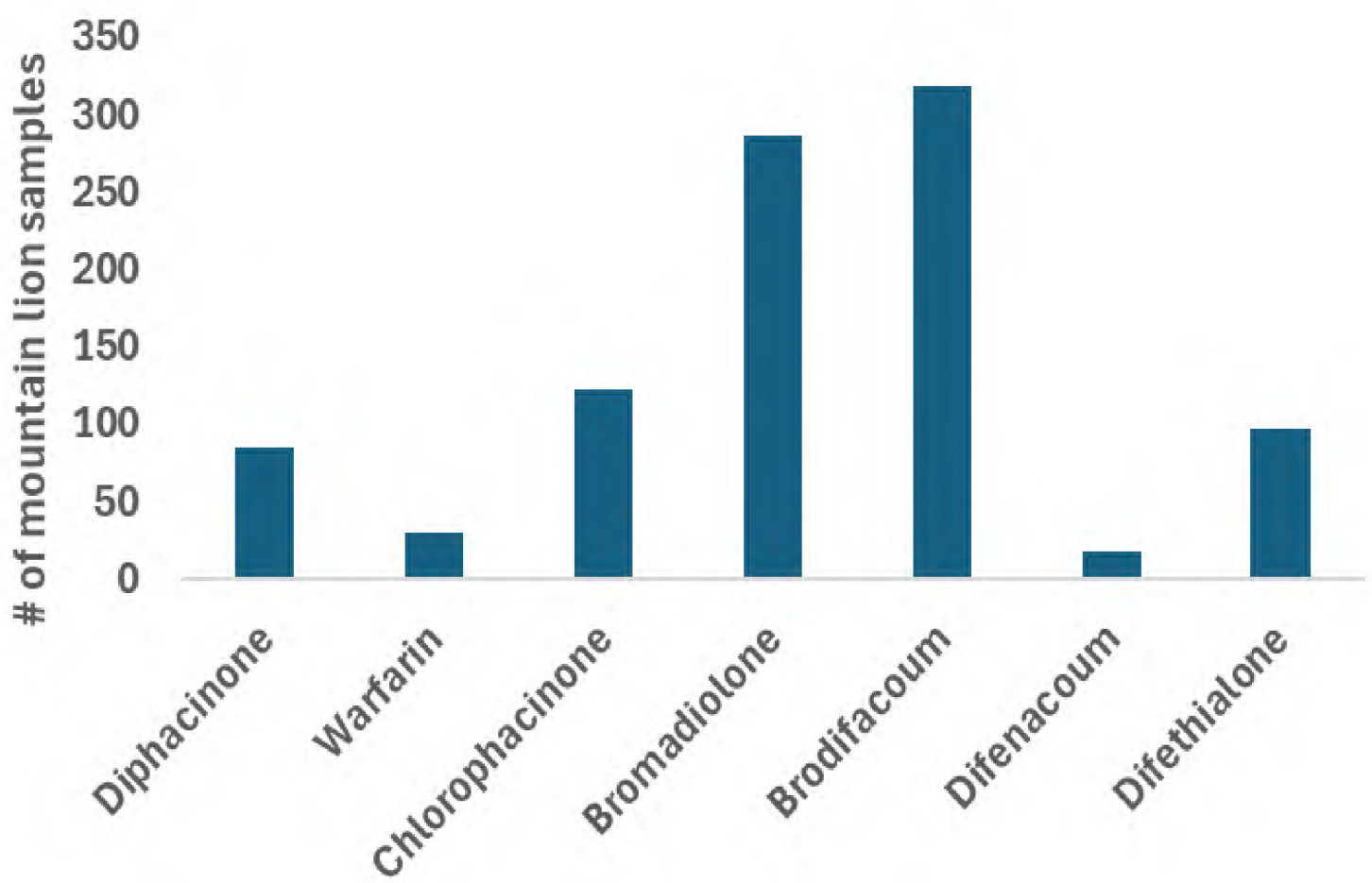
Threats – Diseases



Known mortalities by disease

- Highly Pathogenic Avian Influenza – 6
- Feline Leukemia Virus – 2
- Feline Panleukopenia Virus – 3
- Mange – 1

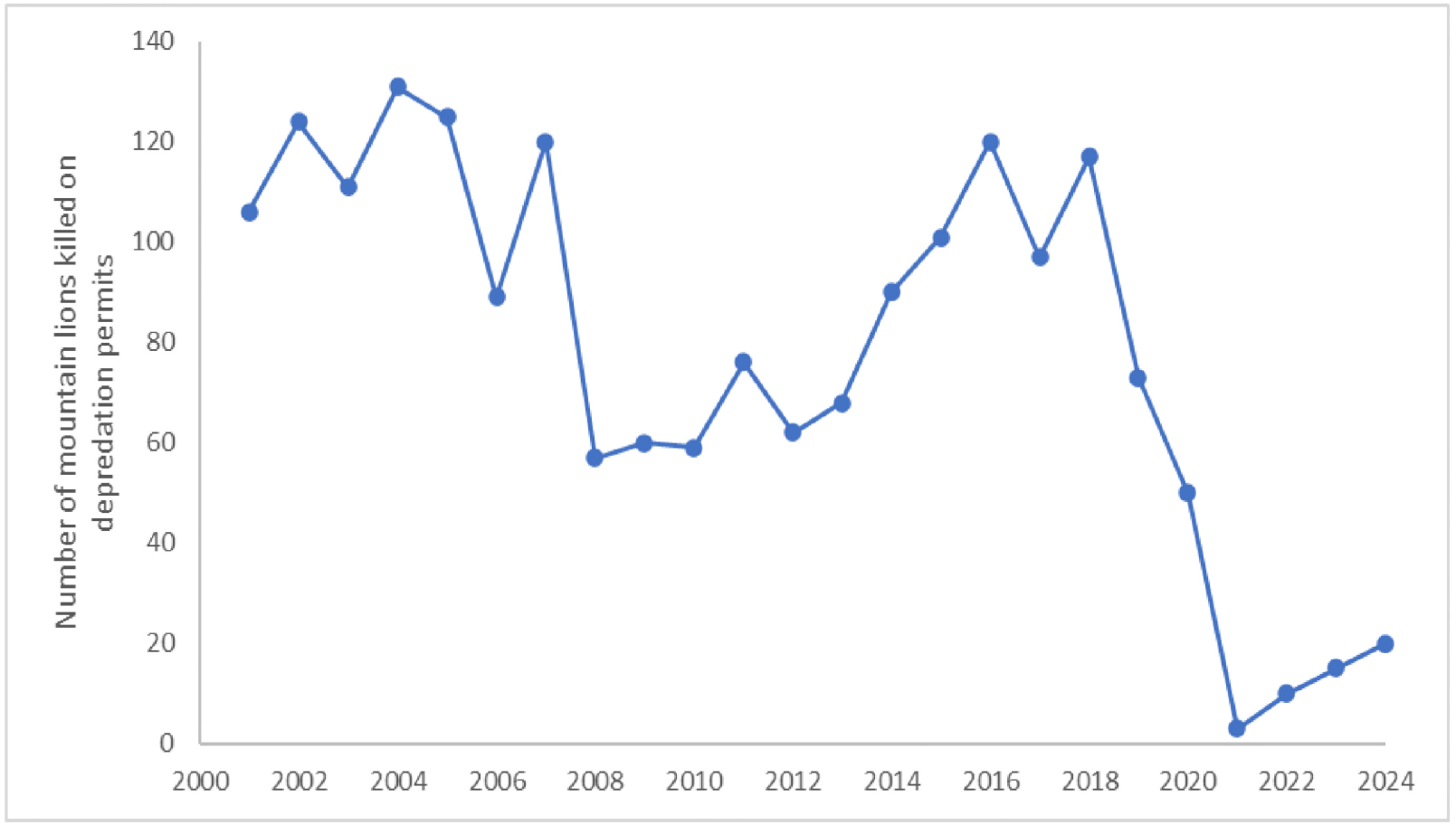
Threats – Toxicants (Rodenticides)



Presence of rodenticide residue in necropsied mountain lions 2016–2022

- Anticoagulant rodenticides(ARs) detected in 343 of 364 tested California mountain lions
- May lead to debilitation or death
- May be transferred from mother to fetuses
- At least 7 deaths in CC-S associated with ARs
- AR exposure associated with increased mange mortality

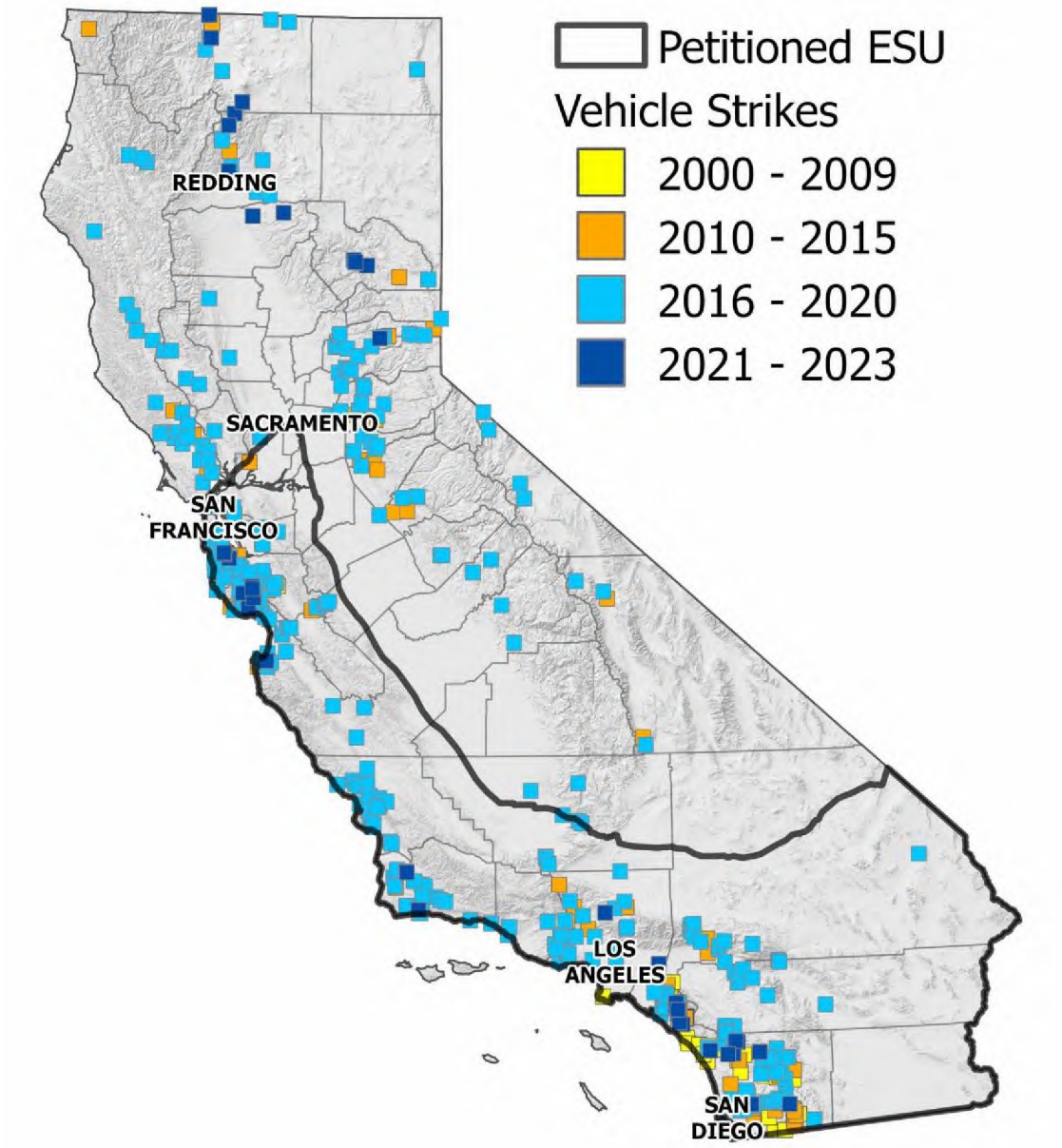
Threats – Legal Removals



Number of mountain lions killed statewide on depredation permits by year

- Leading known cause of mortality statewide 1974–2020
- 2017 CDFW revised depredation response policies to emphasize non-lethal techniques in CC-S and SA
- 2020 expanded policies statewide
- Limited removals to protect threatened and endangered bighorn sheep

Threats – Vehicle Strikes



- Currently account for most known mortalities
- 535 killed 2015–2022
- 53% of known mortalities in Santa Ana Mountains 1981–2013

Threats – Habitat Loss



Historically connected landscape has been divided over last two centuries by:

- Agriculture (yellow)
  - Central Valley
  - Imperial Valley
  - Salinas Valley
  - Oxnard Plain
- Urban (gray)
- Infrastructure – highways, canals, rail

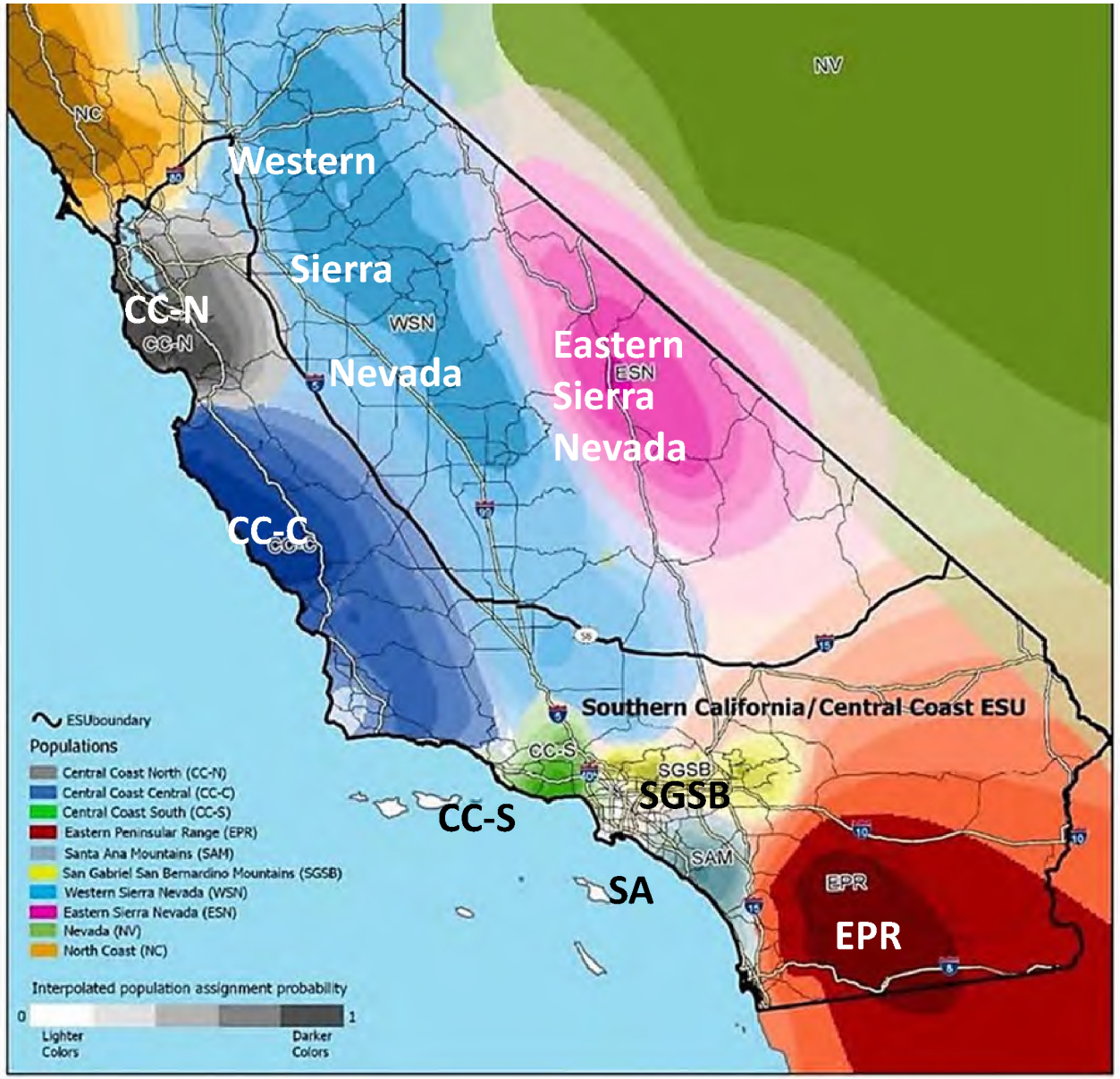
Threats – Habitat Fragmentation

Freeways, dense urban areas, intensively farmed areas, canals, and other anthropogenic infrastructure create barriers to lion movement

- Isolates populations
- Leads to inbreeding effects and reduced fitness



Threats – Habitat Fragmentation (cont.)



- EPR and SA isolated from all other California populations
- CC-N highly isolated, with limited connectivity to CC-C
- Connection to larger Sierra Nevada populations lacking for most populations

Barriers and Fragmentation – Progress

- Progress in key locations
  - Wallis Annenberg, Ventura County, Hwy 101
  - Laurel Curve, Santa Cruz Mountains, Hwy 17
- Positive land use and planning developments
  - Landscape-scale planning
  - Safe Roads and Wildlife Protection Act of 2022
  - Room to Roam Act of 2024



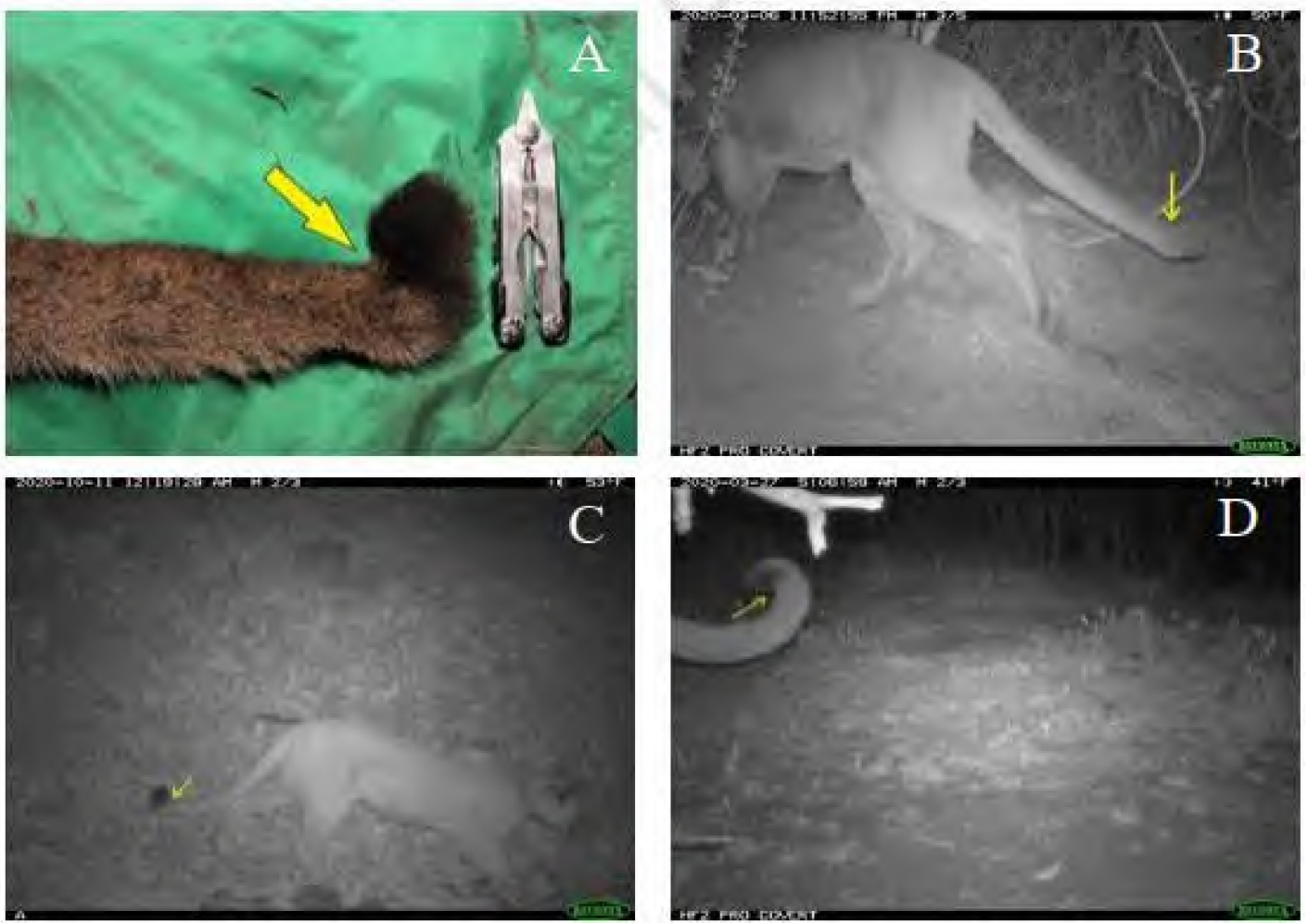
Rendering of Wallis Annenberg Liberty Canyon Wildlife Crossing. Source: Santa Monica Mountains Conservancy

Threats – Small, Isolated Populations



- Demographic stochasticity
- Environmental stochasticity

Threats – Small, Isolated Populations (cont.)



Mountain lions with kinked tails observed in the Santa Monica Mountains. Photos from Huffmeyer et al. 2022

- Genetic Drift & Inbreeding Depression
  - Loss of fitness
  - Extirpation risk
- Connection with larger Sierra Nevada populations critical

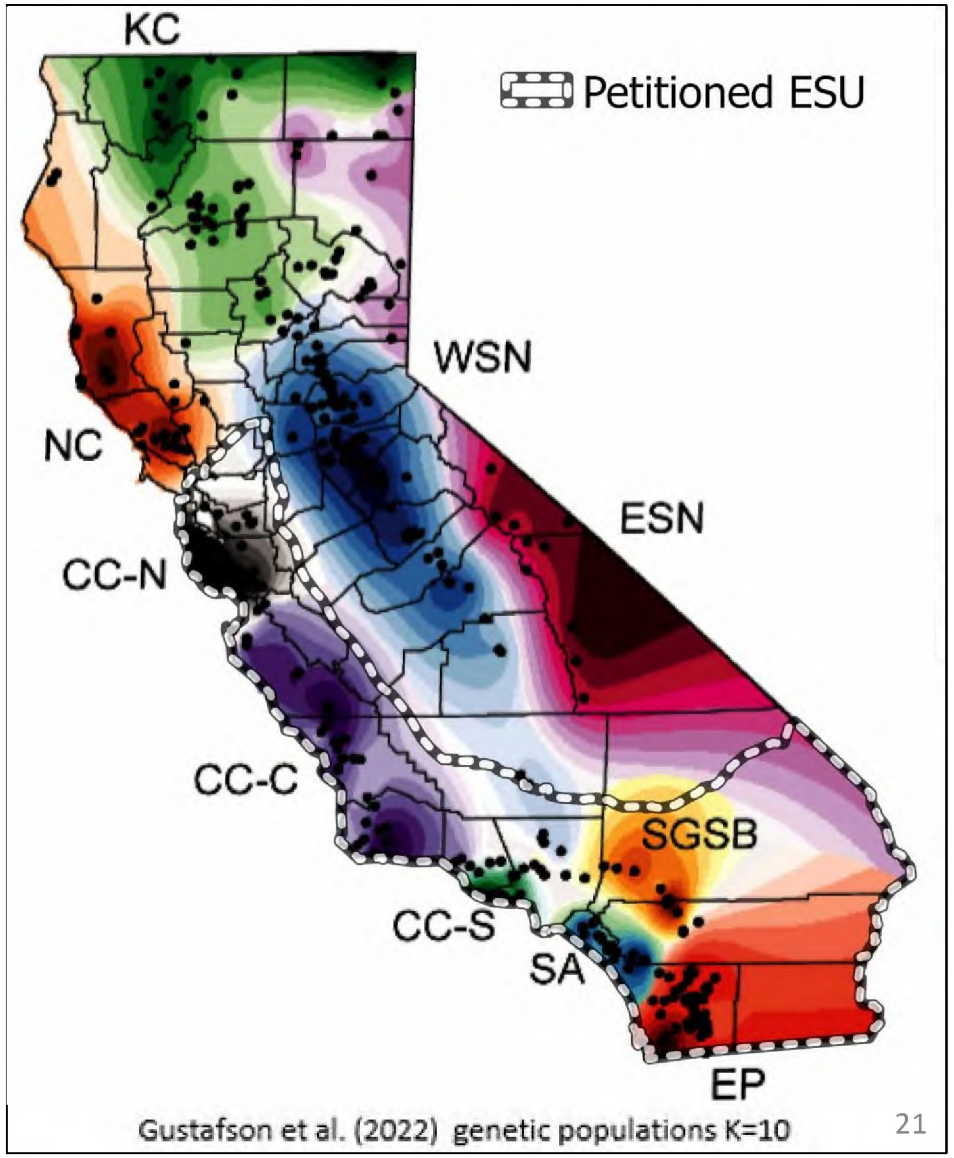
Combined Effects

- Genetic populations are substantially isolated from one another by development and barriers
- Some populations experiencing adverse impacts from inbreeding depression. No population large enough to maintain genetic adaptive capacity
- Other mortality factors such as roadkill, rodenticides, and disease compound these threats



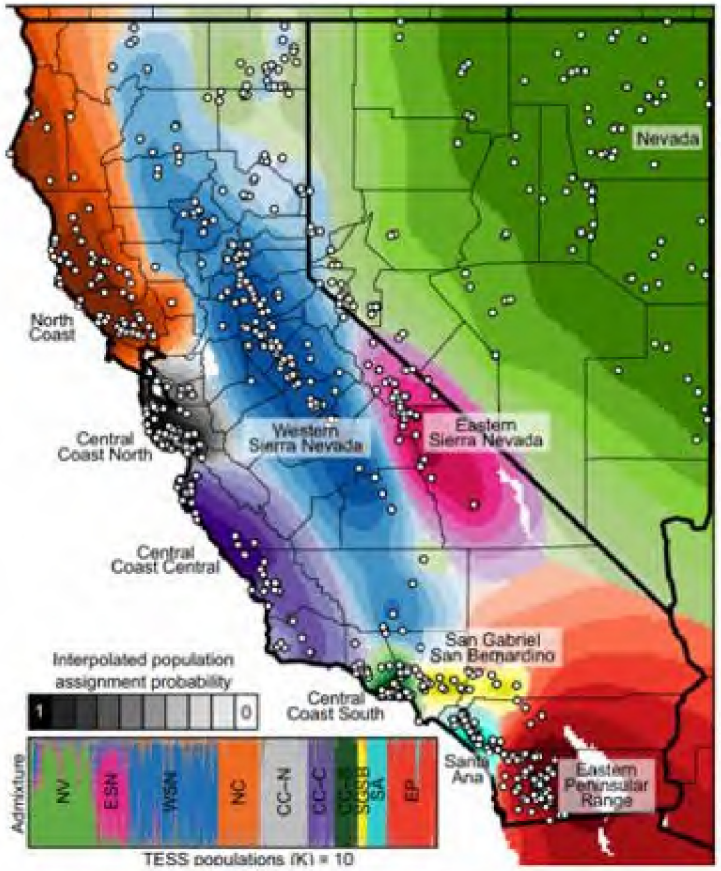
Department Evaluation of Petitioned Action

- Petitioned as one or many **Evolutionarily Significant Units (ESUs)**
- Population substantially reproductively isolated from other conspecific populations, and it represents an important component in the evolutionary legacy of the species
- CDFW determined ESU concept does not apply to the petitioned populations

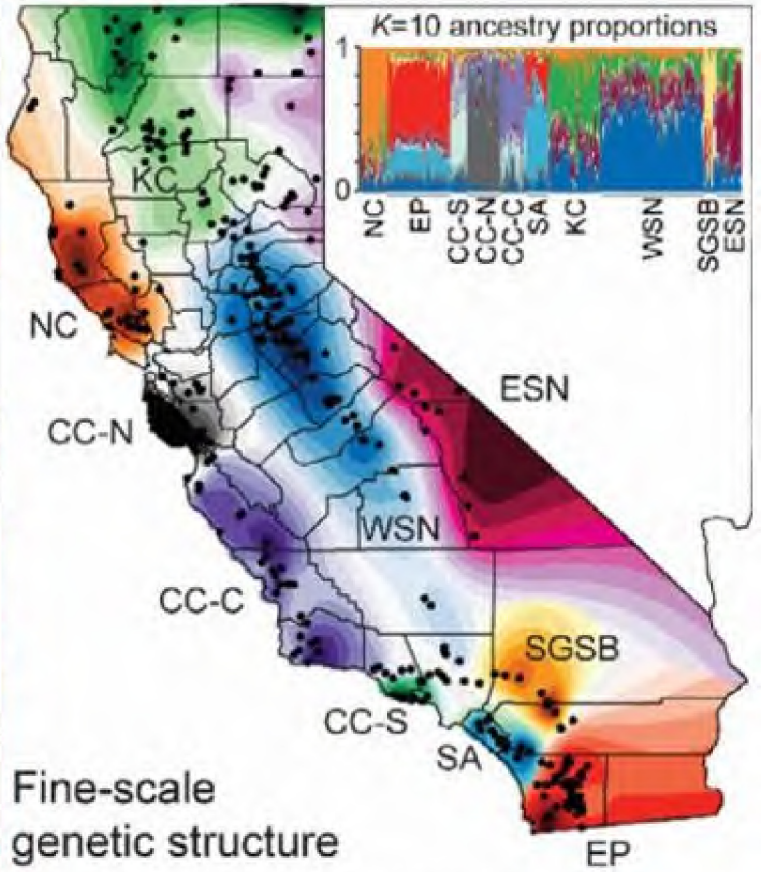


Gustafson et al. (2022) genetic populations K=10

Distinct Population Segment



Gustafson et al. (2019) genetic populations K=10

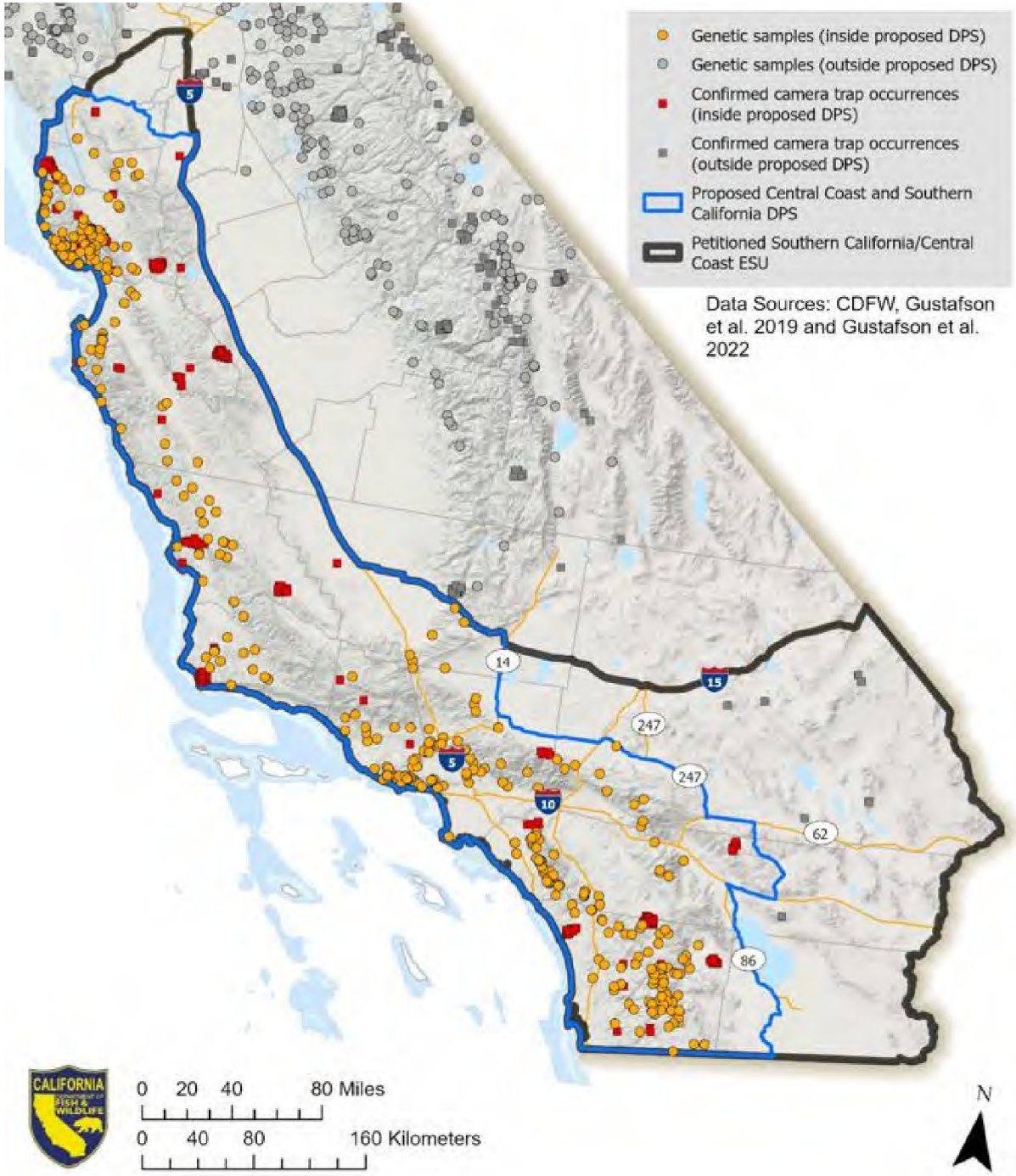


Gustafson et al. (2022) genetic populations K=10

- CDFW also evaluated petitioned populations as **Distinct Population Segments**
  - A vertebrate population or group of populations that is discrete from other populations, and is significant in relation to the remainder of the species
- CDFW concluded the six genetic populations constitute a threatened DPS

Recommended Central Coast and Southern California DPS Boundary

- Unable to assign desert mountain lions to DPS due to lack of samples
- Excluded intensively farmed areas of the Delta with no observations of mountain lions



Department Recommendation



The Department has determined that listing a Central Coast and Southern California Distinct Population Segment of Mountain Lions as threatened under CESA is warranted at this time.

Questions | Contact



Daniel Applebee
Senior Environmental Scientist – Supervisory
Wildlifemgt@wildlife.ca.gov

End of presentation

FGC@FGC

From: Dan Epperson <depperson@amadorcounty.gov>
Sent: Monday, January 5, 2026 11:45 AM
To: FGC
Subject: Mountain Lion Petition Listing Comment

TO whom it may concern,
Mountain Lions are being loved to death. They are slowing losing their fear of humans. Every year we lose a 100+ to reported vehicle strikes and likely many more due to not being noticed, dying outside the view of the public infrastructure. Depredations are at an all-time high for the very same reasons. There are likely many more that are removed for a variety of reasons. They will never be reported, including what would likely be characterized as "poaching." People that live in lion country know the rules and the risks. This is a reality that has not changed. The uptick in highly visible attacks and deaths of both human and pets is not the only driver of these characterizations.

Living in lion country I have seen the results of four reported vehcial strikes involving lions in the past 15 years. I also know of a dozen ranchers, teachers and friends that have lost pets and livestock due the lack of fear and respect for human develepment. We have created a kitchen with no means of repelling their constant wanderings.

Most states utilize the North American Model for conservation. The cats that die currently in California are unceremoniasly dumped and a handful displayed to remind us of the casulties of human interaction. Conservation utilitzes the animal for consumption and the enjoyment of the trophy for educational benefits and respect of the species in total.

Pusuing big cats for consumption on a very limited scale and collecting fees would go a long way to the preservation and managing this iconic species. Quotas could include depredation, rewards for reporting incidental take, vehicle strikes and a zone based pursuit system that would benefit humans and mountain lions alike.

We are already paying the government to do the work that conservationists would gladly pay a fee to participate in. The numbers of mountian lion deaths would not go up. The management and data collection would benefit all concerned parties.

Thank you for entertaining my thoughts,
Dan Epperson
District 2 Supervisor
Amador County
Amador County Fish and Wildlife Commssioner

FGC@FGC

From: Greg Fontana
Sent: Friday, January 9, 2026 6:22 PM
To: FGC
Subject: Mountain Lion

As far as all the data on mountain lion that people are asking about, it has been corruptly covered up. Without traditional hunting, and with this new agenda of not allowing the ranchers to use the depredation policy, SF Bay Area authorities have covered up the paper trail of a major lion problem. All so they can list the big cats as threatened, manipulate the public, receive donation money, then assume no liability as more kids are attacked on SF Bay Area hiking trails. But people are getting more aware that SF Bay Area authorities have failed themselves, their supporters, the CA voters, and taxpayers due to bad management practices.

In the late 2001's to about 2013 the lion problem was about $10,000 in livestock damage for my father in about a 7-8 year time period. Mainly on the Big Dipper in La Honda which is owned by The Mid Peninsula Regional Open Space District. The last year my father had cows there, in just a couple of months, 5 yearlings were confirmed to be killed by lions. Mid Pen had the lions chasing the cattle and eating the cattle on game cameras. When the cattle were finally chased out towards Highway 35, two yearlings were never found, and one yearling was attacked by a neighboring guard dog but survived. Mid Pen did reimburse my father for the 5 confirmed lion kills. But because of the liability issue, my father moved the cows to another smaller location and sold them a month early for another financial loss because the cattle did not gain enough weight. Being forced to abandon the grazing on Big Dipper also created a major fire hazard for the entire La Honda California area in rural San Mateo County.

Then from 2014 to 2016 the problem increased to $20,000 in livestock damage in 3 years with the problem escalating down through San Gregorio and the Purisma/Lobitos Creek Area near Half Moon Bay. At this point local ranchers were warning authorities of the escalating problem, but authorities ignored all warnings. The next year (meaning the fall 2017 and spring 2018 calving season the problem increased to $10,000 in one year with the problem escalating further into the urban communities including San Francisco and The Peninsula.

By the 2020s cougars walking through SF Bay Area neighborhoods have increased to a regular thing. People have them on cameras all the time eating house cats off peoples'

porches, dogs dragged off in broad daylight right in front of their owners, and children being mauled. The lions can no longer branch out any further. They cannot swim The Pacific Ocean or San Francisco Bay which means they are surrounded by water in 3 out of 4 directions. The freeway south near Santa Cruz is a difficult concrete obstacle. The problem will only persist at the fault of SF Bay Area authorities for harassing law-abiding ranchers for using the depredation policy to stabilize the cougar population, feed a nation, and protect our communities from catastrophic wildfires as requested by the CA voters. Under the state law it still remains that, “We The People of The State of California,” are in charge of the great cats. Not this incompetent coalition of dishonest SF Bay Area land management authorities.

January 12, 2026

RE: GREG FONTANA RESPONSE TO: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE PETITION OF THE MOUNTAIN LION IN CALIFORNA AS EVOLUTIONARILY SIGNIFICANT UNIT [ESU], OR DISTINCT POPULATION SEGMENT [DPS]

California Fish and Game Commission:

Vince Fontana, 4th generation rancher on the San Mateo County Coastal Area for more than 50 years, is my father. I grew up ranching, I saw when the mountain lion first became an issue, and watched the predations progressively increase, and the deer and wildlife decrease.

As far as all the data on current mountain lion population that people are asking about, it has been corruptly covered up. Without traditional hunting, and with this new agenda of making it almost impossible for the ranchers to use lethal depredation, the mountain lion population is devastating livestock operations. SF Bay Area authorities have covered up the paper trail of the major lion problem. All so they can list the big cats as threatened, manipulate the public, receive donation money, then assume no liability as more kids are attacked on SF Bay Area hiking trails. But people are getting more aware that SF Bay Area authorities have failed themselves, their supporters, the CA voters, and taxpayers, due to bad management practices.

From 2007 to 2013 the lion problem was about $10,000 in livestock damage for my father in about a 7-8 year time period. Mainly on the Big Dipper Grazing Ranch in La Honda, which is owned by The Mid Peninsula Regional Open Space District. The last year my father had cows there, in just a couple of months, 5 yearlings were confirmed to be killed by lions. Mid Pen had the lions chasing the cattle and eating the cattle on game cameras. When the cattle were finally chased out towards Highway 35, two yearlings were never found, and one yearling was attacked by a neighboring guard dog but survived. Mid Pen did reimburse my father for the 5 confirmed lion kills. But because of the liability issue, my father moved the cows to another smaller location and sold them a month early for another financial loss because the cattle did not gain enough weight. Being forced to abandon the grazing on Big Dipper also created a major fire hazard for the entire La Honda California area in rural San Mateo County.

Then from 2014 to 2016 the problem increased to $20,000 in livestock damage in 3 years, with the problem escalating down through San Gregorio and the Purisma/Lobitos Creek Area near Half Moon Bay. At this point local ranchers were warning authorities of the escalating problem, but authorities ignored all warnings. The next year (meaning the fall 2017 and spring 2018 calving season) the problem increased to $10,000 in one year with the problem escalating. The mountain lion sightings and various attacks, moved into the urban communities including San Francisco and the Peninsula.

By the 2020s cougars walking through SF Bay Area neighborhoods have increased to a regular thing. People have them on cameras all the time eating house cats off peoples' porches, dogs dragged off in broad daylight right in front of their owners, and children being mauled. The lions can no longer branch out any further. They cannot swim The Pacific Ocean or San Francisco Bay which means they are surrounded by water in 3 out of 4 directions. The problem will only persist at the fault of SF Bay Area authorities for harassing law-abiding ranchers for using the depredation policy to stabilize the cougar population and feed a nation. It is the ranchers who protect our communities from catastrophic wildfires, as requested by the CA voters. Under the state law it still remains that, “We The People of The State of California,” are in charge of the great cats.

The mountain lion is not threatened or endangered. It does not belong to be listed under ESA, ESU, or DPS. The mountain lion population data is far from accurate.

Sincerely,

Greg Fontana

Lucy White

January 22, 2026

RE: LUCY WHITE RESPONSE TO: CALIFORNIA DEPARTMENT OF FISH & WILDLIFE PETITION OF THE MOUNTAIN LION IN CALIFORNA AS EVOLUTIONARILY SIGNIFICANT UNIT [ESU], OR DISTINCT POPULATION SEGMENT [DPS]

California Fish and Game Commission:

This document is a response to "A Status Review of the Petitioned Southern California / Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lion (Puma concolor cougar) in California [Petition ESU]" by State of California Natural Resources Agency Department of Fish and Wildlife [CDFW | Department]. By Charlton H. Bonham, Director | California Department of Fish and Wildlife | December 2025. Report to the California Fish and Game Commission.

The CDFW Report | Petition, for Listing and Areas of mountain lion populations as Evolutionary Significant Unit [ESU] and/or Distinct Population Segment [DPS], included here as extractions in text form.

Lucy White comments will be on the left, out to the margin, bold type, not in italics, blue text. *CDFW report extracts are indented, in italics, black text, emphasis in brown.*
Attachments begin on page 116.

LUCY WHITE INTRODUCTORY STATEMENT

I am Lucy White, a graphic designer, writer, and consultant. My projects have included extensive work regarding land issues. I have worked with Vince Fontana, legacy rancher on the San Mateo County Coast, for nearly a year. First on his Proposal for a new lease on Mid Peninsula Open Space District [Midpen] Lobitos Grazing Unit, then a Protest for Midpen's decision, and several other subsequent documents. Through working with Vince Fontana and on the related projects, I have gotten very familiar with the mountain lion issue, as well as the impacts of agencies and policies on agriculture and rural lands.

The geographical area I am most familiar with, related to the mountain lion issue, is the Coastal Area of San Mateo County [SM Coastal Area], and surrounding counties, as hotbeds of mountain lion activity. The SM Coastal Area agricultural community in recent years has been significantly plagued with mountain lion predations of livestock.

California mountain lion population is exponentially increasing. The population data by CDFW is highly inaccurate and deceitful.

The petitioned Evolutionary Significant Unit [ESU] Area is a massive 38,000,000 acres, as well as the proposed Distinct Population Segment [DPS] Area 25,000,000 acres, California is 100,000,000 acres, this is a land and power grab by CDFW. CDFW trying to relate six different mountain lion populations, from six different areas, into an area and encompass all lands within the combination of the separate populations, to become the ESU Area or DPS Area, to be under the authority of CDFW. This would be destructive to California's sovereignty, integrity and rights of individuals.

This is an attempt to allow and assist an unmanaged population growth of the mountain lion, create corridors and pathways for the mountain lion to expand their territory, and subjugate CDFW regulations and policies over nearly 40% [ESU], or 25% [DPS], of California lands. The CDFW policy, regarding depredation of mountain lions, is failing the farmers, ranchers, the public, and communities across our lands.[1] This is an encroachment into urban, rural, desert areas, and mountain ranges, by mountain lions protected at a level that is designed to increase their population, with disregard for the consequences. This is an infringement on our Constitutional Rights, including that of law enforcement to protect the people.

The mountain lion is affecting our production in food supply. Due to the deer and other wildlife populations diminished from mountain lion predations, livestock are increasingly becoming a mountain lion prey target. There are also mountain lion attacks on farm animals, including llamas and donkeys, which both have long been used to help protect livestock. Sightings of mountain lions are becoming all too commonplace, on trails, in yards, towns, schools, and cities. Attacks by mountain lions on people are increasing across California, and other states. Mountain lion exploding populations have nearly exhausted their wildlife prey, they are hungry. They are destroying agriculture, our culture, communities, and endangering the public.

CDFW has attempted to get the mountain lion on lists related to the Endangered Species Act, for many years. The CDFW report states that the Evolutionary Significant Unit [ESU] has been determined to be inappropriate by the Department, as the six areas together or singularly.[2] The current attempt to get the mountain lion populations designated a Distinct Population Segment [DPS],[3] as the six areas or singularly, should not even be considered. CDFW is seeking the DPS listing through interagency means, as it did with the ESU, with the California Fish and Game Commission, to avoid the federal

standards of California Endangered Species Act [CESA], to manipulate information and data to fit their goal.

The mountain lion population is out of control. CDFW has inaccurately reported the mountain lion population statewide, and for the petitioned six populations, that in itself should discredit the report and requests.[4] Management of the mountain lion population is the answer, not corridors trafficking them, and protecting them over humans, animals, and all other wildlife. There needs to be protection of people, places, agriculture, communities, and recreation areas, above that of the mountain lion. The mountain lion is the most distributed carnivore in the US, abundant, expanding territories, and increasing in population. CDFW has the responsibility to manage all wildlife populations.

The ESU Area and DPS Area are designed to disperse mountain lions across California with massive corridor systems.[5] The Area then can further impose regulations and restrictions on the lands to promote mountain lion protection and proliferation. There is no management plan for the mountain lion population.

[1] "*It is the policy of California to conserve, protect, restore, and enhance any endangered or threatened species and its habitat (Fish & G. Code, § 2052). **If the Commission votes to list mountain lion populations as threatened or endangered under CESA, the act would prohibit take** [17]' - 17 **"Take" is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86). except under certain circumstances where both CESA and Fish and Game Code section 4800, et seq. allow CDFW to authorize take.**" CDFW*

[2] "*The **Department has determined**, based upon the best available scientific evidence, that there is **currently insufficient evidence that the mountain lions within the petitioned area and the genetic populations within the petitioned area boundary meet the criteria to be considered ESUs**." … **Nor are the mountain lions within the petitioned area sufficiently genetically or morphologically differentiated from the larger California population to suggest the presence of distinct evolutionary lineages or evolutionarily important differences**. Therefore, the **Department concludes there is insufficient scientific evidence to classify the portions of the California mountain lion population petitioned for listing as one or several ESUs.**" CDFW*

[3] "***Department did not find the petitioned area to meet the federal criteria to be considered a DPS.***" *CDFW*

[4] ***"1989 study estimated 4,100–5,700 mountain lions in the state"*** *CDFW*

"An estimated 4,000 to 6,000 mountain lions call California home, according to the most recent survey by Fish and Wildlife, conducted in 1996. " CDFW in news article

[5] *"The world's largest wildlife crossing is under construction over the 101 freeway in an attempt to reconnect mountain lion habitat." CDFW in news article*

REPORT EXTRACTIONS WITH COMMENTS BY LUCY WHITE FOLLOW:

A Status Review of the Petitioned Southern California / Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lion (Puma concolor cougar) in California" by State of California Natural Resources Agency Department of Fish and Wildlife. Report to the California Fish and Game Commission.

Executive Summary

This status review contains the most current information available on the mountain lion (Puma concolor couguar) in the central coast and southern parts of California and serves as the basis for the California Department of Fish and Wildlife's (Department) recommendation to the California Fish and Game Commission (Commission) on whether to list the species in those areas as threatened or endangered under the California Endangered Species Act (CESA).

On June 25, 2019, the Commission received a petition from the Center for Biological Diversity and the Mountain Lion Foundation that proposed the listing of the mountain lion as threatened or endangered in a portion of the state identified as the Southern California/Central Coast Evolutionarily Significant Unit (ESU). The petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing, that the Commission consider whether any of the six populations, singularly or in combination, comprise an ESU and meet the criteria for listing. On April 16, 2020, the Commission considered the petition, the Department's petition evaluation and recommendation, and comments received. The Commission found that sufficient information existed to indicate the petitioned action may be warranted and accepted the petition for consideration. The Commission's "may be warranted" decision initiated this status review to inform the Commission's decision on whether listing the petitioned ESU or any portion of the Southern California/Central Coast mountain lion population is warranted. The term "petitioned ESU" is used throughout this report. When "petitioned ESU" appears, it is intended to encompass the petitioners' proposal to list the petitioned area as a single ESU.

The premise that the mountain lion in California is threatened or endangered is false. Information provided by CDFW is not the most current or accurate information, in fact the information is absolutely inadequate. There is no relational data and/or information with substantive data. On the Coastal Area of San Mateo County [SM Coastal Area]

studies have been done with collared lions, motion activated cameras in a systematic grid formations,* and various data collection resources including extensive use of satellite technology,* by UC Santa Cruz Puma Project (UC Berkeley…, studies echoed throughout California), Bay Area Puma Project, and CDFW | Department, none of which is included in the Department Report.

** ..grid of motion-activated cameras (camera traps using motion and heat sensors) to study mountain lions and other wildlife, employing internationally recognized "Wildlife Picture Index (WPI) method to understand the species abundance, behavior, habitat use, and connectivity across the Santa Cruz Mountains, supplementing the GPS-collared lions to create population estimates and monitor impacts of human activity. Camera data includes collared and uncollared mountain lions – AI search*

*** the satellites are a key tool, working with GPS and radio telemetry – AI search*

CDFW is deliberately using outdated information and study methods. CDFW is not revealing the current data derived from sophisticated data resources.

*"This status review contains the **most current information available** on the mountain lion (Puma concolor couguar) in the central coast and southern parts of California and **serves as the basis for the California Department of Fish and Wildlife's (Department) recommendation** to the California Fish and Game Commission (Commission) on **whether to list the species in those areas as threatened or endangered under the California Endangered Species Act (CESA)…"*** **CDFW using constant or declining mountain lion population data, "*1989 study estimated 4,100–5,700 mountain lions in the state*", using only scat samples to extrapolate the populations, are deceitful and irresponsible.**

Agriculture, on the SM Coastal Area, is being devasted by mountain lion predations. Mid Peninsula Open Space District, along with and California Department of Fish and Wildlife, have not identified mountain lion predations of cattle, farm animals, and domestic pets, as kills by mountain lion, even though there is evidence to show that they are. The CDFW report is insufficient in accurate information, and lacks the use of sophisticated data.

*"The **petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing.**"* **CDFW knows that the mountain populations do not qualify for listing as threatened or endangered under the Endangered Species Act. The Commission stated in**

April of 2020, that the populations do not warrant the listing as ESU. The contrivances of bunching six populations, and/or singular or in combination, to structure the ESU, and/or DPS, are far reaching and ludicrous.

▶ **ATTACHMENT A | News Articles Related to Mountain Lions | Page 116**

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

▶ **ATTACHMENT C | California Department of Fish and Wildlife Petition Maps | Page 209**

▶ **ATTACHMENT D | Mountain Lion Camera Captures | Page 211**

▶ **ATTACHMENT E | Mountain Lion Predations | Page 218**

> *2015: CDFW formally established the Mountain Lion Conservation Program to coordinate statewide research, species health, population monitoring, and collaboration with external collaborators.*
>
> ***2020: The Fish and Game Commission listed mountain lions as a candidate species under the California Endangered Species Act within a proposed evolutionarily significant unit (ESU) in the central coast and southern California.*** *CDFW is completing a species status review within the proposed ESU. – document "Mountain Lions in California" / Wildlife Health Lab*
>
> ***Species Description, Biology, and Ecology***
>
> ***Mountain lions are large felids that are primarily solitary, territorial, and occur in low density. In California their primary prey are deer, and they have large home ranges often comprised of multiple vegetation types including riparian, chaparral, oak woodlands, coniferous forests, grasslands, and deserts, and occur from near sea level to high elevations. Mountain lions reach sexual maturity at two to four years, and females care for their young for the first one to two years without help from males.***

On the SM Coastal Area the deer population has been diminished by 80 to 90%. The beautiful rolling hills of the rangelands used to be scenically enhanced with deer and deer herds on a consistent basis. Today, it is rare to see a deer herd, or even sighting few or single deer. The many wildlife creatures that appeared in the forests and roaming hills, or the community, have essentially disappeared. No fox in the meadow, no

raccoon in the garbage, no rabbit in the gardens. Those wildlife populations have been decimated by the mountain lion over population. This unbalanced focus on protecting only the mountain lion, is a dereliction of duty by CDFW. Biodiversity is being replaced by the mountain lion.

Population Structure

Mountain lion populations in California are genetically structured (differentiated) by natural barriers such as mountain ranges, water bodies, and deserts, as well as urbanization and the proliferation of highways and interstates. In combination these barriers to movement have facilitated the creation of six distinct genetic populations within the petitioned ESU. Roughly, these are:

1) Central Coast North (CC-N), including the Santa Cruz Mountains and San Francisco Bay Area counties to the east;

2) Central Coast Central (CC-C), generally the coastal mountains from southern Monterey Bay to Ventura County;

3) Central Coast South (CC-S), including the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills;

4) San Gabriel and San Bernardino Mountains (SGSB);

5) Santa Ana Mountains (SA); and

6) Eastern Peninsular Range (EPR), including the mountains of San Diego County, extending east possibly as far as the Colorado River and the Arizona border, and bounded on the south by the border with Mexico.

These genetic populations experience varying levels of isolation and gene flow, and physical signs of inbreeding have been documented in the CC-S, SA, and EPR genetic populations. Available genetic information reveals some level of differentiation between these genetic populations.

The proposed - *"Mountain lion populations in California are genetically structured (differentiated) by natural barriers"* - **Those mountain lions should be managed in their separate areas.**

The petitioned ESU and/or DPS are designed land / power grabs which use six areas in California to create an expansive field of influence. "*The mountain lion population within the petitioned area is significant due to its markedly different genetic characteristics, and the very large, geographically diverse area that it occupies,* ***comprising nearly one quarter of California's land area.***" **Lumping these segregated areas into one massive area is a huge abuse of power. There is no consideration to what affects the mountain lion population has on and between these areas, other than to expand the mountain lion territories. Inclusive are urban area, agricultural lands, and other developments, creating conflicts which are harmful and dangerous.**

▶ ATTACHMENT C | California Department of Fish and Wildlife Petition Maps | Page 209

Status and Trends

Significant changes in mountain lion distribution have occurred within the petitioned ESU due to habitat loss and fragmentation from land use changes that began in the late 1700s and continue to the present. ***Agricultural, residential, and industrial development, including the creation of modern transportation and infrastructure networks, has resulted in significant habitat fragmentation and barriers*** *to movement in portions of the petitioned ESU. Mountain lions were historically controlled to protect livestock, and the Department paid a bounty for mountain lions from 1906 to 1963. The size of the California mountain lion population has been estimated periodically. Biologists estimated there were 600 mountain lions in California in the mid-1950s during the bounty period. By 1976, the population was estimated to be 2,400. A* ***1989 study estimated 4,100–5,700 mountain lions in the state.*** *In 1990, the voters of California enacted Proposition 117, known as the California Wildlife Protection Act of 1990 and codified as Fish and Game Code section 4800, et seq., which prohibited take of mountain lions except in certain limited circumstances. The* ***Department's current and most rigorous statewide population estimate to date is 4,172 (95% CI 3,645–4,750) mountain lions, including dependent young. The current estimate should be considered a refinement of earlier estimates and should not be interpreted to mean the actual population*** *has declined since 1989. There are an* ***estimated 1,449 (95% CI 1,272–1,638) mountain lions within the petitioned area.***

Department is dating back to the 1700s to establish habitat loss and fragmentation!!! That is simply preposterous.

The current estimate CDFW is fabricated. The 600 mountain lions in the mid 1950s, became 2,400 in twenty years, in 1976, multiplying 4-fold. Then in thirteen years later, to 1989, essentially doubled to 4,100 - 5,700. Those were years when hunting and depredations were actively used by CDFW, and allowed for the protection and safety of livestock, the people, and other wildlife. Proposition 117, California Wildlife Protection Act, Fish and Game Code section 4800, prohibited take of mountain lions except in certain circumstances. It is entirely illogical, if not impossible, for the mountain lion population to be the same or less than that in 1989. Throughout News Articles in Attachment A, CDFW continues to refer to the 4,000 to 6,000 population of mountain lions in California year after year.

The CDFW report states that there is "*approximately 4,172 (95% CI 3,645–4,750) mountain lions in the state.*" Derived from scat sampling of DNA. "*3. Status and Trends in California 3.2 Population Size The Department recently developed a statistically rigorous estimate of the statewide mountain lion population size using **DNA from the scats of 335 individual mountain lions collected in 2017–2022 from 13 study sites distributed widely across the state**. The detection histories of individually identifiable mountain lions from these samples were used to estimate the statewide population size using a Bayesian Spatial Capture Recapture (SCR) model. SCR includes a spatial scale parameter (e.g., how the probability of detection of a mountain lion varies over its home range) that is critical for accurately scaling estimated abundances to density and population size (Royle et al. 2013). **Using this method, the Department estimates there are approximately 4,172 (95% CI 3,645–4,750) mountain lions in the state.** This population estimate includes all age classes of mountain lions, including dependent young. The estimate represents an average annual number of mountain lions over a recent 5-year period (i.e., 2017–2022)." CDFW is withholding the real data. CDFW works in collaboration with Bay Area Puma Project and UC Santa Cruz Puma Project related to the local area, of course they have statewide sophisticated data resources. CDFW's scat method and results 2017-2022, with approximately 4,172 mountain lions in the state is unacceptable, improbable, and irresponsible.**

▶ **ATTACHMENT A | News Articles Related to Mountain Lions | Page 116**

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

News Articles Follow with CDFW population estimates in mountain lion news.

News Article | SF Gate February 1, 2023

https://www.sfgate.com/bayarea/article/bay-area-mountain-lion-attack-17757602.php

Bay Area boy attacked by mountain lion was 'fighting for his life'

A 5-year-old California boy was discharged from the hospital after surviving a terrifying mountain lion attack …**An estimated 4,000 to 6,000 mountain lions call California home, according to the most recent survey by Fish and Wildlife, conducted in 1996.**

News Article | SF Gate Feb 15, 2023

https://www.sfgate.com/bayarea/article/california-mountain-lion-tears-away-dog-17786091.php

Mountain lion tears dog on leash away from its owner in California neighborhood

Mountain lions are generally shy animals that avoid humans. The size of the state's cougar population is unknown. A **1996 Fish and Wildlife study** found **4,000 to 6,000** mountain lions live in the state. **The agency started a new population count in 2014 and it has not been completed.**

News Article | SF Gate Oct 5, 2022

https://www.sfgate.com/centralcoast/article/california-mountain-lion-population-growing-17486279.php

'They're out there': Why California mountain lion sightings are on the rise

In the Bay Area, a mountain lion strolled through the Bernal Heights neighborhood in San Francisco in 2021, followed by another sighting at a Daly City school in 2022. **There are so many recent sightings that the Bay Area Puma Project, in partnership with the UC Santa Cruz and the Department of Fish and Wildlife, has an active map with the places where mountain lions have been spotted in recent weeks.**

Instead, it's the human inhabitants of California who have been the aggressors. **California shelled out more than half a million dollars in bounties for 12,461 mountain lions, decimating the population for sport from 1907 to 1963, the Los Angeles Times reported**.

Mountain lions are generally shy animals that avoid humans. The size of the state's cougar population is unknown. A **1996 Fish and Wildlife study** found **4,000 to 6,000** mountain lions live in the state. **The agency started a new population count in 2014 and it has not been completed.**

News Article | SF Gate March 21, 2022

https://www.sfgate.com/news/article/Video-shows-mountain-lion-at-pool-17018569.php

Video shows mountain lion wandering around California family's swimming pool

"If you think about it from this perspective, mountain lions have the largest range of any terrestrial mammal in our hemisphere

News Article | SF Gate Jan 10, 2022

https://www.sfgate.com/news/article/Mountain-Lion-seen-near-Bay-Area-school-16765066.php

Mountain lion seen near Bay Area school

SF Gate By **Andrew Chamings**, *Editor-at-Large* Jan 10, 2022

A mountain lion sighting in Daly City on Monday afternoon prompted police to warn people in a residential neighborhood to use caution when leaving

Mountain lions, also known as cougars or pumas, are native to California. **California Fish and Wildlife estimate that 4,000 to 6,000 mountain lions live in the state**, though there have been only 16 verified mountain lion attacks on people in California since 1890, six of them fatal.

News Article | SF Gate May 26, 2021

https://www.sfgate.com/bayarea/article/Mountain-lion-breaks-into-SF-Bay-Area-house-16204370.php

Mountain lion breaks into SF Bay Area house filled with taxidermy trophy heads

Mountain lion sightings aren't uncommon in California. The **Department of Fish and Wildlife estimates 4,000 to 6,000 mountain lions live in the state.**

▶ **ATTACHMENT A | News Articles Related to Mountain Lions | Page 116**

See full articles from above extractions, along with other articles related to mountain lions

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CDFW statement, "*The current estimate should be considered a refinement of earlier estimates and should not be interpreted to mean the actual population* has declined *since 1989…*" This statement is knowingly and deceptively written to avoid stating the true population of the mountain lion. That in itself should disqualify the petition from having any merit. CDFW, along with Mid Peninsula Open Space District, Santa Cruz Puma Project, and other associated agencies, have all suppressed data and information regarding the mountain lion population. Mountain lion predations of livestock, farm animals, and pets have also been suppressed. Most mountain lion predations of livestock, certainly in the SM Coastal Area, are not reported as mountain lion kills.

Santa Cruz Puma Project got an Agreement with Midpen for a five year mountain lion study, for $500,000, the mountain lion population was the first item in the study. The five years came and went, and a population study was not provided. Puma Project got a six month extension and $100,000 [at twice the fee], to produce their first report and management plan. That is $600,000 and the first reports may be available in May 2026. Interestingly all the data and information are being withheld, during the final efforts to classify the mountain lion as threatened or endangered.

Mid Peninsula Regional Open Space District Minutes July 22, 2020 *"Motion: Director Riffle moved, and Director Cyr seconded the motion to authorize the General Manager to enter into* ***an Agreement with the University of California, Santa Cruz for a base contract price of $500,000 to conduct a mountain lion collaring study for five years to assess the lion population and movement,*** *provide annual updates and research findings at public meetings, and develop a site- specific management plan for reducing potential human- mountain lion conflicts in high risk areas."* **The Minutes state Santa Cruz Puma Project was to develop a management plan to reduce human-mountain lion conflicts. Puma Project is working on mountain lion**

behavior modification to make them fear humans, that is their only method of management.

Mid Peninsula Regional Open Space District Minutes April 9, 2025 "*In year four, the Puma Project treated three individual mountain lions using implementable and humane* ***behavioral modification protocols approved by the California Department of Fish and Wildlife and the Institutional Animal Care and Use Program…*** *To date the* ***Puma Project has treated eight mountain lions using behavioral modification methods. A total of at least ten individuals will need to be treated to determine if this approach effectively alters mountain lion behavior.*** *The improved dataset will allow for greater inferences into the assessment of human-mountain lion interaction factors.* ***The additional 6-month extension*** *will allow for analysis of new data, publication of results, and the* ***development of the final Human-Mountain Lion Interaction Management Plan.***

The results of the study are expected to provide a new source of rigorous science-based data and findings for land managers across the State of California *to utilize in identifying and implementing new, effective* ***strategies for reducing negative human-mountain lion interactions and therefore further protect and sustain regional mountain lion populations.*** *The results of the study are expected to be published in peer-reviewed scientific journals to more broadly contribute toward the current understanding of mountain lion behavior in relation to human activity."*

Attachment 1 | [UC Santa Cruz Puma Project] Annual Report 2024

"Behavioral modification involves exposing an animal involved in an unacceptable behavior to a negative stimulus in an attempt to reduce or eliminate that behavior. For our purposes, mountain lions coming into close proximity or approaching park visitors is the unacceptable behavior. SCPP is using behavioral modification techniques to help mountain lions associate human voices with negative stimuli so as to encourage avoidance of recreationists.

In 2024, SCPP successfully treated three collared mountain lions with behavioral modification techniques following a field protocol that was finalized in year two of the study. ***This protocol includes a combination of trained dogs, human voice playbacks and non-injurious projectiles.*** *We treated male mountain lion 144M on April 16, 2024 in La Honda Creek Open Space Preserve. We treated male mountain lions 130M and 147M off District properties on May 7, 2024 and November 15, 2024, respectively.* ***During each treatment, the mountain lion was pursued by trained hounds into a tree where it was exposed to a human voice recording, played at 80dB and marked with between one to five paintball projectiles.*** *Mountain lion movement behavior*

was monitored before, during and after treatment at five-minute temporal resolution. ***These data are stored on each individual's GPS collar and will be analyzed when all collars are recovered.*** *To-date, eight individuals have been treated following this protocol and six collars have been recovered."*

"Conclusions and next steps: *…The management plan will provide actionable strategies for minimizing human-mountain lion conflict, such as preserve access modifications, education and outreach, habitat modifications along trails or mountain lion behavioral modifications. The final management plan will aim to reduce potential conflicts between preserve visitors and mountain lions and will contribute to a better understanding of human-mountain lion coexistence in multi-use landscapes."*

CDFW working with Santa Cruz Puma Project and Midpen to create a management plan for the mountain lion, and human-mountain lion interactions, is limited and questionable. "…*behavioral modification protocols approved by the California Department of Fish and Wildlife and the Institutional Animal Care and Use Program… During each treatment, the mountain lion was pursued by trained hounds into a tree where it was exposed to a human voice recording, played at 80dB and marked with between one to five paintball projectiles."* It's possible that this behavioral modification protocol could make the mountain lion more aggressive toward humans. No two mountain lions are the same, and results from the same protocol will vary from lion to lion. Expecting all lions to change their natural behavior, even if the protocol had some affect – good or bad - there is no way to treat a significant number or all mountain lions. Agency personnel may project a certain type of character that appears to be offensive to the mountain lions from behavioral modification treatments, but people on trails, in parks, on their property, in rural or urban areas, may just seem like a food source to a hungry mountain lion. A treated lion might see the person as their enemy, and prey on them when they are vulnerable.

Midpen is putting trails throughout the grazing lands in the SM Coastal Area, where the hungry mountain killing livestock [due to deer population extremely diminished], and where Midpen is inviting the public. Then add in CDFW depredation policy. The effects on our food supply are significant. People and animals are all more endangered. This is the creation of conflicts from allowing the mountain lion population to get out of control, from focusing only on protecting the mountain lion, and from not protecting other wildlife, farm animals, pets, ranchers and the public. Santa Cruz Puma Project now calls their $600,000 study the Human-Mountain Lion Interaction Study. The current trajectory of these agencies' actions and management are increased conflicts and endangerment.

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Threats

Primary threats to mountain lions in the petitioned ESU include continued habitat loss and isolation of small populations due to expanding human infrastructure. Especially in Southern California, distinct genetic populations inhabit mountain ranges that are surrounded by human development or desert, such that dispersal to and from those ranges is significantly constrained by the presence of freeways and urban areas. From 1974 to 2020, the top sources of mortality throughout the state were removal in response to livestock or property damage and vehicle strikes. These mortality sources exceed "natural" causes of mortality. However, in recent years the number of mountain lions killed for depredating livestock or pets has dropped sharply (as a result of the Department's ongoing efforts to balance Proposition 117's conservation purpose and emphasis on the use of nonlethal methods with the need to provide a reasonable approach to depredation). Rodenticides and infectious disease kill relatively few mountain lions outright but can weaken individuals and make them less resilient to other threats. Recent intense wildfires have killed animals in already small, isolated populations (e.g., the Santa Monica Mountains) and may temporarily reduce habitat suitability. Human infrastructure that challenges or prevents gene flow between the genetic populations is a major concern in much of the petitioned ESU. Malformed sperm and/or kinked tails have been recorded in the SA, EPR, and CC-S genetic populations. Isolation and inbreeding increase the chance of extinction and the SA genetic population has a 16–21% chance of extirpation over the next 50 years if current low levels of gene flow continue.

Although the cumulative population estimate for the petitioned area is over 1,400 animals, the population is not continuous. Instead, it is broken into six genetic populations with varying levels of connection to adjacent populations. Each of the genetic populations has a low or very low effective population size (Ne; the estimated number of individuals in a population that participate in producing the next generation, which is smaller than the estimated population size), with estimates ranging from 3 to 57. None of the six genetic populations has an estimated effective population size of 100 or more, which would help avoid negative impacts from inbreeding in the long term at the population level. Improved connectivity is needed to increase gene flow, mitigate

the negative impacts of isolation, and reduce the risk of localized extirpations from a variety of threats.

The following statement is curated to meet the depth of deception. "*However, in recent years* ***the number of mountain lions killed for depredating livestock or pets has dropped* *sharply."* The reasons mountain lions have not been depredated for their predations of livestock and pets, is due to CDFW not identifying the predations as mountain lion kills – when in fact in most cases they were. CDFW not responding to the kills site - stating it had been too long or some other response. CDFW only going to a predation site if a depredation permit is requested. CDFW permit for depredation policy, the three-phase permits, with the first two being non-lethal, and only the third lethal, basically makes it almost impossible to depredate a mountain lion. CDFW has a law enforcement division which should to be responsive and proactive of depredations based on circumstances. Lack of DNA sampling does not allow for identifying the aggressive lions and/or repeat predators. CDFW keeps information and reports out of the news and public access as much as possible.**

Meanwhile the mountain lion is preying on livestock and pets at an unprecedented rate. Vince Fontana, legacy rancher on the Coast, had a cow killed in June, July and August 2025, basically one every 30 days, on his Midpen Lobitos lease.

CDFW now refuses to inspect Midpen predations. Fontana also had a predation on a private lease in November, Fontana called CDFW, he did get a Hazing Permit [good for 8 days], for a mountain lion predation. Fontana assisted a rancher in Half Moon Bay on a calf predation. CDFW went out, but was refusing to confirm it was predation by mountain lion, until Fontana made the inspection irrefutably predation by mountain by exposing multiple lion multiple kill traits. A Hazing Permit was issued.

The mountain lion in California is neither threatened, nor endangered as a species. The population CDFW states, "*Although the cumulative population estimate for the petitioned area is over 1,400 animals, the population is not continuous."* This is highly questionable. The populations have been exploding. It seems that CDFW is depending on trafficking mountain lions out of the densely populated areas through corridors, rather than manage the populations.

The petition for EUS and/or DPS broad swaths of area, appear to be an effort to expand the population of the mountain away from the areas where their populations are exploding, and traffic them to other areas, many through urban areas, to other mountain

ranges, and even desert areas. The mountain lion in these California areas do not have a predator. They are the powerful predator which has devastated the wildlife and livestock populations on the SM Coastal Area, see Attachment D and Attachment E related to Vince Fontana's lease of Lobitos Grazing Ranch [Unit], Midpen's property. CDFW and Midpen, have not reported one of the fifteen predations experienced by Vince Fontana as predations by mountain lion. Vince Fontana has the "VINCE FONTANA LEGACY RANCHER CHALLENGE TO MIDPEN," related to the CDFW and Midpen reports and decisions, not reporting the predations by mountain lions. Nearly all information on mountain lion predations has been suppressed. Vince Fontana is the only rancher on the SM Coastal Area who has spoken up about the mountain lion predations. All the other ranchers are fearful of losing their leases and remain silent. Sometimes the ranchers get rent reductions or other benefits, but most of the time they simply bear the expense and damage of the losses. This is oppression on, coercion of, and financial burdens for the ranchers, ultimately harming agriculture. The mountain lion appears to be a tool to expand power and control over California lands.

CDFW has weighted all preferential benefits to the side of the mountain lion, protecting and expanding their population and habitats, to a point that is destroying biodiversity of wildlife, and the Constitutional Rights of the people.

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Recommendation

Although Petitioners seek to have these mountain lion populations listed as one or more ESUs, the ***Department concludes they are more appropriately analyzed as a distinct population segment (DPS).1*** ***The Department finds that neither the petitioned ESU nor genetic populations within the petitioned area, singly or in combination, could appropriately be considered an ESU.*** *The genetic populations are not known to be both substantially isolated from other populations and important components of the evolutionary legacy of the mountain lion species.*

However, the ***Department also examined whether the mountain lions comprising the six petitioned genetic populations constitute a DPS****, based on a federal policy that is applied in listing evaluations under the federal Endangered Species Act and which has previously been used by the Department in CESA evaluations.* ***A DPS is a population or group of populations that is discrete from other populations of the species and significant in relation to the entire species*** *(in this case the statewide population). The* ***Department finds that the mountain lion population composed of the six petitioned genetic populations is discrete, significant, and imperiled****; therefore, the Department recommends the Commission find a DPS of mountain lions in an area largely coinciding with the petitioned area2 should be listed as threatened. The Department further recommends implementation of the management recommendations and recovery measures described in this status review.*

1] Both DPSs and ESUs are concepts originally developed in the context of the federal Endangered Species Act. ***The Department and the Commission are not required to apply either the federal ESU policy or the federal DPS policy. CESA permits the Commission to list "species or subspecies"*** *(See Fish & G. Code, §§ 2062, 2067, 2068).* ***To the extent the Commission concludes that an ESU or a DPS of a particular species constitutes a "subspecies" within the meaning of CESA****, it may recommend listing of that subspecies as an ESU or DPS (See Cal. Forestry Assn. v. Cal. Fish and G. Com. (2007) 156 Cal.App.4th 1535).*

2] For the DPS assessment, the Department made modifications to the petitioned ESU boundary. Areas of the southeastern deserts were excluded because no genetic samples from the area have been evaluated, making it impossible to assign lions in this area to a genetic population. Additionally, areas of intensive agriculture in the northeastern portion of the petitioned ESU were excluded. See sections 6 and 9 of this report for more details.

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CDFW recognizes that the petitioned mountain lion populations cannot be considered an ESU, and is making a new attempt to use DPS. In their Recommendation, "*Department concludes they are more appropriately analyzed as a distinct population segment (DPS)…* Department also *examined whether the mountain lions comprising the six petitioned genetic populations constitute a DPS… A* ***DPS is a population or group of populations that is discrete from other populations of the species and significant in relation to the entire species…*** *The Department finds that the mountain lion population composed of the six petitioned genetic populations is* ***discrete, significant, and imperiled****; therefore, the Department recommends the Commission find a DPS of mountain lions in an area largely coinciding with the petitioned area2 should be listed as threatened."* **The Distinct Population Segment, DPS, should not apply to any or all of the six petitioned mountain lion populations. "*There are currently two recognized subspecies of mountain lion throughout the Americas*** *(Culver et al. 2000; Kitchener et al. 2017).* ***Mountain lions in North and Central America are classified as P. c. cougua****r, while most* ***mountain lions in South America are classified as P. c. concolor."*** **CDFW basing the DPS listing on it being a subspecies, when the are only two recognized subspecies of mountain lion throughout the Americas. Mountain lions in North and Central America are classified as P.c.cougar. That's it, there are no other subspecies in North America.**

The petitioned mountain lion populations are not genetically "*discrete, significant, and imperiled.*" The mountain lions are thriving, and their population is escalating. The mountain lion populations need to be managed.

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1.1 CESA Petition History

*On June 25, **2019**, the California Fish and Game Commission (Commission) received a petition from the Center for Biological Diversity and the Mountain Lion Foundation (hereafter "the petitioners**") to list the mountain lion** (Puma concolor couguar) **in a portion of the state identified as the Southern California/Central Coast Evolutionarily Significant Unit (ESU) as threatened or endangered under the California Endangered Species Act (CESA).** The petitioners also requested, in the event the Commission determined that the six populations comprising the identified ESU did not collectively comprise a single ESU or otherwise did not warrant listing, that the Commission consider whether any of the six populations, singularly or in combination, comprise an ESU and meet the criteria for listing. Commission staff transmitted the petition to the Department of Fish and Wildlife (Department) pursuant to Fish and Game Code section 2073 on July 5, 2019, and published a formal notice of receipt of the petition on July 26, 2019 (Cal. Reg. Notice Register 2019, No. 30-Z, p. 1086).*

*On **January 31, 2020, the Department provided the Commission with its evaluation of the petition,** "Evaluation of a Petition from the Center for Biological Diversity and the Mountain Lion Foundation to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act," to assist the Commission in making a determination as to whether the petitioned action may be warranted based on the sufficiency of scientific information in the petition (Fish & G. Code, §§ 2073.5 & 2074.2; Cal. Code Regs., tit. 14, § 670.1, subds. (d) & (e)). Focusing on the information available to the Department relating to each of the relevant categories, the Department recommended to the Commission that the petition be accepted.*

*At its public meeting held via teleconference on **April 16, 2020, the Commission considered the petition,** the Department's petition evaluation and recommendation, and comments received. **The Commission found that sufficient information existed to indicate the petitioned action may be warranted and accepted the petition for consideration.** Upon publication of the Commission's notice of its findings, the Southern California/Central Coast ESU of mountain lions became a CESA candidate species on May 1, 2020 (Cal. Reg. Notice Register 2020, No. 18-Z, p.692).*

The Commission's action designating the mountain lion within the boundary of the petitioned Southern California/Central Coast ESU as a candidate species triggered the

Department's process for conducting a status review to inform the Commission's decision as to whether ***listing the petitioned ESU or any portion of the Southern California/Central Coast mountain lion population as threatened or endangered is warranted.*** *At its scheduled public meeting on April 14, 2021, the Commission granted the Department a six-month extension to complete the status review and facilitate external peer review.*

1.2 Status Review Overview

This status review serves as the basis for the Department's recommendation to the Commission on whether the petitioned action to list the mountain lion in the petitioned ESU as threatened or endangered under CESA is warranted. It is based upon the best scientific information available to the Department. It is not intended to be an exhaustive review of all published scientific literature on the mountain lion; rather, it is intended to summarize key points relevant to the status of the species and address regulatory report requirements. All the required elements in Fish and Game Code sections 2072.3 and 2074.6, as well as

in California Code of Regulations Title 14 section 670.1, are included and addressed in this status review.

Specifically, this status review addresses each of the required petition components and the listing factors that the Commission must consider in making its determination. A petition to list a species under CESA must include "information regarding the ***population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant"*** *(Fish & G. Code, § 2072.3; see also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). A status review must include a preliminary identification of the habitat that may be essential to the continued existence of the species and recommend management activities and other recommendations for recovery of the species (Fish & G. Code, § 2074.6). Additionally, a species shall be listed as threatened or endangered "if the Commission determines its continued existence is in serious danger or is threatened by any one or any combination of the following factors: present or threatened modification or destruction of its habitat,*

overexploitation, predation, competition, disease, or other natural occurrences or human-related activities" (Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A)).

In addition to addressing each of the petition components and listing factors, the Department must make a recommendation to the Commission as to whether the petitioned action to list the mountain lion as threatened or endangered is warranted. An endangered species is defined under CESA as ***one "which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease"*** *(Fish & G. Code, § 2062). A threatened species under CESA is one that "although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]" (Id., § 2067).*

Receipt of this report is to be placed on the agenda for the next available meeting of the Commission after delivery. At that time, the report will be made available to the public for a 30-day public comment period prior to the Commission taking any action on the petition.

1.4 Administrative Status

For much of the 20th Century, mountain lions were ***a bountied predator*** *in California (Young and Goldman* ***1946****; Dellinger and Torres 2020). In* ***1964****, bounties ceased and the mountain lion was* ***classified as a nuisance or vermin species*** *that could be taken without a hunting license and with no limits (Dellinger et al. 2021b). In* ***1969****,* ***mountain lions were classified as a game species that could be hunted by licensed hunters****. From* ***1972–1986****, mountain lions were classified as a* ***non-game mammal*** *with a moratorium on hunting. Their status as a* ***game species was reinstated in 1986****. However, no mountain lions were harvested between this status change and a ballot initiative (Proposition 117) approved in* ***1990 which classified mountain lions as a "specially protected mammal species"*** *(Fish & G. Code, § 4800). That classification continues to this day, and state law prohibits the take, possession, transport, import, or sale of a mountain lion or mountain lion products with limited exceptions. Take is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86).* ***Take of mountain lions is allowed*** ***only under specified conditions, including for the protection of public health and safety, the protection of listed or fully***

protected bighorn sheep species *(Ovis canadensis spp.),* ***and in response to livestock or property damage.***

CDFW turns a blind eye to the harm the mountain lion is causing across vast areas, on rural and urban lands. It is illogical and irresponsible to make the taking of aggressive lions nearly impossible. By CDFW not managing the mountain lion population, the other wildlife populations have been devastated. The mountain lions are overabundant and hungry.

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1.5 Summary of Petitioned Action

The Petitioners propose listing mountain lion populations south of San Francisco Bay in the coastal, Transverse, and Peninsular Mountain Ranges, the Sonoran Desert, part of the Central Valley, and part of the Mojave Desert as a single Southern California/Central Coast ESU. Alternatively, the Petitioners propose the Commission determine whether one or more of the six genetic populations in the following areas identified by Gustafson et al. (2019) comprise an ESU and meet the criteria ***for listing as threatened or endangered:***

1) Central Coast North (CC-N), which includes the Santa Cruz Mountains and San Francisco Bay Area counties to the east;

2) Central Coast Central (CC-C), generally from southern Monterey Bay to Ventura County in the coastal mountains;

3) Central Coast South (CC-S), which includes the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills;

4) San Gabriel and San Bernardino Mountains (SGSB);

5) Santa Ana Mountains (SA); and

6) Eastern Peninsular Range (EPR), which includes the mountains of eastern San Diego County, extending east possibly as far as the Colorado River and the border with Arizona, and is bounded on the south by the border with Mexico.

These populations are six of the 10 genetically discernible populations in California as delineated in Gustafson et al. (2019) (Fig. 1).

Figure 1. Map ESU

The Evolutionary Significant Unit concept was developed primarily for use in salmonids by the National Marine Fisheries Service (NMFS) and has been used to list populations of anadromous salmon under the federal Endangered Species Act such as the Columbia River chum salmon ESU *(64 Fed. Reg 14508–14517 (March 25, 1999)). The use of ESUs by the Department to evaluate the status of species pursuant to CESA is supported by* ***recent listing determinations by the Commission (e.g., Southern Sierra Nevada Fisher ESU; Coho salmon Central California coast ESU) and by the determination of California's Third District Court of Appeal that the term "species or subspecies" as used in CESA*** *(Fish & G. Code, §§ 2062 and 2067) can include ESUs (Cal. Forestry Assn. v. Cal. Fish and G. Com. (2007) 156 Cal.App.4th 1535).*

To be considered an ESU under federal policy, a population must meet two criteria: ***1) it must be substantially reproductively isolated from other conspecific*** *(i.e., same species) population units; and* ***2) it must represent an important component of the evolutionary legacy of the species that contributes to the genetic diversity of the species as a whole*** *(Waples 1991). The genetic isolation "does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in different population units" (Waples 1991). Although neither the Department nor the Commission is bound by the federal ESU policy or the federal DPS policy, the Department has found these approaches useful for assessing the existence of a subspecies under CESA, has used these criteria in its prior evaluations of ESUs for species such as the Pacific fisher and Coho salmon, and uses them in this status review.*

For brevity, the term "petitioned ESU" is used throughout this report. When "petitioned ESU" appears, it is intended to encompass the petitioners' proposal to list the petitioned area as a single ESU.

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CDFW is reaching down to the level of relating a mountain lion to salmonids. *"The Evolutionary Significant Unit concept was developed primarily for use in salmonids by the National Marine Fisheries Service…"* The mountain lion is a carnivorous predator, of which there is one subspecies in North America. ESU and DPS are irrelevant to the mountain lion in America.

2. Biology And Ecology

2.1 Species Description and Life History

Mountain lions belong to the mammalian order Carnivora and are members of the cat family Felidae, subfamily Feline, and a part of the puma lineage. They have numerous other common names including puma, cougar, panther, painter, and catamount (Young and Goldman 1946; Hunter 2015). Mountain lions were once widespread in the Americas, but Euro-American settlers extirpated them from most of the U.S. and Canada east of the continental divide by the beginning of the 20th century, with only a small population (< 200 individuals) remaining in Florida and a population of unknown size in western and southern Texas. Populations in Mexico and other countries in Central and South America do not appear to have suffered similar extirpations (Hall and Kelson 1959; Pierce and Bleich 2003). However, since the late 20th century, breeding populations of mountain lions have returned to some areas east of the continental divide, including North and South Dakota and Nebraska (Hunter 2015; Cougar Fund 2023).

There are currently two recognized subspecies of mountain lion throughout the Americas *(Culver et al. 2000; Kitchener et al. 2017).* ***Mountain lions in North and Central America are classified as P. c. cougua****r, while most* ***mountain lions in South America are classified as P. c. concolor.*** *The Department formerly recognized another subspecies, the Yuma puma (P. c. browni) (Williams 1986; Kucera 1998; CDFW 2022a). However, research by McIvor et al. (1995) and Culver et al. (2000) detected little morphological or genetic support for retention of the P. c. browni subspecies. Consequently, the Department no longer Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California California Department of Fish and Wildlife considers mountain lions from the Colorado River valley and adjacent Sonoran Desert uplands to be a distinct taxonomic unit.*

Adult mountain lions are large and slender with muscular limbs and a long, black-tipped tail that is about one third of the animal's total length. Males are typically larger than females. Males generally weigh 55–65 kg (121–143 lbs.) with a length of 2.2–2.3 m (7.2–7.5 ft.) from nose to tail tip, and females generally weigh 35–45 kg (77–99 lbs.) with a length of 2.0–2.1 m (6.6–6.9 ft.) (Currier 1983).

Deer (Odocoileus spp.) are the most common prey of mountain lions in the United States, Canada and parts of Mexico, composing about 70% of their diet *(Ruth and Murphy 2009). The relationship between mountain lions and deer is so strong that lion distribution throughout the Americas has been described as largely a function of deer distribution (Young and Goldman 1946; Pierce et al. 2000). However, mountain lions are opportunistic predators and are known to eat at least 232 different species of mammals, birds, and reptiles across their extensive geographic range.* ***Larger prey are favored*** *in temperate forest, desert, and grassland biomes, whereas smaller prey are more often consumed in tropical forest biomes (Karandikar et al. 2022). Prey species in North America include, elk (Cervus canadensis), feral horses (Equus ferus caballas), feral burros (Equus asinus), wild pigs (Sus scrofa), pronghorn (Antilocapra americana), bighorn sheep, coyotes (Canis latrans), bobcats (Lynx rufus), porcupines (Erethizon dorsatum), fishers (Pekania pennanti), rodents, wild turkeys (Meleagris gallopavo), and livestock (Young and Goldman 1946; Currier 1983; Iriarte et al. 1990; Sweitzer et al. 1997; Wengert et al. 2014; Allen et al. 2015; Vickers and Garcelon 2022).*

Mountain lions reach sexual maturity at two to four years, and females care for their young for the first one to two years (Quigley and Hornocker 2009). Mature females typically breed every other year (Robinette et al. 1961). Males will mate with multiple females and do not contribute to rearing young (Logan and Sweanor 2010). Mates locate each other with auditory and olfactory signals including scrapes—shallow troughs with a small mound of debris at the distal end, made using their hind feet. These forms of communication are also vital for maintaining family cohesion and avoiding competition or direct threats from other mountain lions. Identity, social status, and reproductive condition may all be possible functions of scent markers (Logan and Sweanor 2010). Mountain lion scent marks seem to serve as "bulletin boards" which males and females visit to determine the temporal presence, reproductive status, and possibly even the individual identity of other mountain lions (Currier 1983; Logan and Sweanor 2001; Harmsen et al. 2010; Allen et al. 2014).

Gestation lasts 82–96 days (Young and Goldman 1946; Currier 1983; Hunter 2015). ***Litter size ranges from one to six, though two to four kittens are typical*** *(Pierce and Bleich 2003; Beier et al. 2010; Riley et al. 2014). Reproductive females tend to avoid human disturbances. Wilmers et al. (2013) found that mountain lions exhibiting reproductive behaviors (denning and chemical and vocal communication) avoided human disturbances by distances four times greater than non-reproductive mountain lions. As young reach 12–18 months of age, mothers may come into estrus and become aggressive towards them, encouraging their dispersal (Pierce and Bleich 2003). Adult males are also known to kill kittens, yearlings, subadults, and occasionally other adults (Logan and Sweanor 2010; Riley et al. 2014; Benson et al. 2020). Survivorship of dispersing mountain lions is low relative to adults with established home ranges (Benson et al. 2016; Benson et al. 2020), and* ***dispersing young are more likely than resident mountain lions to be involved in depredation incidents or other conflicts with humans as they try to find prey without the advantage of an established home range*** *(Torres et al. 1996).*

Mountain lions are known to move long distances while dispersing. One subadult male was documenting moving 2,450 km (1,522 mi.) from South Dakota to Connecticut (Hawley et al. 2016). Vickers et al. (2015) documented numerous Southern California study animals dispersing > 80 km (50 mi.), and one young male moved approximately 150 km (93 mi.) from California south into Baja California, Mexico and back. Most long-distance dispersers are thought to be young males in search of available mates (Hawley et al. 2016).

A study of juvenile lion dispersal was conducted by Beier et al. (1995) in the Santa Ana Mountains of Southern California from 1988 to 1992. Juvenile mountain lions dispersed via habitat corridors in a landscape fragmented by urbanization. Each collared male dispersed over several weeks to months, and as many as four temporary home ranges were occupied sequentially. The mean dispersal distance from a sample of eight males was 63 km (39.1 mi.). The one monitored female disperser wandered throughout the northern half of the Santa Ana Mountains, changing directions ≥ 5 times upon encountering the urban-wildland interface and covered ≥ 342 km (212.5 mi.) without establishing a temporary home range. Four months after beginning her dispersal, she returned to the edge of her natal range and bedded near her mother for one day before dying near that location days later of unknown causes. All travel in corridors and habitat peninsulas occurred at night.

***Adult mountain lions are primarily solitary**, territorial, and occur in low density. **They require large areas of habitat with adequate prey abundance** (Quigley and Hornocker 2009). Their home ranges are often comprised of multiple vegetation community types including riparian, chaparral, oak woodlands, coniferous forests, grasslands, and deserts (Grinnell 1914; Grinnell et al. 1937; Williams 1986; Dickson et al. 2005; McClanahan et al. 2017; Dellinger et al. 2019) and occur from near sea level to high mountain elevations (Grinnell et al. 1937; Young and Goldman 1946; Hunter 2015). Average home range size in California varies substantially depending on sex, season, and area of the state. The average male home range size is larger than the average female home range size. Home ranges change size depending on season and tend to be larger in the Sierra Nevada compared to the Coastal Ranges. In the Santa Ana Mountains and the Eastern Peninsular Range, Zeller et al. (2017) found that home range size varied from 41–497 km2 (16–192 mi.2; mean = 231 km2; female mean = 188 km2; male mean = 316 km2). In the Santa Monica Mountains and surrounding areas, Riley et al. (2021) found the average home range size was 134 km2 (52 mi.2) for females and 372 km2 (144 mi.2) for males. In contrast, in the Sierra Nevada Mountains the average home range size for females in summer was 541 km2 (209 mi.2) and 349 km2 (135 mi.2) in winter (Grigione et al. 2002). For males it was 723 km2 (279 mi.2) in summer and 469 km2 (181 mi.2) in winter. While male home ranges can overlap spatially, male mountain lions are territorial, making temporal overlap between males rare (Logan and Sweanor 2001). However, males attempt to overlap their home ranges with multiple female home ranges to enhance breeding opportunities (Logan and Sweanor 2010). Females are less territorial, with their home ranges often including significant overlap, and the degree of home range overlap is typically greater where prey densities are higher (Stoner et al. 2018). Subadult males are generally met with aggression from resident adult males and can disperse long distances (see above). Only about half of subadult females disperse from their natal area (Logan and Sweanor 2010). Due to these behavioral mechanisms, local abundance of male mountain lions is generally limited by available habitat (Maletzke et al. 2014), while female abundance is generally limited by prey availability (Stoner et al. 2018). Given the importance of females to population growth, and because one male can breed with multiple females, mountain lion populations can be primarily limited by prey availability (Pierce et al. 2000; Logan and Sweanor 2001; Logan 2019).*

***Mountain lions have few natural predators in California.** Mountain lions are subordinate to black bears (Ursus americanus) and gray wolves (Canis lupus sp.) across parts of*

their geographic range including California (Elbroch and Kusler 2018). Black bears occasionally kill mountain lion kittens (Elbroch and Kusler 2018), but mainly affect mountain lions through the plundering of kills and cache sites in California (Elbroch et al. 2015a). Where gray wolves and mountain lions coexist in North America, wolves are known to affect adult and kitten survival, resource selection, prey selection, bedding locations, and local abundance (Bartnick et al. 2013; Elbroch et al. 2015b; Kusler et al. 2017; Elbroch and Kusler 2018; Elbroch et al. 2020). In 2021, a GPS-collared wolf dispersed into the petitioned area before being struck and killed by a vehicle on Interstate 5. In the summer of 2023, the Yowlumni wolf pack was identified in southern Tulare County, with an activity center approximately 80 km (50 mi.) north of the petitioned ESU boundary; however, there are currently no resident wolf packs or individuals known within the petitioned ESU area.

CDFW is well aware of the primary prey of mountain lions, and yet with CDFW's focused protection of the mountain lion the deer population has been decimated. Instead of managing the mountain lion population in relation the deer population, CDFW is to move mountain lions to other areas. ***"Deer (Odocoileus spp.) are the most common prey of mountain lions in the United States, Canada and parts of Mexico, composing about 70% of their diet*** **...** ***The relationship between mountain lions and deer is so strong that lion distribution throughout the Americas has been described as largely a function of deer distribution****...However,* ***mountain lions are opportunistic predators and are known to eat at least 232 different species of mammals, birds, and reptiles across their extensive geographic range. Larger prey are favored*** *in temperate forest, desert, and grassland biomes, whereas smaller prey are more often consumed in tropical forest biomes****...Prey species in North America*** *include, elk ..., feral horses ..., feral burros ..., wild pigs ..., ..., bighorn sheep, coyotes (Canis latrans), bobcats ..., porcupines ..., fishers ..., rodents, wild turkeys ..., and livestock...* **The carnivorous mountain lion preys on many wildlife species. The number of smaller wildlife to sustain the mountain lion is numerically increased when deer are not available. The result is a more exasperated diminished wildlife, creating an imbalanced ecosystem due to mountain lion unchecked proliferation. Mountain lions can have their first liter at 20 to 40 months of age.** ***"Litter size ranges from one to six, though two to four kittens are typical..."*** **Mountain lion life-span is 8-14 years in the wild, in captivity 20 years or more. The mountain lion population needs to be managed.**

2.2 Range and Distribution

***A species' range is the general geographic area within which it normally occurs**, while its distribution is the locations it occupies within its range at a given time. For purposes of CESA and this Status Review, the term range refers to the species' California range (Cal. Forestry Assn. v. Cal. Fish and Game Com. (2007) 156 Cal. App. 4th 1535, 1551), though emphasis is on the geographic area of the petitioned ESU. **The current range of the mountain lion includes much of California.** Though **verified mountain lion sightings and encounters have occurred in all counties in the last decade**, they are most commonly reported from the more mountainous areas of the state **... Mountain lions are most likely to establish home ranges in areas with sufficient forest and/or shrub cover which promotes presence of their primary prey, mule deer** (Odocoileus hemionus) and provides cover for stalking (Dellinger et al. 2020a). In California, these areas include the coastal mountain ranges from Southern California north to the Oregon border, the Transverse Ranges, the Sierra Nevada, the southern Cascade Range, the Klamath Mountains, and the Modoc Plateau (Fig. 2).*

*The areas with **the least suitable habitat** (i.e., lowest densities of mountain lions), include **intensively farmed areas of the Central Valley and lowlands of the inland desert regions of the state.** However, resident breeding populations have recently been documented near the Sutter Buttes in the Sacramento Valley and in the Mojave Desert (McClanahan et al. 2017; Dellinger et al. 2019). The distribution of mountain lions in California has changed little from what Grinnell et al. (1937) described in the early 1900s, although they are now absent or uncommon in the large, high density urban areas of the San Francisco Bay Area and the Los Angeles–San Diego coastal plain and inland valleys. They are also absent or uncommon in intensively farmed agricultural areas such as the Salinas Valley and the Central Valley, where historical reports noted mountain lions were not uncommon in riparian areas (Fig. 3) (Newberry 1857). Historically, those riparian corridors likely played an important role in connecting mountain lion populations in the Sierra Nevada with populations in coastal mountain ranges.*

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Mountain lions have large range sizes, one of the reasons their populations need to be managed.

Figure 2. *Range and habitat suitability for mountain lions in California. Darker red indicates a higher probability of mountain lion occupancy (Dellinger et al. 2020a). Mountain lions may occasionally occur at low densities outside of this range (most often non-breeding or dispersing individuals).*

Figure 3. *Agricultural and populated areas and major roadways in California.*

2.3 Habitat That May Be Essential to the Continued Existence of the Species

Dellinger et al. (2021b) described general patterns of habitat use and selection3 in California:

*"**Mountain lions are among the most widely distributed carnivore species** (Logan and Sweanor 2001). This **wide distribution is a product of their ability to persist in almost any habitat provided adequate prey is available.** When **establishing a home range, mountain lions select habitat with adequate prey and stalking cover to aid in meeting energetic demands.** After establishing a home range, many things, including human activity, can influence habitat use patterns (Wilmers et al. 2013).*

In California, mountain lion habitat use patterns were found to be seasonal in the more temperate areas of the state (Dellinger et al. 2018) while, in the more Mediterranean areas, mountain lion habitat use patterns are more stable between seasons (Wilmers et al. 2013)."

*Mountain lions in **North America have associations with vegetative and topographic cover, steep slopes, and higher elevations**, while avoiding areas of open agricultural land, sagebrush (Artemesia tridentata) dominated communities, open meadows, and pastures (Fig. 2) (Murphy 1983; Logan and Irwin 1985; Laing 1988; Lindzey et al. 1994; Pierce and Bleich 2003).*

*Zeller et al. (2017) found that in **Southern California, mountain lions preferred to establish home ranges that contained chaparral, scrub, and grasslands**, but within those home ranges, primarily spent their time in relatively rugged terrain, riparian areas, and woodland. Dickson and Beier (2002) noted that riparian areas were selected by mountain lions in all seasons in Southern California and suggested the preference is related to the presence of stalking cover and prey. Riley et al. (2021) found that mountain lions in the Santa Monica Mountains and surrounding areas selected "chaparral, riparian woodland, and coastal sage scrub. The two features of the*

landscape that they consistently avoided were grasslands and altered open areas, which were also the most open portions of the landscape. These results are consistent with previous work showing that mountain lions select areas with dense stalking cover and avoid open areas to facilitate hunting success." However, Burdett et al. (2010) speculated that dense, mature late seral chaparral may be avoided because mule deer prey cannot easily move through such stands and thus may select against them.

3] Habitat selection is the choice by an organism of habitats relative to their availability on the landscape.

The mountain lion is not threatened, endangered, discrete, or underpopulated. Instead, the mountain lion is a predator, with an expanding population – its primary prey is deer has diminished greatly, along with other wildlife. *"Mountain lions are among the most widely distributed carnivore species... This wide distribution is a product of their ability to persist in almost any habitat provided adequate prey is available."* Agriculture on the SM Coastal Area is a victim of the mountain lion overpopulation, which has nearly exhausted its natural prey. As a predator, the mountain lion is seeking out alternate food sources and preying on livestock, farm animals and pets. Biodiversity is endangered under the current trajectory with over protection of the mountain lion.

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2.4 Population Structure

***There are currently two recognized subspecies of mountain lion throughout the Americas (Culver et al. 2000; Kitchener et al. 2017). Mountain lions in North and Central America are classified as P. c. couguar**, while **most mountain lions in South America are classified as P. c. concolor** (the subspecific identity of some mountain lions west of the Andes in South America remains uncertain). This taxonomy is partly based on the finding that the entire North American population is genetically homogenous across several mitochondrial loci (Culver et al. 2000, Caragiulo et al. 2014). Genetic diversity is greater in Central and South American mountain lions, and it is hypothesized that the North American population derived from a relatively recent (i.e., late Pleistocene, circa 10,000 years ago) recolonization by a small number of founders whose ancestors*

originated in eastern South America 200,000–300,000 years ago (Culver et al. 2000, Caragiulo et al. 2014).

Several studies have demonstrated that the complex geography and land use patterns in California have influenced patterns of gene flow and genetic exchange among mountain lions in different areas of the state (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019; Gustafson et al. 2022). Two studies are especially relevant to understanding the genetic structure of mountain lions within the petitioned ESU. The first is Gustafson et al. (2019), which the petitioners referenced extensively. Gustafson et al. (2019) collected samples from 992 mountain lions in California and Nevada (obtained from 1992–2016) and examined genetic diversity across 42 microsatellite markers4

4 . The authors identified nine geographic clusters of samples containing similar genetic characteristics in California and one cluster in Nevada (Fig. 1). In addition to the six clusters within the petitioned ESU, the other clusters in California include North Coast (NC), Western Sierra Nevada (WSN) and Eastern Sierra Nevada (ESN) (Fig. 1). In this report, the Department follows Gustafson et al. 2019 in referring to these clusters as genetic populations. Though mountain lions associated with these genetic populations show significant genetic differentiation, the populations are not fully isolated from one another (Fig. 4). The bidirectional migration rates calculated by Gustafson et al. (2019) demonstrate important historical connectivity between the Western Sierra Nevada (WSN) genetic population and the Central Coast populations (CC-S, CC-C, CC-N) and populations to the north and east (North Coast (NC) and Eastern Sierra Nevada (ESN)). Additionally, the SGSB genetic population functions to some extent as a linkage between genetic populations to the south (EPR and SA) and the north (WSN and the Central Coast genetic populations), although gene flow through this linkage appears to be very limited.

CDFW's ESU and DPS populations are classified as P. c. cougar. *"There are currently two recognized subspecies of mountain lion throughout the Americas ... Mountain lions in North and Central America are classified as P. c. couguar,* *while* ***most mountain lions in South America are classified as P. c. concolor"*** **Listing the mountain lion under ESU and/or DPS is inappropriate and malevolent. Using California Fish and Wildlife Commission to address the listing[s] as an interagency directive is unacceptable.**

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

3. Status and Trends in California

3.1 Historical Distribution and Abundance

*Habitat loss and fragmentation resulting from land use changes in the petitioned ESU began in the **1700s** and continues to the present. Those changes have significantly affected mountain lion distribution in some areas. **Many areas within the petitioned ESU have been modified by urban and agricultural development, primarily in the San Francisco Bay Area, Southern California, and the Central Valley, making them mostly unsuitable for mountain lions** (Fig. 3). Near the coast in Southern California, extensive urbanization from Ventura County to the border with Mexico has supplanted large areas of mountain lion habitat in the coastal valleys and plains and has isolated patches of remaining habitat in the Santa Monica, San Gabriel, San Bernardino, and Santa Ana Mountains (Fig. 3; Vickers et al. 2015; Benson et al. 2016; Benson et al. 2019). The Eastern Peninsular Range is also affected by human development and road networks but to a lesser degree than the aforementioned mountain ranges. Likewise, remaining habitat in the Santa Cruz Mountains and the southern San Francisco Bay Area is increasingly constricted by development and busy highways (Wilmers 2014; Wang et al. 2017). In contrast, the Santa Lucia and other rugged mountains of the central coast have fewer highways and relatively little development and the distribution of lions has likely changed little there from the pre-European era.*

CDFW states, "*Many areas within the petitioned ESU have been modified by urban and agricultural development,… making them mostly unsuitable for mountain lions.*" which should exclude them, and other similar areas from being in the petitioned area[s]. "*Many areas within the petitioned ESU have been modified by urban and agricultural development, primarily in the San Francisco Bay Area, Southern California, and the Central Valley, making them mostly unsuitable for mountain lion.*" These, and other urban areas, need to be protected from the mountain lion encroachment.

3.2 Population Size

Historical estimates of the size of the mountain lion population within the petitioned ESU do not exist. While some historical estimates of the statewide mountain lion population exist, the methods used to derive the estimates, and the statistical rigor of the estimates varied substantially. As such, these estimates are not directly comparable and cannot be used to examine trends in the statewide population over time.

The Department paid a bounty for mountain lions from 1906–1963 (Dellinger and Torres 2020). McLean (1954) presented bounty numbers from 1907-1950 and estimated there were 600 mountain lions in California. Over a decade after the end of the bounty period, Sitton (1977) estimated that there were approximately 2,400 mountain lions in California. A 1989 study estimated 4,100–5,700 mountain lions in the state based on the amount of suitable habitat and adult density estimates from prior studies (Mansfield and Weaver 1989).

The Department recently developed a statistically rigorous estimate of the statewide mountain lion population size using ***DNA from the scats of 335 individual mountain lions collected in 2017–2022 from 13 study sites distributed widely across the state****. The detection histories of individually identifiable mountain lions from these samples were used to estimate the statewide population size using a Bayesian Spatial Capture Recapture (SCR) model. SCR includes a spatial scale parameter (e.g., how the probability of detection of a mountain lion varies over its home range) that is critical for accurately scaling estimated abundances to density and population size (Royle et al. 2013).* ***Using this method, the Department estimates there are approximately 4,172 (95% CI 3,645–4,750) mountain lions in the state.*** *This population estimate includes all age classes of mountain lions, including dependent young. The estimate represents an average annual number of mountain lions over a recent 5-year period (i.e., 2017–2022). An important caveat is that extrapolation from the modeling was limited to only those portions of state that were mapped as mountain lion habitat by Dellinger et al. (2020b). Accordingly, the estimate may be undercounting a small number of mountain lions outside of the mapped range (e.g., Central Valley and some desert areas). These results are preliminary and may change based on peer review when a manuscript is submitted to a scientific journal for publication.*

As part of this analysis, the Department used available California GPS telemetry data from 152 mountain lions to inform the spatial scale parameter in the SCR model. The result of this exercise was that spatial inferences from the telemetry were consistent with those from the scat (e.g., <5% difference) which provides validation that the statewide population estimate is accurate.

The ***Department also generated regional scale current estimates of abundance that roughly correspond to the genetic populations*** *in Gustafson et al. 2019 (Table 3). The boundaries for the regional genetic population estimates come from Figure 1 in Dellinger et al. (2020b). The Department used SCR to create* ***density estimates*** *that vary*

over space depending on relative use of specific habitats within an area of interest. However, the covariates the Department used were more effective for extrapolating a statewide population total than drawing accurate inferences about density in specific areas. For this reason, these local estimates may be less accurate than the statewide estimate. ***The total population estimate within the petitioned ESU is 1,449 mountain lions (95% CI 1,272–1,638).*** *However,* ***each of the genetic populations comprising the petitioned ESU is moderately to considerably isolated from adjacent populations.*** *The petitioned area does not support a single well-connected population and instead effectively consists of several mostly isolated smaller populations. Estimates for the CC-S, SGSB, and SA genetic populations are each lower than 100 individuals. The* ***best currently available data indicate most of the populations within the petitioned ESU have small effective population sizes and low genetic variation*** *(see Section 4.9), which could put them at increased risk of local extirpation (Beier 1993,1995; Dickson et al. 2005; Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Benson et al. 2016; Benson et al. 2019; Gustafson et al. 2019; Gustafson et al. 2022).*

Table 3. *Estimates of total population sizes and 95% confidence intervals for the genetically distinct mountain lion populations identified in Gustafson et al. 2019. The boundaries used to calculate the population sizes come from Dellinger et al. 2020b.*

Note: ***these estimates were derived from modelling at a different geographic scale than the statewide and petitioned area estimates, and consequently, the summed estimates differ from the statewide estimate.***

CDFW has lost credibility to present mountain lion populations accurately. *"The Department paid a bounty for mountain lions from 1906–1963… (1954) estimated there were 600 mountain lions in California. Over a decade after the end of the bounty period … (1977) estimated that there were approximately 2,400 mountain lions in California. A 1989 study estimated 4,100–5,700 mountain lions in the state …" …"Department … generated regional scale current estimates of abundance that roughly correspond to the genetic populations … The total population estimate within the petitioned ESU is 1,449 mountain lions… each of the genetic populations comprising the petitioned ESU is moderately to considerably isolated from adjacent populations… best currently available data indicate most of the populations within the petitioned ESU have small effective population sizes and low genetic variation… these estimates were derived from modelling at a different geographic scale than the statewide and petitioned area estimates, and consequently, the summed estimates differ from the statewide estimate."*
CDFW has failed to produce accurate data and information. CDFW, has repeated 4,000

to 6,000 mountain lions in California since 1989. In the Petition CDFW stating the mountain lion population in California is 4,172, that is highly inaccurate, misleading, and irresponsible.

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Population

Estimated Population Size (95% CI)

Central Coast North (CC-N) 219 (193–247)

Central Coast Central (CC-C) 480 (422–540)

Central Coast South (CC-S) 64 (56–72)

San Gabriel/San Bernardino (SGSB) 94 (82–107)

Santa Ana Mountains (SA) 67 (59–75)

Eastern Peninsular Range (EPR) 459 (383–546)

North Coast (NC) 821 (707–943)

Modoc Plateau (MP) 377 (307–456)

Western Sierra Nevada (WSN) 1,199 (1,050–1,360)

Eastern Sierra Nevada (ESN) 398 (320–489)

3.2.1

3.2.1 Survival and Sources of Mortality

Benson et al. (2023) analyzed ***data from 590 radio collared mountain lions in 24 California study areas from 1974 to 2020 (76% of the study animals were collared after the year 2000).*** *They estimated an annual survival rate of 0.67 for males (95% CI 0.63–0.72, n = 297 males and n = 151 deaths) and 0.80 for females (95% CI 0.77–0.83, n = 293 females and n = 112 deaths). Of the 263 known mortalities, 199 were attributable to a specific cause. Management killing had the highest annual mortality rate at 6%. Management killing includes lethal removal of mountain lions following livestock depredations (75% of the mortalities in this category), lethal removal following bighorn sheep depredations (23% of the category), and lethal removal of lions that posed a public safety threat (2%). After management killing, the*

greatest sources of mortality were vehicle strikes (4%), non-strife natural mortality including starvation and disease (3%), intraspecific strife (3%), poaching (3%), and other human causes including mortalities directly attributable to rodenticide poisoning and wildfire, which combined resulted in a 1% annual mortality rate (Benson et al. 2023).

The ***Department's approach to issuing depredation permits has evolved toward increased emphasis on nonlethal methods of take,*** *and the relative importance of this mortality factor may have declined (for more detail see section 4.3.2). Benson et al. (2023) found that as human-caused mortality increased in an area, so did natural mortality, though the trend was not significant. This suggests human caused mortality may have been additive during the study period and did not just affect animals that would have otherwise died of natural causes. They also found that human population density influenced mountain lion mortality rates, with human density being a better predictor of mortality risk than the density of sheep and goat farms on the landscape. Both human-caused and natural mortality were highest in areas of the state with intermediate human density, and lower in both high human density areas and remote, low human density areas (Benson et al. 2023).*

CDFW is not allowing warranted depredations by their non-lethal "takings", those are delays, essentially not allowing takings, limiting the rights of those with losses, and putting their livestock, animals, and themselves, in harms way. "*Department's approach to issuing depredation permits has evolved toward increased emphasis on nonlethal methods of take,*" In the case of getting a lethal depredation permit, there are a small percentage of those who have losses or are threatened by the mountain lion, who even have a firearm or means to carry out a depredation. Historically, and some today, depredations were carried out by CDFW. The CDFW Law Enforcement needs to be more responsive to mountain lion attacks and endangerments with depredations.

4.1 Past and Threatened Modification and Destruction of Habitat

4.1.1 Urbanization

Anthropogenic habitat loss and fragmentation have been occurring in California since the arrival of Spanish settlers in the 18th century and increased dramatically with expansion of mining and agriculture in the mid-19th century. Early 20th century naturalists catalogued the flora and fauna throughout the state and noted the loss of formerly abundant prey species of the mountain lion, including elk, mule deer,

pronghorn, and beaver (Castor canadensis) (Stephens 1906; Grinnell 1914; Merriam 1919; Leopold 1966). Successive waves of agricultural and other development, including railroads, canals, roads, and highways resulted in the conversion of natural vegetation and led to further loss and fragmentation of mountain lion habitat. Development impacts have been extensive in the greater San Francisco Bay area, Sacramento and San Joaquin valleys (water diversions, agricultural development, and urban development), and the Los Angeles Basin and adjacent mountain ranges and valleys south to San Diego (urban, agricultural, and industrial uses).

The California State Wildlife Action Plan summarizes existing stressors on wildlife populations and ecosystems in the state and describes recent and ongoing habitat loss, fragmentation, and degradation in California (CDFW 2015). Significant habitat loss continues in many important California ecosystems. For example, over 195,000 ha (480,000 acres) of California rangeland habitats were converted to other uses between 1984 and 2008 (approximately 3% of available rangelands) - primarily due to residential and commercial development and agricultural intensification. Additionally, habitat degradation—resulting from pollution, invasive species, livestock grazing, intensive recreation, soil erosion, drought, flooding, or wildfire—is a widespread stressor to wildlife populations in California (CDFW 2015).

Habitat fragmentation occurs when portions of habitat are lost or degraded such that natural areas are divided into small and isolated remnants (CDFW 2015). This fragmentation can have numerous negative impacts on wildlife including declining biodiversity and impairment of ecosystem functions, isolation of species into small subpopulations susceptible to extinction, and inhibition of movement between populations that leads to reduced genetic variation and inbreeding (Ibid.). ***Species with large home ranges, like mountain lions, require large contiguous areas of habitat or connectivity between multiple diffuse patches of habitat.*** *Habitat loss and fragmentation can eliminate or isolate key habitat elements from home ranges, such as water and prey associated with riparian zones, and can reduce access to breeding and foraging habitat (Ibid.). These effects impact mountain lion populations as well as populations of their prey. When resources are dispersed across a broader area or fragmentation limits access to resources, mountain lions may be required to expend more time and energy to meet their needs, exposing them to more risk.*

In Southern California, human populations are especially dense, and land conversion has been extensive. The significant amount of urban, suburban, and rural development in this

area—resulting from population pressures of the region's 24 million residents (Wikipedia 2024)—has led to substantial habitat loss and fragmentation (CDFW 2015). Currently, ***nearly 40% of the land area in southern coastal California is in urban and suburban use*** *(CDFFP 2010). Sprawling development with residential housing located far from existing urban centers has required new or enlarged roads and infrastructure. These development patterns not only reduce the amount of habitat available but also degrade the quality of adjacent habitat making the remaining natural habitats more vulnerable to the incursion of invasive species, air and water pollution, and altered fire regimes (Ibid.). In addition, the developed areas, roads, and utility corridors fragment the landscape leaving few or no movement corridors between natural areas (Ibid.).*

Historical habitat loss and fragmentation have caused reductions in the geographic distribution of mountain lions in the petitioned ESU. Moreover, in the absence of adequate habitat conservation efforts, including connectivity measures, such reductions are expected to continue. A study of mountain lion habitat in CC-S and EPR showed that nearly half of mountain lion habitat in the study area is on private land, and the authors estimated approximately one-third of the lands that were available habitat in 1970 would be developed by 2030 (Burdett et al. 2010). Additionally, some habitat that is currently adjacent to development may become fragmented, with potential loss of connectivity and increased risk to mountain lions from vehicle strikes and depredation take (Burdett et al. 2010). For example, Development within key connectivity areas such as the Tehachapi Mountains near Interstate 5, if not carefully planned, could further constrain lion movement within a relatively narrow corridor of highly suitable habitat connecting the western Sierra Nevada with the central coast and Southern California (Penrod and Smith 2022).

Additionally, limited habitat connectivity has resulted in highly restricted gene flow in many areas of central and Southern California. For example, connectivity between the EPR and the SA genetic populations is limited due to the barrier effect of Interstate 15 in the Temecula region. Similar connectivity challenges occur due to Interstate 5 and Highway 58 between the CC and SN genetic groups. Recently published information on reproductive and morphological abnormalities in mountain lions in the Santa Monica Mountains, SA, and EPR indicate that habitat loss and fragmentation, and associated dispersal challenges, have led to inbreeding (Huffmeyer et al. 2022). See section 4.9

for more information on the inadequate habitat connectivity and highly impeded gene flow for these populations.

Residential and industrial development is projected to continue within the petitioned ESU, even in the areas that are already highly urbanized *(EPA 2017). Projections of increased housing density through the year 2050 demonstrate that continued development will exacerbate existing barriers to mountain lion movement, effectively rendering existing pathways less permeable, and in some areas may lead to complete isolation of portions of genetic populations (Ibid.). Areas that are projected to become substantially more isolated* ***by the year 2050 due to residential development include the Santa Cruz Mountains of the CC-N, the San Gabriel and San Bernardino Mountains, the Santa Monica and Santa Susana Mountains, and the Sierra Pelona and Tehachapi Mountains*** *near the nexus of the WSN, CC-S, and SGSB genetic populations (Ibid.).*

The cumulative effects of approximately 250 years of habitat loss and fragmentation due to development and road construction, loss of riparian habitat, and the associated reduction and shifting of prey species appear to have contributed to the separation of mountain lions into smaller genetic populations in the central and southern regions of California. See section 4.9 for information on the risks to small and isolated populations.

CDFW's perspective on human use and development is anti-American. This is our country which needs a balance that affords us to exercise our rights of life, liberty and the pursuit of happiness. Basic sanctity and security of our homes, properties, and communities are becoming threatened from the lack of predator management. Life is about progress, opportunity, and development. The mountain lion and wildlife play an important role in the ecosystem, but they must be managed. ***"…nearly 40% of the land area in southern coastal California is in urban and suburban use… Residential and industrial development is projected to continue within the petitioned ESU, even in the areas that are already highly urbanized… by the year 2050 due to residential development include the Santa Cruz Mountains of the CC-N, the San Gabriel and San Bernardino Mountains, the Santa Monica and Santa Susana Mountains, and the Sierra Pelona and Tehachapi Mountains"*** **It is irresponsible for CDFW to increase the mountain lion population in the most attractive and populous areas on the California coast, and in California.**

4.1.2 Agriculture and Forestry

The conversion of native habitat to intensively farmed crops and pasture has resulted in large swaths of land that no longer provide foraging and breeding habitat for mountain

lions (Fig. 3). This conversion began as early as the 1700s in coastal California and accelerated rapidly in the 19th and 20th centuries as water storage and delivery systems were developed enabling the irrigation of crops. ***Approximately 43% of California's land area is used for agricultural production (CDFA 2009). In recent years over 9 million acres has been in irrigated agricultural production (DWR 2024). Although the same pattern of conversion of native plant communities to agricultural uses occurred wherever suitable soils and adequate water existed, this change has been most dramatic in the Central Valley, by far the largest contiguous region of intensively farmed land in the state. The Central Valley appears to form a largely semi-impermeable barrier to mountain lion movement between coastal mountain ranges and the Sierra Nevada and Cascade Mountains.*** *Historically, the Central Valley contained extensive riparian forests along the Sacramento and San Joaquin Rivers, their tributaries, and in the Delta which likely provided corridors of suitable cover for mountain lions living in and traveling through the valley. Within the petitioned area, these historical habitats likely facilitated genetic connection between the WSN and NC genetic populations and the Central Coast group. However, it is estimated that 92-97% of such riparian forests have been lost through channelization, altered hydrology, and conversion to agricultural and urban uses, and much of the remaining riparian forest has been modified (CDFW 2014). The loss of Central Valley riparian forests and scrub, in combination with the development of significant highways and other infrastructure, is likely a major driver of contemporary mountain lion population structure.*

Commercial timber harvesting in the petitioned area primarily occurs in the redwood-dominated (Sequoia sempervirens) forests of the CC-N. Although the impacts are less intense and less permanent than commercial agriculture, commercial timber harvesting can modify mountain lion habitat in that region. A study of nine mountain lion home ranges in the redwood forest of northwest California found mountain lions used forest areas with a greater proportion of fragmentation and edge more frequently than areas of more contiguous forest; however, mountain lions generally avoided areas of active timber harvest operations (Meinke 2004). Mountain lion home ranges included different stages of forest succession from freshly harvested stands to late seral forests, perhaps indicating commercial timber management, as regulated by the California Department of Forestry and Fire Protection (CAL FIRE), does not fragment mountain lion habitat or isolate populations. Conversely, Smallwood (1994) found mountain lion use of forest stands of the central coast, north coast, and Sierra Nevada sharply declined within six years following clear cut harvest. The timing and extent of mountain lion use of clearcut

harvest units likely depends on how rapidly shrub and small tree cover develops in the harvested area, which is influenced by the tree and shrub species composition of the harvested stand, the nature and extent of post-harvest site preparation treatments, and the management of young stands.

Agriculture is the backbone of America by design and need to produce food and other products, making America great and sustainable. *"Approximately 43% of California's land area is used for agricultural production (CDFA 2009). In recent years over 9 million acres has been in irrigated agricultural production (DWR 2024). Although the same pattern of conversion of native plant communities to agricultural uses occurred wherever suitable soils and adequate water existed, this change has been most dramatic in the Central Valley, by far the largest contiguous region of intensively farmed land in the state. The Central Valley appears to form a largely semi-impermeable barrier to mountain lion movement between coastal mountain ranges and the Sierra Nevada and Cascade Mountains."* CDFW, seems hostile toward agricultural lands, in preference to mountain lion having free range over California. The mountain lion is devasting agriculture with increasing livestock predations.

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▶ **ATTACHMENT D | Mountain Lion Camera Captures | Page 211**

▶ **ATTACHMENT E | Mountain Lion Predations | Page 218**

4.2 Vehicle Strikes, Roads, and Rail Lines

Planning for safe wildlife crossings in Southern California has been underway for nearly two decades. *In 2008, the* ***South Coast Missing Linkages Project*** *identified areas in the coastal areas of Southern California where linkages are needed (South Coast Wildlands 2008). The County of Ventura has incorporated these linkages into its General Plan land use zones to help ensure these important wildlife movement corridors remain passable (Ventura County 2019). In 2020, CDFW assessed priority barriers Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California, California Department of Fish and Wildlife to wildlife movement throughout the state, and in 2022, 12 were considered to be top priorities, including several in the petitioned ESU area (Fig. 12, CDFW 2022c).*

Figure 12. *Priority movement barriers within the petitioned area as identified by the Department (CDFW 2022c).*

In general, funding to implement wildlife crossing projects, including land acquisition to preserve natural habitat on both sides to make the crossing more suitable for wildlife, has been limited to date. The lack of wildlife crossings with appropriate fencing, and lack of fencing near existing crossing structures, particularly in highly urbanized areas or across major transportation corridors, contributes to continuing vehicle strikes and to the barrier effects on movement and gene flow. However, several crossings have recently been planned and/or approved. Construction of the ***Wallis Annenberg Wildlife Crossing over Highway 101*** *in the Liberty Canyon area of CC-S (Fig. 13) began in 2022. The crossing, including the approaches and the crossing over adjacent Agoura Road, is expected to be completed in late 2026. The overpass will help facilitate mountain lion movement between the Santa Monica Mountains and the Simi Hills and could ultimately contribute to genetic exchange throughout the CC-S genetic population, between CC-S and CC-C, and ideally between CC-S and WSN. It may also minimize some local vehicle-related mortality on Highway 101.* ***A wildlife undercrossing with associated fencing and habitat conservation was constructed under Highway 17 in the Santa Cruz Mountains in February of 2023****. Another wildlife crossing over Highway 101 in San Benito County is in the planning and fundraising phase. Together,* ***these crossings should help facilitate the movement of mountain lions between the Santa Cruz Mountains in CC-N and the Gabilan Mountains in CC-C.*** *In addition, initial design and environmental studies are being completed for a new crossing structure across I-15 south of Temecula, and improvements to the* ***Temecula Creek passageway*** *are planned. Other connectivity studies are being initiated along I-10 in the Banning Pass area that is critical to mountain lion movement between the EPR and SGSB genetic populations (W. Vickers pers. comm.). Lastly, the* ***Department and the California Department of Transportation (Caltrans) have announced there will be three new wildlife overcrossings along I-15 and the high-speed rail line in San Bernardino County and existing undercrossings and culverts along the corridor will be improved and maintained****, all of which should facilitate the movement of mountain lions and other species (CDFW 2023).*

Figure 13. *Rendering of Wallis Annenberg Liberty Canyon Wildlife Crossing. Source: Santa Monica Mountains Conservancy.*

4.3 Overexploitation

4.3.1 Historical Bounties and Hunting

The management of mountain lions in California has varied widely in the last century. From the early 20th century until 1964, mountain lions were a bountied predator in California (Young and Goldman 1946; Dellinger and Torres 2020). During the bounty period, approximately 12,580 mountain lions were killed across California (Dellinger et al. 2021b). Nearly one-third of the bounties paid in the first few decades were in Humboldt, Trinity, Mendocino, and Lake Counties (Dellinger and Torres 2020). Additionally, the Department employed 1–5 hunters whose only job was to remove mountain lions throughout the state (McLean 1954; Dellinger and Torres 2020). One of those hunters, Jay Bruce, killed 669 mountain lions during his long career (Bruce 1953).

When bounties ended in 1964, mountain lions were classified as a nuisance or vermin species—while there was no longer paid incentive for removal, they could be killed year-round without a hunting license and with no limits (Dellinger et al. 2021b). From 1969–1972, mountain lions were considered a game species and could be hunted with a proper hunting license. Two hunting seasons took place (1970–1971) during which 118 animals were harvested from 4,953 permits issued (Dellinger et al. 2021b). Following the second hunting season, a legislative moratorium ceased further mountain lion hunting (Fitzhugh and Gorenzel 1986). From 1972–1986 mountain lions were classified as a non-game mammal and the hunting moratorium remained in place. Their status as a game species was reinstated from 1986, and the Department began to establish hunting zones and harvest quotas and issue tags. However, no mountain lions were harvested due to this change before a 1990 ballot initiative (Proposition 117) approved by California voters classified mountain lions as a "specially protected mammal species" with significant new protections for the species starting in 1991 (Fish & G. Code, § 4800). That classification continues today (see section 1.4). As a specially protected species, the only allowable take of mountain lions occurs via depredation permits when mountain lions have killed or are encountered attacking or threatening livestock, to protect public safety, and the targeted removal of individuals negatively impacting federally listed bighorn sheep populations (Fish & G. Code, §§ 4801–4809).

California's mountain lion population is out of control. CDFW seems to have lost its moral compass. There should be an annual analysis of the mountain lion population in relation to the deer and other wildlife populations. The number of mountain lions in each particular area need to have a maximum number. We need to learn from earlier times how to control our wildlife populations, to have ecological balance, where the mountain has an adequate food source of their natural prey. Management can include

relocations, sterilization, hunting quotas, depredations, and other means. Predators attacking or killing people, livestock, farm animals, and pets, should be candidates for depredation, by the victim or CDFW Law Enforcement Unit.

Our country was built on solid principes of safety and security. The hierarchy is that human life is protected at the highest level then - livestock, farm animals, pets…then wildlife. Guns were, and are, our protection against harm. We have a Constitutional right to bear arms. CDFW has a depredation policy which used to be a control mechanism for the mountain lion population, many depredations were carried out by CDFW. The change to the three-tier system is a tool used by CDFW to restrict, and nearly eliminate depredations.

4.3.2 Poaching

Poaching and other unpermitted take is rarely reported but has been observed in the CC-S, SA, and EPR (Beier and Barrett 1993; Riley et al. 2014; Vickers et al. 2015) as well as in the CC-N (Yap et al. 2019). Benson et al. (2023) reported 26 out of 199 mortalities from known causes in the years 1974–2020 were due to poaching, translating to a 2%–3% annual rate of mortality. This annual mortality rate is lower than the rate for depredation take (6%), vehicle collisions (4%), natural mortality (3%), and being killed by another mountain lion (3%). However, the fact that mortalities from poaching are unreported and difficult to detect means the actual poaching-related mortality rate may be higher than reported in the literature.

4.4 Depredation and Public Safety Management

The interactions between humans and mountain lions in California have profound impacts on the conservation and management of the species. Human-wildlife conflict occurs "when humans and wild animals interact in an unwanted or unsafe way" *(CDFW 2024a). As the State's Trustee Agency for fish and wildlife resources (Fish & G. Code, § 1802),* ***the Department's responsibilities include serving as the primary state agency charged with helping to resolve human-wildlife conflict and public safety wildlife incidents.***

CDFW has created the increase in human-wildlife conflicts by allowing the mountain lion population to explode, while the deer population diminish. The mountain lion is expanding its range in search of food sources. Santa Cruz Puma Project's study, of mountain lions, is now called Human-Mountain Lion Interactions Study, that is not

preventative objective, it is predictivity. ***"The interactions between humans and mountain lions in California have profound impacts on the conservation and management of the species. Human-wildlife conflict occurs 'when humans and wild animals interact in an unwanted or unsafe way'"***

CDFW has the responsibility to protect the public. ***"…the Department's responsibilities include serving as the primary state agency charged with helping to resolve human-wildlife conflict and public safety wildlife incidents."***

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4.4.1 Depredation Permits

When mountain lions have attacked or killed domestic animals, depredation permits issued by the Department allow them to be taken, nonlethally and, in some very limited circumstances, lethally *(Fish & G. Code, § 4801.5 and 4802, et seq.). Nonlethal methods of take include, but are not limited to, practices such as hazing with hounds and use of less-than-lethal projectiles. Mountain lions encountered in the act of pursuing, inflicting injury to, or killing livestock or domestic animals may be taken—nonlethally or lethally—by landowners and their agents without prior authorization (Id., § 4807). Additionally,* ***the Department or local public safety agencies may take mountain lions perceived to be an imminent threat to public health and safety*** *(Id., §§ 4801, 4801.5).*

In 2013, the ***Department implemented a situation-specific approach to responding to human-mountain lion conflict, which addressed mountain lions in areas of human habitation, mountain lions depredating pets/livestock, and mountain lion public safety situations*** *(CDFW 2013). The most noteworthy change in management action reflected in this approach was specifying that* ***no more than one mountain lion could be taken under a single depredation permit.*** *In 2017, the Department amended its approach, consistent with Fish and Game Code section 4801.5, to* ***prioritize non-lethal measures*** *for dealing with mountain lion depredation in the Santa Monica and Santa Ana Mountains where research indicated that local mountain lion populations constrained by anthropogenic barriers lacked genetic variation (CDFW 2017). Following the Commission's decision to make mountain lion a candidate species in 2020, the* ***Department expanded the area where non-lethal measures would be prioritized to the entire petitioned ESU*** *(CDFW 2020a), and later to the entire state (CDFW 2020b), consistent with Fish and Game Code section 4801.5.*

From January 2010 through 2020, the Department recorded 3,637 reported mountain lion incidents statewide. *These included depredations, public safety concerns, as well as sightings and nuisance reports [6]* ***There were 2,202 depredation incidents, wherein mountain lions were reported to have attacked pets and/or livestock.***

6] When reporting a nuisance animal, the reporting party can select "There is/are wild animals on or around my property that I would consider pests and I would like more information" or "There is/are wild animals on or around my property that is/are disturbing my garbage, causing noise or creating some other type of disturbance."

Across California from 1972 to 2019, the number of reported depredation events trended upward for large hoofstock (cows and horses), small hoofstock (mostly sheep and goats), and pets (Dellinger et al. 2021a). Sheep and goats accounted for 59.4% of confirmed depredations, while large hoofstock accounted for 13.1%, and pets accounted for 10.4%.

From 1972 to 2020, at least 3,694 mountain lions were removed in depredation incidents *(Dellinger et al. 2021b), and such removal was the leading cause of attributable mortality of collared mountain lions in 1974–2000 (Benson et al. 2023). Between 2001 and 2020, an average of approximately 92 mountain lions were lethally removed pursuant to depredation permits per year statewide (Dellinger et al. 2021b). With recent efforts to prioritize non-lethal measures in response to livestock damage, the number of mountain lions lethally removed pursuant to depredation permits statewide dropped to 3 in 2021, 10 in 2022, and 15 in 2023 (Fig. 14, CDFW 2022b; 2024b; 2025).*

Figure 14. *The number of mountain lions reported killed pursuant to depredation permits in California in 2001–2024. Data from (Dellinger et al. 2021b; CDFW 2022b, 2024b, 2025). The Department's approach to* ***mountain lion depredation and public safety response was modified in 2013, amended in 2017, and amended again in 2020.***

Interestingly, ***researchers have noted that at the county level, mountain lion depredation rates increased by 9% for every lion removed through a depredation permit the prior year*** *(Dellinger et al. 2021a). This general pattern of increased depredations in an area the year after mountain lion removal was also seen in Washington State, though removals were done via sport hunting and therefore less targeted to individual mountain lions that may have been involved in depredations (Peebles et al. 2013). Dellinger et al. (2021a) suggested this pattern could be a result of subadults moving to territories*

vacated when resident adults were removed. Research shows subadults can be more likely to use areas closer to people (Kertson et al. 2013), but evidence that subadults mountain lions have less well-developed hunting skills and are more likely to target easily killed domestic animals is not conclusive (Linnell et al. 1999; Peebles et al. 2013).

Mountain lion removal through depredation permits diminishes the total abundance of mountain lions in an area, and the lions removed are predominantly males (Sweanor et al. 2000). For example, from 1981 to 2013 in the Santa Ana Mountains and the Eastern Peninsular Range, 3.4 times as many males were taken for depredation than females (Vickers et al. 2015). Because males are more likely to disperse than females, depredation removal may thus further inhibit adequate gene flow between mountain lion populations in Southern California by removing the animals most likely to move between genetic populations (Vickers et al. 2017).

To further reduce the number of mountain lions killed for depredation, best practices to minimize livestock predation should be consistently employed. Unfortunately, mountain lions may not adequately interpret human cues and risk levels to substantially modify their behavior and thus reduce the number of conflicts with humans. In the Santa Cruz Mountains, during the day, mountain lions avoided areas of housing where they were most likely to come into conflict with humans (Nisi et al. 2022). However, at night mountain lions were more likely to use areas of intermediate housing density than during the day. Areas of intermediate housing density are where they were also most likely to be killed in response to depredation events. This suggests that improving livestock husbandry to minimize the risk of depredation is vital to further reduce the lethal take of mountain lions.

CDFW instituted a three-tier depredation permit, with one and two being Hazing, with things that should be common use as needed on any ranch – such as playing loud human voices, dogs, rubber bullets... the permit is only good for eight days. Those permits should be for 60 to 90 days. A person applying for a depredation permit should get a lethal permit, if the situation meets the need.

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

▶ **ATTACHMENT D | Mountain Lion Camera Captures | Page 211**

▶ **ATTACHMENT E | Mountain Lion Predations | Page 218**

Lucy White

I, Lucy White, personally sent a PRA to CDFW | Greg Martinelli emailed on 10/29, and later again through the CDFW Portal on 10/29/2025

Message sent through CDFW Portal 10/29/2025 reference number R017901-102925:

RE: REQUEST FOR REPORTS, INFORMATION, REQUESTS, DENIALS, FOR DEPREDATION PERMITS

This is a Request for Data, Reports and Information, regarding all Depredation Actions, Requests, and Permits, including those which were approved, and those which were denied, for depredations of mountain lions, for the years 2020. 2021. 2022, 2023, 2024, 2025 to current date, for San Mateo County.

CDFW Response:

CALIFORNIADFW Support <californiadfw@govqa.us> Thu, Oc

RE: PUBLIC RECORDS ACT REQUEST of October 29, 2025, Reference # R017901-102925

Dear Lucy McCargar-White,

This letter is in response to the above-referenced request you submitted to the Department of Fish and Wildlife (Department) pursuant to the Public Records Act (PRA) (Govt. Code, §7920.000 et seq.) on October 29, 2025.

The Department is initiating a search for records responsive to your request and will make available for inspection or provide copies of all responsive records, if any, that it is able to locate through reasonable efforts and that are not privileged or exempt from disclosure pursuant to the PRA or other applicable law. The Department will seek to make such records available as soon as reasonably possible. In the event the Department will be unable to make the records available within 90 days of your initial request, we will contact you to discuss the matter.

The PRA requires disclosure of existing records in the possession, custody, or control of a

public agency. If the Department locates existing records responsive to your request, Department staff will assemble the disclosable records. You may elect to receive copies of the records or to inspect them in person:

- If you chose to receive copies electronically, documents maintained in electronic format will be transmitted electronically whenever possible through the PRA Records Center.
- If the Department needs to deliver hard copies, you will be charged a copying fee of $.15 per page. The Department will notify you of the total cost prior to mailing the records. Please note the Department cannot waive or reduce these fees and costs for any reason. Once staff are able to return to their offices to make and send the copies, they will be sent to you.
- If you chose to inspect the records in person, you will be notified of the availability of the records for inspection.

If you have any questions or need additional information, please contact us and reference PRA No. R017901-102925. You may also call (916) 654-3821.

Sincerely,
Lacy Bauer

As of 1/22/2026 the documents requested have not been provided, showing "In Progress."

4.4.2 Bighorn Sheep Management

Mountain lions are occasionally removed when predating upon state and federally endangered Sierra Nevada bighorn sheep *(O. canadensis sierrae) or state and federally threatened Peninsular bighorn sheep (O. canadensis nelsoni). The Department is authorized to take such actions by Fish and Game Code section 4801, and such actions are identified in each species' federal recovery plan (USFWS 2000, 2007). Between 1999 and 2019, 26 mountain lions were lethally removed in the Eastern Sierra Nevada Mountains as part of bighorn sheep recovery (CDFW 2021). These lethal removals occurred outside the petitioned ESU boundary and where mountain lion populations are relatively large and well connected.*

4.4.3 Public Safety

*The **Department prioritizes public safety and lethally removes or attempts to remove mountain lions that represent an immediate threat to human safety. Specifically, a threat to public safety is when a mountain lion "exhibits one or more aggressive behaviors directed toward a person that is not reasonably believed to be due to the presence of responders."** (Fish & G. Code, § 4801.5, subd. (b).) From 1986 to April 2024 there were 25 reported mountain lion attacks on humans in California, 4 of them fatal (CDFW 2024c). The Department has records of 10 mountain lions being euthanized following attacks on humans in California between 2000 and 2024 (**reliable records prior to 2000 are unavailable**).*

Collectively, all forms of permitted take are unlikely to negatively influence mountain lion populations and trends at the statewide level or within the relatively large and well-connected NC and SN genetic populations. However, the additive mortality resulting from lethal removals associated with depredations and human conflicts in areas where mountain lion groups are already small and isolated such as California's central and south coasts may result in local population declines (Benson et al. 2023). Importantly, Benson et al. (2023) noted the risk of mortality from management killing declined dramatically from 2001 to 2020, and raised the possibility that the decline may be related to the 2017 changes in CDFW's management policies. The number of management killings decreased sharply after 2020 (Fig. 14), and therefore its relative importance as a source of mortality has decreased.

In April 2025 Santa Cruz Puma Project stated that there were a total of 50 adult lions based on the 2017 CDWF study, from scat analysis. The misleading information, which the public is relying on, could allow them to fall victim to mountain lion attacks on trails, on rural lands, in urban areas, and communities.

In the East Bay Times May 1, 2016 article, *"Zara McDonald, president of the Felidae Conservation Fund, one of the groups in a research consortium dubbed the Bay Area Puma Project. The **current estimate for the Santa Cruz Mountains ranges from 50 to 100 cats.** Numbers for the greater Bay Area simply don't exist.... Other pumas remain untracked, largely because collaring them is quite a feat. To place a collar, researchers must stalk pumas through the woods, using dogs to scare them into trees. If the cats don't climb so high that a fall would be dangerous, the researchers dart them with tranquilizers, fit the collars and then wait with the cats until they recover... The endeavor, which sometimes keeps researchers out overnight, has to*

be repeated every two years when a cat's transmitter runs out of juice. ***Only a few Bay Area cats outside the Santa Cruz Mountains wear collars****…"*

CDFW delays or denies depredations as much as possible, the three-tier system makes depredation almost impossible. CDFW needs to get DNA samples whenever possible, to better track and identify mountain lion interactions. Mountain lion behavior is getting more brazen and aggressive. "…*Department prioritizes public safety and lethally removes or attempts to remove mountain lions that represent an immediate threat to human safety. Specifically, a threat to public safety is when a mountain lion 'exhibits one or more aggressive behaviors directed toward a person that is not reasonably believed to be due to the presence of responders.' "* Mountain lions do not wait for CDFW to arrive on a scene.

▶ **ATTACHMENT A | News Articles Related to Mountain Lions | Page 116**

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

▶ **ATTACHMENT D | Mountain Lion Camera Captures | Page 211**

▶ **ATTACHMENT E | Mountain Lion Predations | Page 218**

4.5 Competition

Mountain lions compete with other large carnivores in most areas of their range. Mountain lions and black bears regularly overlap in space in almost all mountain lion-occupied areas in California except for the Santa Cruz Mountains and the Santa Monica Mountains. In a study in the Mendocino National Forest in Northern California, black bears displaced mountain lions from about 50% their kills (Elbroch et al. 2015a), depriving them of calories, and potentially forcing them to expend additional energy hunting to procure more prey (Allen et al. 2021). Instead of avoiding areas with bears, mountain lions increased their predation rates to compensate for the kills stolen by bears (Elbroch et al. 2015a). It is unknown whether displacement by black bears occurs frequently enough to affect mountain lion survival and reproductive rates (Elbroch and Kusler 2018).

In western North America, gray wolves can affect adult and kitten survival by directly killing individual mountain lions, and can affect habitat and prey selection, bedding locations, and population size (Bartnick et al. 2013; Elbroch et al. 2015b; Kusler et al. 2017; Elbroch and Kusler 2018; Elbroch et al. 2020). Mountain lions can also kill individual wolves. In Washington State, at least four collared wolves were killed by

mountain lions from 2013–2022 (WDFW 2022). However, given the small size and limited distribution of California's current gray wolf population, competition between wolves and mountain lions has not been a significant threat to the persistence of mountain lions in the petitioned ESU. Wolves are currently absent from the petitioned ESU and therefore wolf competition is not considered a current threat; however, wolves are rapidly expanding their range in the state with one pack known to occupy a portion of the southern Sierra Nevada. If wolf distribution continues to expand, competition between wolves and mountain lions in the petitioned area may become a threat in the future. Finally, smaller predators and scavengers such as coyotes are known to opportunistically feed from mountain lions kills (Brunet et al. 2022), although the degree this loss of food resources impacts lions is difficult to quantify.

Intraspecific conflict and aggression (i.e. aggressive interactions between two or more mountain lions) appears to be a significant mortality factor in areas where mountain lions occupy small patches of suitable habitat surrounded by urban and agricultural development and other dispersal barriers (Riley et al. 2014; Vickers et al. 2015; Benson et al. 2020). Intraspecific aggression was identified as the leading cause of mortality for the nearly isolated mountain lions in the Santa Monica Mountains (a portion of the CC-S; Riley et al. 2014), although more recently, vehicles and toxicants have caused similar levels of mortality (Benson et al. 2020). From 2002 to 2018, about 41% of deaths of telemetered mountain lions tracked in the Santa Monica Mountains were determined to have resulted from intraspecific aggression. There were multiple documented cases of adult males killing their siblings, offspring sired by other males (i.e., infanticide), and previous mates (Riley et al. 2014; Benson et al. 2020). Additionally, in the SA, intraspecific predation was documented on two occasions in recent years (W. Vickers, unpublished data). Therefore, this form of competition should be considered a potential threat to mountain lion populations in small, isolated genetic populations such as the CC-S, SA, and the SGSB. While the effect of inter- and intraspecific competitions on mountain lions within the entire petitioned ESU is unknown, in the smaller genetic populations it likely exacerbates the threats associated with small, isolated populations.

4.6 Toxicants

Mountain lions throughout California are exposed to toxic chemicals in their environment. Depending on the extent of exposure, toxicants may cause clinical signs of disease or debilitation, or may lead to Status Review of the petitioned Southern

California/Central Coast ESU of Mountain Lion in California, California Department of Fish and Wildlife toxicosis and death or debilitation. Some ingested toxicants can be transferred in utero to fetuses, and debilitated lions may be more susceptible to other forms of mortality such as starvation and traumatic injuries.

Anticoagulant rodenticide (AR) baits are commonly used to control rodent pests in urban, suburban, and agricultural areas (Litovitz et al. 1998; Maroni et al. 2000). As summarized in Serieys et al. (2015), ARs interrupt the production of vitamin K-dependent blood clotting proteins, leading to the depletion of these proteins over a period of days and inducing mortality by internal hemorrhage. Comprised of two classes of compounds, ARs are the primary chemical method used worldwide for the control of rats and mice. First-generation ARs, including warfarin, diphacinone, and chlorophacinone, are more readily metabolized, have a shorter half-life in liver tissue (two weeks to several months), and must be consumed in multiple feedings to reach a lethal dose. Second-generation ARs include brodifacoum, bromadiolone, difenacoum, and difethialone, and were developed to target rodents with genetic resistance to warfarin. Due to increased toxicity and persistence in animal tissues, with half-lives ranging from 6–12 months, second-generation ARs may persist in liver tissue for more than a year in some species. Both classes of compounds have a delayed onset of action, and death from AR consumption can occur up to 10 days after ingestion. Individual rodents may continue to accumulate the compounds over a period of days, increasing their likelihood of capture by predators as they become weakened by the toxicant. For these reasons, ARs have the potential of creating primary and secondary poisoning risks to non-target wildlife. Predatory animals are at significant risk of secondary poisoning if they consume prey that had previously ingested ARs. AR exposure in wildlife has been positively associated with proximity to urban areas, raising concerns about long-term conservation impacts of AR exposure on non-target wildlife populations on the fringe of urban areas (Hosea 2000; Riley et al. 2007; McMillin et al. 2008; Gabriel et al. 2012; Serieys et al. 2015; Serieys et al. 2018).

Mountain lions can be exposed to ARs in many settings including near human settlements where legal ARs are used to control vertebrate pests (Moss et al. 2016; Smith et al. 2016). However, even in remote locations on public lands, mountain lions can come into contact with prohibited rodenticides as they are often used to protect illicit cannabis plantations (Gabriel et al. 2012). The Department's Wildlife Health Lab detected AR exposure in 94.2% (343/364) of tested mountain lion livers submitted between 2016

and 2022 (Fig.15; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data). Second-generation ARs were more commonly detected than first-generation ARs, despite a 2014 California regulatory change restricting second-generation AR use to certified pesticide applicators (Rudd et al. 2018; Rudd and Rogers 2021). Eighty-five percent of the mountain lion livers (306/364) tested had two or more different ARs present at the time of death, with 52.2% (190/364) of individuals testing positive for three or four different ARs, which indicates multiple exposure events are common (Fig. 16; Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data). The 94.2% (343/364) total exposure prevalence recorded between 2016 and 2022 is higher ($X2 = 14.8$, $p < 0.001$) than the 82.4% (103/125) exposure prevalence found in mountain lion livers analyzed from across the state between 2003 and 2015 (Poppenga et al. unpublished data). In samples from 2003–2015, 67.2% (84/125) of livers indicated exposure to multiple AR compounds, which was lower than the exposure prevalence rate in livers tested between 2016 and 2022 ($X2 = 15.4$, $p < 0.001$).

Figure 15. *Anticoagulant rodenticide residues detected in 364 livers of mountain lions submitted to the Wildlife Health Laboratory for postmortem examination 2016–2022 (Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022, CDFW unpublished data). Numbers on top of the bars are the number of livers that the specific residue was found in.*

Figure 16. *Number of different anticoagulant rodenticide analytes detected in 364 individual mountain lion livers analyzed from 2016–2022 (Rudd et al. 2020b; Rudd and Rogers 2021; Rudd et al. 2021; Rudd et al. 2022; CDFW unpublished data).*

Fetal AR exposure occurs in mountain lions, as exposure was detected in four of eight (50%) instances where both pregnant female mountain lions and fetal or placental tissues were tested (Table 4; CDFW unpublished data; National Park Service (NPS) unpublished data). Many toxic substances, including ARs, can adversely affect fetal development and survival at doses that may not produce toxic effects in the mother (Gupta 2012). Fetuses are also typically more susceptible to AR toxicity because the placenta is the only source of vitamin K for the fetus (Gupta 2012). AR-related coagulopathy and toxicity was not observed in any of the examined fetuses with AR exposure (Rudd et al. 2020, CDFW and NPS unpublished data).

Table 4. *Anticoagulant rodenticide test results for liver samples from 8 pregnant mountain lions and their fetuses, pooled fetal tissue, or placenta (CDFW and NPS unpublished data). BRD: brodifacoum, BRM: bromadiolone, CHL: chlorophacinone, DIF: difethialone, DIPH: diphacinone. An asterisk (*) indicates that the samples were pooled together for qualitative and quantitative analyses (i.e., samples too small to be evaluated individually).*

In the Santa Monica Mountains National Recreation Area (CC-S), the deaths of seven mountain lions since 2004 have been associated with AR exposure and toxicosis (Riley et al. 2007; NPS 2021). Between 2002 and 2019, out of 26 known deaths of adults and subadults in that population, 5 were from AR toxicosis (Benson et al. 2020). Two mountain lions that died from AR toxicosis in 2004 in CC-S also had infestations of notoedric mange (Riley et al. 2007; Uzal et al. 2007). Notoedric mange, typically caused in felids by the parasitic mite Notoedres cati, may cause fatal disease in bobcats and mountain lions (Foley et al. 2016). Exposure to higher doses of ARs or to more than one AR was associated with greater likelihood of dying due to severe mange (Serieys et al. 2015).

In addition to ARs, risk of pesticide exposure may also come from neurotoxic rodenticides, such as bromethalin, which have become more widely used as restrictions on ARs have increased (McMillin et al. 2016). Bromethalin is a single-feed neurotoxic rodenticide which once ingested is absorbed and processed in the liver to form its highly toxic metabolite, desmethylbromethalin (DMB). Both bromethalin and DMB accumulate in fat and brain tissues. Lethal intoxication leads to a death via respiratory failure, while sublethal intoxication can cause neurological dysfunctions that may resolve, or result in death (McMillin et al. 2016).

Bromethalin was thought to have low risk of secondary exposure, yet in recent years has been documented in nontarget wildlife in California (McMillin et al. 2016; Rudd et al. 2021; Rudd et al. 2022). Because exposure was documented in probable mountain lion prey species, CDFW and the California Animal Health and Food Safety Laboratory tested fat or brain tissue from 49 mountain lions for the metabolite DMB over two years. In 2021 and 2022, four of 32 (12.5%) and six of 17 (35.3%) mountain lions tested positive for DMB exposure, respectively (Rudd et al. 2021, 2022). Continued surveillance for bromethalin exposure is warranted and more research is needed on exposure pathways and the sublethal effects on mountain lions due to bromethalin products entering the food web.

The Petition cited Rudd et al. (2019) to state that mountain lions in California are exposed to dangerously high levels of illegal pesticides, such as carbofuran. However, this citation is incorrect; the Department has not documented any cases of carbofuran toxicity in mountain lions to date. Further research is needed to investigate the lethal and sub-lethal effects of anticoagulants and other toxicants on wildlife in terrestrial environments (Riley et al. 2007; Gabriel et al. 2015; Rudd et al. 2018).

4.7 Infectious Diseases

Mountain lions are afflicted by various viral, bacterial, and parasitic pathogens. It is not known if these pathogens and their respective diseases alone could imperil the species in California…

4.8 Wildland Fire and Fire Management

Fire is a natural disturbance in many California ecosystems. However, intense, high-severity burns can significantly modify ecosystems by changing plant and animal community compositions temporarily or long term (Williams et al. 2023). Wildfires in California can cause direct mortality to mountain lions and can result in temporary adverse modification of their habitats. However, after wildfires, deer populations typically respond favorably to the resulting plant regrowth (Lewis et al. 2022)….

Figure 17. *Wildfire perimeters in California by fire year, 1990–2022.*

4.9 Climate Change

Weather.

4.10 Risks to Small, Isolated Populations

Small, isolated mountain lion populations—such as those in the Santa Monica Mountain portion of CC-S, and the SA and SGSB genetic populations, which are each estimated to number less than 75 individuals (Table 3)—are inherently vulnerable to extinction due to multiple factors. These factors may include demographic stochasticity8, genetic drift9, lack of immigration, and inbreeding, which can eventually lead to inbreeding depression10. Genetic drift and inbreeding both reduce genetic variation which can diminish the ability of a population to adapt to changes in the environment (Primack 1993; Reed and Frankham 2003). Each of these effects can amplify the impact of the

other effects, further reducing population size and accelerating local extinction in what has been termed an extinction vortex (Primack 1993).

4.10.1 Demographic and Environmental Stochasticity

Reproduction and survival rates vary among individuals and between years in wildlife populations. This variation leads to demographic stochasticity, which tends to average out in large populations but has a much greater effect on the rate of growth or decline in small populations. If a small population declines, subsequent generations become even more susceptible to demographic stochasticity. Additionally, unpredictable changes in the natural environment can cause the size of small populations to vary dramatically while larger, more widely distributed populations would remain more stable because these changes normally occur only in localized areas of the entire population's geographic range (Primack 1993). For example, changes in vegetation, abundance of resources, or disease and parasite exposure can cause the size of small, isolated wildlife populations to fluctuate wildly, possibly leading to local extinction (Primack 1993). Additionally, natural disasters such as droughts, fires, and severe storms can lead to dramatic population changes when populations are small and isolated to one location.

While the statewide population of mountain lions is large enough that demographic and environmental stochasticity is unlikely to be an issue, the smaller and more isolated populations (those in the Santa Monica Mountains portion of CC-S, and the SA and SGSB genetic populations) are potentially vulnerable to those impacts. Of specific concern are the increasingly large and severe fires leading to direct death or injury or significant habitat changes (see section 4.7). For example, the Woolsey Fire in 2018 burned about 39,235 ha (96,949 acres) in the center and western part of the Santa Monica Mountains National Recreation Area. According to the National Park Service, two of the 11 mountain lions with working radio-collars in and around the Santa Monica Mountains at the time of the Woolsey Fire succumbed to the fire or its impacts (Blakey et al. 2022). In such a small population (Table 3), the impact of just one event like the Woolsey Fire on the population could be substantial, especially if the animals killed or adversely affected were breeding adults.

4.10.2 Inbreeding and Genetic Drift

Inbreeding and genetic drift can both result in decreased genetic variation in wildlife populations. Deleterious alleles (maladaptive genes) can be present at low frequency even in large, healthy populations. But as populations become smaller, these

maladaptive genes can increase in relative frequency, and populations may suffer the effects of inbreeding depression, resulting in offspring with a reduced ability to survive and reproduce (Frankham 2005; Harding et al. 2016). Genetic drift may also lead to the loss of beneficial alleles or the fixation of deleterious alleles in a small population due to a limited breeding pool (Hedrick and Kalinowski 2000). Deleterious fixed alleles can result in decreased fitness for all individuals and lead to population declines (Hedrick and Kalinowski 2000; Frankham 2005).

Multiple genetic studies have shown that certain mountain lion genetic populations along the southern coast of California have particularly low genetic variation (Ernest et al. 2003; Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019; Gustafson et al. 2022) which may be the result of habitat fragmentation and genetic isolation. Linkage decay analysis by Gustafson et al. (2022) showed evidence of inbreeding between closely related11

11 "A common ancestor less than three generations ago" (Saremi et al. 2019) (i.e., first-cousins or closer). individuals in at least four of the fine scale genetic populations (see details in section 4.9.4 below). Saremi et al. (2019) investigated mountain lion genomes and found additional evidence of recent inbreeding among closely related individuals (i.e., long runs of homozygosity) in the Santa Monica and Santa Cruz Mountains.

However, the results of Gustafson et al. (2022) suggest the problems of inbreeding and homozygosity do not occur in all California populations. Several larger California populations (e.g., Sierra Nevada) display little evidence of inbreeding (see section 4.9.4 below for details). Additionally, genetic variation in the broad-scale genetic populations may minimize the impacts of inbreeding depression in many of the fine-scale populations if gene flow can be enhanced (Gustafson et al. 2022). This conclusion is consistent with the results of Saremi et al. (2019) that indicated even though inbreeding had reduced variation in the genomes of many individual mountain lions, these low-heterozygosity genome regions were generally not shared between populations. These studies suggest genetic restoration is possible even among genetically depauperate populations. When considering that genetic variation is high in the WSN and ESN genetic populations (Gustafson et al. 2022), there is potential for long-term persistence of mountain lions throughout much of the state if adequate habitat can be protected and habitat connectivity can be restored and/or enhanced to facilitate increased genetic exchange

between the genetic populations in the Sierra Nevada and those within the petitioned area (see Section 10.1 for more detail).

4.10.3 Loss of Genetic Variation

High levels of genetic variation have been shown to be positively correlated with survival and reproduction rates and decreased extinction risk (Hedrick and Kalinowski 2000; Reed and Frankham 2003). The concept of effective population size12

12 The number of individuals in a population that are contributing to the next generation (i.e., reproducing and passing on their genes). (Ne) is useful for understanding the likelihood that a population will lose genetic variation through genetic drift or inbreeding. Ne is the size of an ideal population that would result in the same level of inbreeding or genetic drift as that of the population under study (Palstra and Ruzzante 2008). Ne is determined by several factors and its value is generally significantly smaller than the census population (i.e., the number of animals actually breeding in a population is usually significantly fewer than the total number of animals in the population; Palstra and Ruzzante 2008).

Both Franklin (1980) and Soulé (1980) reviewed the genetic considerations fundamental to species conservation. They proposed two primary considerations related to population viability: 1) an immediate danger in small populations due to inbreeding (i.e., inbreeding depression), and 2) the longer-term loss of additive genetic variation that would limit future evolutionary change (i.e., evolutionary potential). Their work led to the common adoption of what is now referred to as the 50/500 rule in conservation biology. Under this framework, in the absence of gene flow, a Ne of at least 50 should be maintained to avoid inbreeding depression in the short term for large mammal species (Harmon and Braude 2010). Franklin (1980) suggested that with a Ne below 500, genetic variance for complex traits would be lost significantly faster than it could be renewed by mutation. Soulé (1980) added that this size (500) was required to maintain sufficient genetic variation for populations to evolve to changing environments in the longer term (evolutionary potential).

Since then, the importance of conserving quantitative genetic variation has gained recognition, although there is disagreement about the appropriate value for Ne. Frankham et al. (2014) suggested that Ne = 50 would be raised to at least Ne = 100 to prevent inbreeding depression over short time scales (~5 generations). Frankham et al. (2014) also summarized several independent lines of theoretical and empirical

evidence suggesting that at least Ne = 1000 is required to maintain evolutionary potential in perpetuity.

Regardless of whether Ne = 50 or Ne = 100 is used as a benchmark, nearly all the genetic populations within the petitioned area are below the population size needed to avoid inbreeding depression in the short term (Table 6). True extinction risk is often the result of the complicated interaction of both genetic and demographic factors. Recent analyses reveal that a minimum of 7,923 km2 (3,059 mi2) of protected suitable habitat [13] or 14,591 km2 (5.633 mi2) of overall suitable habitat is needed to allow mountain lions to maintain an Ne ≥ 50 (Dellinger et al. 2020b). According to Dellinger et al. (2020b), the Central Coast (roughly equivalent to CC-C) is the only area where the mountain lions within the petitioned area occupy an area larger than this suitable habitat threshold; however, because of potential future development pressures, it is unknown whether the threshold will continue to be met over the long term. Dellinger et. al.'s conclusions (2020b) suggest that the long-term viability of mountain lions in the other genetic populations may be reduced unless suitable habitat and/or connectivity to other genetic populations is increased (Benson et al. 2016; Benson et al. 2019). While there are examples of small wild populations that persist below the suggested threshold, at least in the short term, it is not known whether the genetic populations within the petitioned area, facing increasing isolation and with low genetic variation, will ultimately maintain long-term viability (see examples in Harding et al. 2016)

13] Dellinger et al. (2020b) considered all public lands and private lands overlain with conservation easements "protected".

***Table 6.** Estimated population (CDFW unpublished data) and effective population sizes of genetically distinct mountain lion populations identified in Gustafson et al. (2019). The boundaries used to calculate the population sizes come from Dellinger et al. (2020b). Estimates from Gustafson et al. (2019) are adapted from Table 3 and include parametric 95% confidence intervals. Estimates from Gustafson et al. (2022) are adapted from their Table 1 and confidence intervals were not reported.*

An important metric of genetic variation is expected heterozygosity (HE)14

14 Heterozygosity refers to having inherited two different alleles for a particular trait compared to homozygosity, in which the inherited alleles are identical at a given location of the genome. . Adequate genetic variation is important for maintaining evolutionary potential, as variation is the raw material that allows populations to adapt

to changing conditions over generations. The amount of heterozygosity in California mountain lion genetic populations is highly variable (Gustafson et al. 2019; range of HE = 0.33–0.53; based on microsatellite loci), but lower on average than other western states, including Wyoming, Nevada, Arizona, Utah, Colorado, and New Mexico (range of HE = 0.49–0.59; (Anderson et al. 2004; McRae et al. 2005; Andreasen et al. 2012)). Compared to California, mountain lion populations in these states show less population genetic structure due to higher rates of gene flow, which in turn counteracts the effect of genetic drift in reducing heterozygosity (Anderson et al. 2004; McRae et al. 2005). The lower overall heterozygosity, as well as the large variance in heterozygosity among local genetic populations, observed in California is most likely driven by barriers to dispersal such as mountain ranges and contemporary patterns of urban and transportation development (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022).

Assessing heterogeneity among the four broad-scale mountain lion groups in California, Gustafson et al. (2022) found they have retained substantial heterozygosity, particularly in the Sierra Nevada region with its large stretches of undeveloped contiguous habitat (Dellinger et al. 2020b). Multiple genetic investigations have now demonstrated the importance of the Sierra Nevada region as a reservoir of genetic variation (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022). Bi-directional migration rate models based on genetic data indicated the WSN genetic population has served as a significant source of migrants into other regions of California, importantly the EPR, CC-N, and SGSB (Fig. 4; Gustafson et al. 2019).

Isolated populations can also become structured through natural selection as locally adaptive genes become more prevalent in the population. However, mountain lions are long-distance dispersers and inhabit all major mountain ranges in California (Dellinger et al. 2020b), suggesting local adaptation may be unlikely, despite current connectivity challenges. Gustafson et al. (2022) found no evidence for local adaptive differences among the four broad-scale geographic mountain lion groups, or among the 10 fine-scale genetic populations. Though the appropriateness of using reduced representation genome sequencing data (in this case, restriction site-associated DNA sequencing data) to detect local adaptation has been questioned within the scientific literature (Lowry et al. 2017), this approach has been employed successfully in other studies (Catchen et al. 2017). The results of Gustafson et al. (2022) found no evidence for local adaptive traits warranting specific conservation status, nor risk of outbreeding depression

resulting from the mixing of genetic groups as a result of active management (e.g., translocations) (Frankham et al. 2011). However, the South Coast group contained some private alleles which were not found in other genetic groups and which should be conserved to help preserve statewide genetic variation (Gustafson et al. 2022).

While genetic risks may significantly increase a small population's risk of extinction, implementation of a well-planned conservation strategy can substantially mitigate risks associated with small populations. A comprehensive plan for long term viability should include the principles of representation, resiliency, and redundancy (Shaffer and Stein 2000; Wolf et al. 2015).

4.10.4 Genetic Impacts on the Populations Within the Petitioned ESU

Heterozygosity within the genetic populations of petitioned ESU is highly variable. Of the broad-scale groups, SC and CC have relatively low genetic variation while SN and NC have retained sufficient variation to be capable of serving as sources of genetic rescue under various management scenarios (e.g., improved connectivity, assisted gene flow). Maintaining and enhancing connectivity within and among broad-scale groups has the potential to counteract the effects of genetic drift and inbreeding to at-risk coastal genetic populations.

Sierra Nevada Group. *Gustafson et al. 2019 and 2022 consider the Sierra Nevada region to be a major source of genetic diversity for mountain lions in California. This group is of critical importance to sustaining statewide gene flow as the Tehachapi range at its southern end is the only known area where there is current gene flow from outside the petitioned area into the CC and SC groups. Enhancing connectivity through the Transverse Ranges, including the Tehachapi, Sierra Pelona, San Gabriel, and San Bernardino Mountains, represents a critical conservation priority (Gustafson et al. 2019)*

Central Coast Group. *The three fine-scale genetic populations in the Central Coast Group differ significantly in their levels of genetic variation. The CC-C has the highest diversity with the Central Coast Group and the largest Ne estimates, though neither Ne estimate exceeds 100. The CC-N and CC-S genetic populations have low estimated Ne and represent areas of genetic management concern because the area they inhabit contains insufficient suitable habitat to sustain a mountain lion population with Ne ≥ 50 (Gustafson et al. 2019; Dellinger et al. 2020b; Gustafson et al. 2022).*

Central Coast-North. *Lack of connectivity and inbreeding are concerns in CC-N. Gustafson et al. (2022) found evidence of close inbreeding in CC-N, which is consistent with the whole genome sequencing results of Saremi et al. (2019) from the Santa Cruz Mountains which suggested close and recent inbreeding led to runs of homozygosity in the lion genomes. A long-term research project in the Santa Cruz Mountains has collared 147 adult and juvenile mountain lions with GPS and/or VHF collars over the past 15 years. During that time no collared animal has left the Santa Cruz Mountains to the east across the Coyote Valley to the Diablo Range or to the south across Highway 101 to the Gabilan Range (pers. comm C. Wilmers 2024). This suggests that there is very limited current connectivity between the major mountain ranges in CC-N, and further inbreeding is a concern.*

Central Coast-Central. *The CC-C population is currently the largest and most genetically robust of the genetic populations within the petitioned ESU, with Ne estimates of 57 (Gustafson et al. 2019) and 27 (Gustafson et al. 2022; Table 6). However, the amount of suitable habitat in the area that is currently conserved (6,780 km2; 2,618 mi.2) is more than 1,000 km2 below the threshold Dellinger et al. (2020b) considered necessary to support an Ne ≥ 50 and long-term population stability. Additionally, bi-directional migration rate models indicate CC-C serves as the most significant source of migrants to CC-S, and along with WSN, is one of only two occasional sources of migrants to CC-N and SGSB (Gustafson et al. 2019). This suggests protecting CC-C is key to maintaining the entire Central Coast Group and for maintaining what little genetic connectivity remains between the Central Coast Group and the South Coast Group (Figs. 4, 9, 10). Thus, maintaining or expanding this genetic population and its connectivity to adjacent genetic populations is critical for the long-term viability of the entire petitioned ESU.*

Central Coast-South. *As with CC-N, Gustafson et al. (2022) and Saremi et al. (2019) found evidence of close inbreeding in CC-S. Within CC-S, the Santa Monica Mountains in particular appear to have very low genetic variation and are exhibiting both genetic and phenotypic evidence of inbreeding (Ernest et al. 2014; Riley et al. 2014; Benson et al. 2019; Gustafson et al. 2019; Gustafson et al. 2022; Huffmeyer et al. 2022). This population is one of two in the petitioned ESU (see SA below) to have the lowest genetic variation observed for the species globally, apart from the endangered Florida panther (Riley et al. 2014). There are multiple known cases of close inbreeding, for example a male that had kittens with daughters, granddaughters, and great granddaughters (Riley et al. 2018a, S. Riley pers. comm. 2024). Phenotypic evidence of inbreeding depression*

in the form of kinked tails, failed descension of the testes, and abnormal sperm morphology have been observed. These irregularities have also been observed in Florida panthers (Roelke et al. 1993; Ernest et al. 2014; Huffmeyer et al. 2022). Freeway traffic and urban development have largely isolated the Santa Monica Mountains from animals in the rest of CC-S and therefore from the rest of the Central Coast and from the Sierra Nevada groups, severely limiting contemporary gene flow (Riley et al. 2014). For example, 2009 was the last time a mountain lion was documented crossing U.S. 101 and entering the Santa Monica Mountains (Benson et al. 2016). That male bred successfully and increased the genetic diversity of the Santa Monica Mountain population (Riley et al. 2014). Similarly, very few animals have been documented dispersing from the main body of the Santa Monica Mountains. A male lion, identified as P-22, which established a territory in Griffith Park in 2012 after migrating from the western Santa Monica Mountains, almost certainly crossing U.S. 101 and I-405 along the way, was the most famous of these. He died in 2023 without fathering cubs; however, in 2024, another mountain lion of unknown origin was sighted in Griffith Park (Gammon 2024). Models predict a 16–28% probability of the extirpation of the Santa Monica Mountains population within 50 years if immigration levels remain the same or are reduced, in part due the impacts of inbreeding depression (Benson et al. 2016; Benson et al. 2019). In contrast, in the CC-S genetic population north of U. S. 101, two radio collared males dispersed from their natal range, crossed highways, and established home ranges as adults in the area of the Santa Susana Mountains, Simi Hills, and Los Padres National Forest (Riley et al. 2014). Therefore, the threat of isolation and potential inbreeding depression is more acute in the Santa Monica Mountains than in the CC-S genetic cluster as a whole.

South Coast Group. *The South Coast Group is comprised of 3 genetic populations: Santa Ana Mountains (SA), Eastern Peninsular Range (EPR), and the San Gabriel/San Bernardino Ranges (SGSB).*

San Gabriel/San Bernardino. *The SGSB genetic population has low observed genetic variation, a very small estimated Ne (2.3–5; Table 6), and exhibits evidence of inbreeding (Gustafson et al. 2019; Gustafson et al. 2022). Additionally, the SGSB area is comprised of two discreet mountain ranges that area separated by roads and largely surrounded by urbanized areas and desert containing little shrub or tree cover. This isolation increases the genetic population's risk of inbreeding depression (Gustafson et al. 2019).*

Santa Ana Mountains. *The SA genetic population has an estimated Ne of 3.5–15 and concerningly low genetic variation (Gustafson et al. 2019; Gustafson et al. 2022) and available suitable habitat (Dellinger et al. 2020b). Along with the Santa Monica Mountains population, the SA has the lowest genetic variation of any known mountain lion population other than Florida panthers (Ernest et al. 2014; Riley et al. 2014; Gustafson et al. 2019). Like the Santa Monica Mountains, genetic and phenotypic evidence of inbreeding depression in the form of kinked tails and teratospermia (> 60% abnormal sperm production) has been observed in the SA (Ernest et al. 2014; Huffmeyer et al. 2022). As with the Santa Monica Mountains, the main barriers to movement appear to be freeways and adjacent urban/developed areas, which have limited gene flow in recent decades (Ernest et al. 2014; Riley et al. 2014; Vickers et al. 2015; Huffmeyer et al. 2022). While there is genetic evidence that individual animals from EPR historically were able to successfully move into the SA and breed (see the full red and half red samples in the Santa Ana Mountains in Fig. 10), that connectivity may no longer be viable due to the strength of I-15 as a barrier between the populations as traffic and nearby development have increased in recent years (Vickers et al. 2015). For example, a thirteen-year study (2001–2013) that collared 74 mountain lions in the SA and EPR observed only one animal move between the populations, and that individual was killed for depredating sheep before it could breed and introduce genetic material to the group (Vickers et al. 2015). The impact of this isolation and inbreeding has led to an estimated "16–21% probability of local extinction in the (Santa Ana Mountains) due purely to demographic processes over 50 years with current low levels or no immigration" (Benson et al. 2019).*

Eastern Peninsular Range. *The EPR genetic population has an estimated Ne of 15–32 and shows little evidence of inbreeding (Gustafson et al. 2019), although there has been a report of teratospermia (Huffmeyer et al. 2022). The EPR appears to have retained sufficient variation to be capable of serving as a source of genetic rescue for other genetic populations (Gustafson et al. 2019; Gustafson et al. 2022), and could perform an important role in increasing connectivity and gene flow within the broad-scale SC group if connectivity is improved (Figs. 4, 10). The EPR is the only genetic population known to exchange migrants with the Santa Ana Mountains, and management actions which enhance gene flow between these areas are critical to SA's population viability. Gene flow between EPR and the adjacent SGSB genetic population appears limited. The degree of dispersal from Arizona, Nevada, and Mexico into EPR remains unknown (Gustafson et al. 2019). Connectivity between EPR and adjacent populations in Mexico*

and Arizona may be curtailed by physical barriers along the border and the damming and major channelization of the Colorado River. Immigration and emigration patterns of mountain lions in the eastern area of EPR have not been studied, and mountain lion density may be low in that area. Some gene flow may occur across the Colorado River from the Kofa National Wildlife Refuge into California, and one mountain lion has been documented moving between EPR and Mexico, suggesting genetic connection to Mexico may exist (Vickers et al. 2015; W. Vickers, unpublished data).

In summary, multiple genetic populations in the petitioned area are at risk from genetic factors associated with small, isolated populations. However, these genetic populations identified in Gustafson et al. (2019) are nested within two broader-scale genetic groups identified by Gustafson et al. (2022) that each contain more robust, but still less than ideal levels of genetic diversity. This suggests that if connectivity can be improved among the smaller, nested genetic populations and between CC, SC, and SN, low genetic variation in the at-risk populations can still be mitigated with intentional management.

5. Existing Management

5.1 Land Ownership within the Petitioned Southern California/Central Coast ESU

The area of the petitioned ESU is approximately 15,273,700 ha (37,742,134 acres) (Table 7). Approximately 52% of the area is public land and 48% is private. The Bureau of Land Management (BLM) manages the largest amount of land at 21%, followed by the U.S. Forest Service (9%), the National Park Service (6%), the Department of Defense (5%), and the California Department of Parks and Recreation (3%). Local (city or county) and nonprofit special districts combined represent 5% of the public land. Tribal lands total 167,700 ha (414,396 acres), which is 1% of the non-private land within the petitioned ESU *(Table 7, Fig. 20).*

Public (and private) lands are managed for many different purposes including recreation, extractive uses (timber harvest and mining), grazing, and wildlife habitat. Thus, while some specific projects on public lands may not benefit mountain lions, most public lands in California are managed for multiple uses including wildlife conservation and sustainability.

Table 7. *Land ownership within the petitioned Southern California/Central Coast ESU, percentage of total ESU area by manager, and percentage of public land area by manager in the petitioned ESU.*

Figure 20. *Public and tribal lands within the petitioned Southern California/Central Coast mountain lion ESU.*

California is 100,000,000 total acres, the third largest state, with 40-43 million acres used for agriculture. CDFW's proposed ESU Area is nearly 38 million acres [38% of California], which would traffic the mountain in multiple directions, with no management plan for the mountain lion, but oppressive policies for the people and lands within the boundaries. ***The area of the petitioned ESU is approximately 15,273,700 ha (37,742,134 acres) (Table 7). Approximately 52% of the area is public land and 48% is private.*** *The Bureau of Land Management (BLM) manages the largest amount of land at 21%, followed by the U.S. Forest Service (9%), the National Park Service (6%), the Department of Defense (5%), and the California Department of Parks and Recreation (3%). Local (city or county) and nonprofit special districts combined represent 5% of the public land. Tribal lands total 167,700 ha (414,396 acres), which is 1% of the non-private land within the petitioned ESU.* **The only benefit the mountain lion has in California, is in the balance of our ecosystem. They are majestic**

▶ **ATTACHMENT B | Mountain Lion Sightings Maps | Page 205**

▶ **ATTACHMENT C | California Department of Fish and Wildlife Petition Maps | Page 209**

5.2 California Wildlife Protection Act

California voters through Proposition 117 adopted the California Wildlife Protection Act of 1990 (Act), codified in part as Fish and Game Code section 4800, et seq. Among other things, ***the Act specifically called out the loss of deer, mountain lion, and other wildlife habitat*** *within California's mountain ranges and foothills, including the Simi Hills, and the Santa Lucia, Santa Susana, Santa Monica, San Gabriel, San Bernardino, San Jacinto, and Santa Ana Mountains in Southern California as well as the need to preserve habitat corridors to maintain the genetic integrity of California's wildlife.* ***The Act, through the establishment of the Habitat Conservation Fund, included an ongoing annual appropriation of $14,500,000 for the acquisitions of deer and lion habitat in those areas.*** *More generally, the Act emphasized the use of funds to acquire habitat needed to maintain connectivity between isolated or fragmented habitats to promote the genetic*

integrity of wildlife populations. ***To date, the Act's Habitat Conservation Fund has protected nearly 405,000 ha (1,000,000 ac.) of habitat across the state, including over 76,890 ha (190,000 ac.) of habitat within the petitioned ESU (California Wildlife Conservation Board unpublished data).*** *The Act also designated mountain lions as specially protected mammals and prohibited their taking, injury, possession, or sale, except for instances where a lion represents an imminent threat to public safety or has damaged livestock or other property damage.*

5.3 State and Federal Land Use Laws

The laws and regulations governing actions within the mountain lion's range vary by ownership. Several state and federal environmental laws apply to activities undertaken in California, and while they may not specifically address mountain lions, they may indirectly provide some level of protection for the species and its habitat. The primary environmental laws are summarized below.

5.3.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires state and local agencies to identify, analyze, and consider alternatives to, and to publicly disclose environmental impacts from, projects over which they have discretionary authority (Pub. Resources Code, § 21000 et seq.). CEQA requires an agency find that projects may have a significant adverse effect on the environment if they have the potential to substantially reduce the habitat, decrease the number, or restrict the range of any rare, threatened, or endangered species (Cal. Code Regs., tit. 14, §§ 15065(a)(1), 15380). ***CEQA establishes a duty for public agencies to avoid or minimize such potentially significant adverse effects where feasible*** *(Cal. Code Regs., tit. 14, § 15021), and it differs substantially from the National Environmental Protection Act in requiring potentially significant adverse effects be mitigated to a less than significant level unless the lead agency adopts a statement of overriding considerations. In practice, implementation of CEQA by state and local governing bodies typically results in projects incorporating impact avoidance, minimization, and mitigation measures into project design and construction. A lead agency is not required to make a mandatory finding of significance conclusion for a project unless it determines on a project-specific basis that the project has the potential to: substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an*

endangered, rare or threatened species. Under CEQA, a lead agency should identify and evaluate potential impacts to mountain lions, and if the impacts are found to be significant, mitigate them under the Biological Resources section of an environmental document prepared pursuant to CEQA or adopt a statement of overriding considerations.

Another important component of CEQA is the requirement that governing bodies disclose and consider project-related impacts that when considered alone may not be significant, but when viewed in concert with other past, present, and foreseeable related projects cumulatively result in a significant impact to the environment (i.e., cumulative impacts; Cal. Code Regs., tit. 14, § 15355). This requirement often results in the incorporation of wildlife movement corridors into local development and infrastructure projects (e.g., open space setbacks along stream corridors and property lines) which can provide opportunities for mountain lions to pass through urban and suburban landscape, although such corridors are not always wide enough or vegetated with adequate shrub and tree cover to encourage use by mountain lions.

Section 21080.5 of the Public Resources Code provides that a regulatory program of a state agency shall be certified by the Secretary for Resources as being exempt from the CEQA requirements for preparing EIRs, negative declarations, and initial studies if the Secretary finds that the program meets the same criteria as CEQA. A certified regulatory program (CRP) remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible. These CRPs include the regulation of timber harvest by CAL FIRE and the State Board of Forestry through the Forest Practice Act; the regulation of coastal development permits by the California Coastal Commission through the California Coastal Act of 1976, Division 20 (commencing with Section 30000) of the Public Resources Code and the preparation, approval, and certification of local coastal programs as provided in Sections 30500 through 30522 of the Public Resources Code; and the pesticide regulatory program administered by the Department of Pesticide Regulation and county Agricultural Commissioners. While these CRPs are exempt from some of the procedural requirements of CEQA, courts have consistently held that they remain subject to the broad policy goals and substantive standards of CEQA, including requirements to consider feasible alternatives and cumulative impacts and to recirculate environmental review documents in certain circumstances.

5.3.2 Z'Berg–Nejedley Forest Practice Act

The Z'Berg–Nejedley Forest Practice Act was originally enacted in 1973 to ensure that forest practices, including timber harvesting, are undertaken in a manner that will also preserve and protect California's fish, wildlife, forests, and streams. The Forest Practice Rules are regulations that implement the provisions of the Z'Berg–Nejedley Forest

Practice Act in a manner consistent with other laws, including CEQA, Porter-Cologne, CESA, and the Timberland Productivity Act of 1982. CAL FIRE enforces these laws and regulations governing timber harvesting and other forest practices on state and private land. ***The only area within the petitioned ESU where commercial timber harvest commonly occurs is the redwood forest zone of Santa Cruz County and nearby minor areas of San Mateo and Santa Clara Counties (CDTFA 2021). The CC-N genetic population occurs in these areas.***

5.3.3 Natural Community Conservation Plans and Habitat Conservation Plans

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) are federally and state authorized conservation plans that permit incidental take of species listed under the federal Endangered Species Act (ESA) or CESA, respectively. Take authorization may be applied to species not currently listed but which may become listed as threatened or endangered over the term of the plan, which is typically 25–75 years. Non-federal entities can obtain authorization for take of federally threatened and endangered species incidental to otherwise lawful activities through development and implementation of an HCP pursuant to Section 10 of the ESA. California's companion law, the Natural Community Conservation Planning Act of 1991, takes a broader approach than either CESA or ESA. An NCCP identifies and provides for the protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. There are currently four HCPs in California that include mountain lions as a covered species; all four are also NCCPs, but only three of those NCCPs include mountain lion as a covered species.

The 1998 San Diego Multiple Species Conservation Program (MSCP) is a 50-year NCCP/HCP that covers 233,099 ha (576,000 acres) in the southwestern portion of

San Diego County and includes mountain lion as a covered species. The Program includes coverage for mountain lions as 81% of the core areas (± 42,492 ha, ± 105,000 acres) that will be conserved contain lion habitat, and the core areas have multiple connections

to help maintain ecosystem balance. While the MSCP generally notes linkage areas were designed to accommodate "large animal movement," it does not identify linkages designed for mountain lions or contain specific measures designed to protect them.

While the MSCP addresses specific design criteria for linkages, and road crossings/under crossings are included in subarea plans, not all subarea plans are complete.

The San Diego Water Authority NCCP/HCP also includes mountain lion as a covered species. The Plan Area encompasses 401,448 ha (992,000 acres) in western San Diego and southwestern Riverside Counties. The plan includes general conditions to avoid and minimize impacts to habitat linkages and wildlife movement corridors and includes habitat-based mitigation for unavoidable impacts. The plan estimates that approximately 139 ha (344 acres) of potential mountain lion habitat could be impacted over the 55-year permit term with approximately 284 ha (702 acres) of potentially suitable habitat provided within the existing Preserve Area.

The Orange County Transportation Authority NCCP/HCP (OCTA Plan) lists the mountain lion as a covered species for purposes of the federal HCP, but not for purposes of the NCCP permit. The Plan covers all of Orange County (2,070 km2; 800 mi.2). The OCTA Plan contains four "Species Goals" intended to offset impacts to mountain lions, including: (1) acquiring 410 ha (1,013 acres) of suitable habitat; (2) realigning fencing near the Highway 241 toll road; (3) funding for the North Coal Canyon Restoration Project; and (4) a "wildlife crossing policy" requiring pre-construction surveys to ensure existing crossings "maintain or improve functionality" if modified by new freeway projects. However, the OCTA Plan does not require the construction of specific wildlife crossings.

The Western Riverside County Multiple Species HCP/NCCP, which covers approximately 510,227 ha (1,260,800 acres) in western Riverside County and proposes to set aside 202,343 ha (500,000 acres) for habitat, also lists the mountain lion as a covered species. Plan implementation is expected to result in the loss of 53,418 ha (132,000 acres) of suitable mountain lion habitat and includes three biological objectives **to mitigate these impacts related to the Conservation Area, Conservation Area Linkages, and maintaining or improving dispersal route functionality.**

5.4 Local Ordinances

There are three local ordinances within the petitioned ESU that are relevant to mountain lions.

5.4.1 Ventura County Habitat Connectivity and Wildlife Movement Ordinance

***Ventura County's Wildlife Connectivity Ordinances were adopted by the Ventura County Board of Supervisors in 2019 to facilitate wildlife connectivity and minimize habitat fragmentation for mountain lions**, mule deer, California gnatcatchers (Polioptila californica), bobcats, least Bell's vireos (Vireo bellii pusillus), California red-legged frogs (Rana draytonii), and other species. **Two of the linkages targeted in the Connectivity Ordinances are the Santa Monica Mountains—Sierra Madre Mountains connection and the Sierra Madre Mountains—Castaic Connection, which together connect wildlife habitat in the Santa Monica Mountains, Santa Susana Mountains, Simi Hills, and Los Padres National Forest**. While implementation of the Connectivity Ordinances should help wildlife to move more easily through private lands between core habitat areas, it would not address connectivity across major roads and highways, which is outside its jurisdiction (Country of Ventura Resource Management Agency 2024).*

5.4.2 Los Angeles County Significant Ecological Areas Ordinance

***The Los Angeles County Significant Ecological Areas Program recently updated its Significant Ecological Areas (SEAs) Ordinance**. The ordinance is intended to protect biodiversity in SEAs from **incompatible development** and ensure that projects reduce habitat fragmentation and edge effects by providing technical review of impacts and requiring mitigation. Like Ventura County's Connectivity Ordinance, **the SEAs designations can lead to compact development and allow wildlife to move across private lands more easily between core habitat areas**. However, the SEA ordinance is not specifically designed to protect mountain lions (Los Angeles County Planning (LACP) 2023).*

5.4.3 City of Los Angeles Draft Wildlife Ordinance

The City of Los Angeles Department of City Planning has developed draft regulations for the protection of wildlife within the city limits, including the promotion of wildlife movement corridors. One stated goal of the draft regulations is to improve wildlife mobility and connectivity opportunities along waterways, ridgelines, and natural open spaces. The Wildlife Pilot Study is intended to result in regulations that will help to preserve wildlife and promote

habitat connectivity on small to medium size residential developments in a pilot study area in the Santa Monica Mountains between the 405 and 101 freeways (Los Angeles County Planning (LACP) 2024).

5.5 Management on Federal Lands

5.5.1 National Environmental Policy Act

Most federal land management actions must undergo National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. § 4321, et seq.) analysis. NEPA requires federal agencies to document, consider alternatives, and disclose to the public the impacts of major federal actions and decisions that may significantly impact the environment. The ***Department is not aware that the mountain lion is afforded any federal special status, and as such, impacts to the species are not required to be considered during NEPA analysis.*** *The law directs federal agencies to adopt all practical means to minimize or mitigate adverse effects when selecting preferred alternatives or justify not doing so.*

5.5.2 National Forest Service and Bureau of Land Management

The U.S. Department of Agriculture's Forest Service is responsible for developing forest management plans consistent with the National Forest Management Act requirements. These plans guide land use and development within national forests and grasslands in a way that balances use and protection of natural resources to support ecological, social, and economic sustainability. Within the petitioned Southern California/Central Coast ESU, the USFS has adopted Forest Management Plans for the Los Padres, Angeles, San Bernardino, and Cleveland National Forests. These plans identify conservation strategies for mountain lion related to land acquisition, preventing habitat fragmentation, monitoring, and fire management. The Forest Service also manages several Wilderness Areas in the major National Forests within the petitioned area. Wilderness Areas are the most protected public lands in the US. Extractive uses are prohibited, as well as building roads or structures. The Angeles National Forest has five Wilderness Areas, the Cleveland National Forest has four Wilderness Areas, the Los Padres National Forest has 10 Wilderness Areas, the San Bernardino NF has eight Wilderness Areas. ***National Forest Wilderness in the petitioned ESU area totals approximately 485,000 ha (1.2 million acres).***

The U.S. Department of Interior's Bureau of Land Management prepares Resource Management Plans to provide broad-scale direction for managing public lands in accordance

with the principles of multiple use and sustained yield, as mandated by the Federal Land Policy and Management Act. These plans establish goals, objectives, and decisions for air quality, biological resources, cultural resources, lands with wilderness characteristics, paleontological resources, visual resources, water resources, fire ecology and management, trail and travel management, lands and realty, land use authorizations, livestock grazing, minerals management, recreation and visitor services, and areas of critical environmental concern. Within the petitioned Southern California/Central Coast ESU, adopted BLM plans include the Southern Diablo Mountain Range RMP, the Central Coast of California RMP, the Carrizo Plain National Monument RMP, the Clear Creek RMP, the South Coast RMP, the West Mojave RMP, the Eastern San Diego County RMP, the Santa Rosa and San Jacinto Mountains National Monument RMP, the Northern and Eastern Colorado Desert Coordinated Management Plan, and the Desert Renewable Energy Conservation Plan. While these plans may not specifically address mountain lions, they generally provide some level of protection for wildlife habitat. The BLM manages several Wilderness Areas within the petitioned area totally approximately 117,000 ha (290,000 acres), especially in the desert regions between the San Bernardino Mountains and the Arizona border.

5.5.3 Military Bases

The Sikes Act was established in 1960 to ensure conservation and protection of natural resources used by certain federal agencies, including the Department of Defense. The U.S. Congress amended the Sikes Act in 1997 requiring the Department of Defense to develop and implement Integrated Natural Resources Management Plans. These plans outline how each military installation will manage its significant natural resources holistically while maintaining military readiness. Since these lands are often protected from access and use by the public, they may contain large tracts of undeveloped land and thus be an important tool for species conservation and habitat connectivity especially in the desert regions. Military bases within the petitioned Southern California/Central Coast ESU include Fort Hunter Liggett, Camp Roberts, Camp San Luis Obispo, Vandenberg Space Force Base, Marine Corps Base Camp Pendleton, Naval Weapons Station Seal Beach, March Air Reserve Base, Marine Corps Air Station Miramar, Naval Air Facility El Centro, Chocolate Mountain Aerial Gunnery Range, and other installations.

5.5.4 National Parklands

The guiding principles for managing biological resources on the U.S. Department of the Interior's National Park Service lands include maintenance of animal populations native to park ecosystems (NPS 2006). The NPS also commits to work with other land managers on regional scientific and planning efforts. NPS management plans provide direction and guidance on a variety of issues including resource preservation, visitor use, development, and boundary management. These plans generally specify management objectives and may vary in the type of plan, ranging from a general management plan to wilderness plans to strategic facility investment plans. For example, the Santa Monica Mountains National Recreation Area General Management Plan (GMP) provides a framework for the area's management, administered by the National Park Service, California State Parks, and the Santa Monica Mountains Conservancy. The GMP includes mountain lions as a "park species of concern" and includes construction best management practices, facility siting, fire management, vegetation, and habitat connectivity strategies intended to mitigate project impacts. However, the GMP does not include specific actions for mountain lions. Extensive mountain lion research has been carried out by The Santa Monica Mountains National Recreation Area under the leadership of Dr. Seth Riley.

Other NPS lands within the petitioned areas, such as Carrizo Plains National Monument, Fort Ord National Monument, Pinnacles National Park, Mojave National Preserve, and Golden Gate National Recreational Area, ***provide habitat and important habitat corridors for mountain lions.***

5.6 Management on State Lands

5.6.1 California Department of Fish and Wildlife

The ***Department is responsible for over 445,000 ha (1,100,000 acres) of fish and wildlife habitat, managed through 749 properties throughout the state, including 111,462 ha (275,428 acres) within the petitioned ESU.*** *These properties provide habitat for a rich diversity of fish, wildlife, and plant species and include representatives of most major ecosystems in the state.*

Most Department lands are classified as either Wildlife Areas or Ecological Reserves. *Wildlife Areas are acquired for the conservation of wildlife and the habitats on which they depend, and to provide opportunities for recreational uses that are compatible with those conservation*

goals (Fish & G. Code, §§ 1525–1530, 1745). Ecological Reserves are acquired primarily for the purpose of protecting rare and endangered native species and specialized habitat types (Id., § 1580). Certain public uses, deemed compatible with those goals, are authorized for ecological reserves—typically this includes hiking on established trails to observe native plants and wildlife (Id., § 1584). The Department prepares land management plans for Wildlife Areas and Ecological Reserves which are subject to public review under CEQA prior to being finalized.

The 167 Department properties within the petitioned Southern California/Central Coast ESU range from a fishing access property of less than 1 acre to the 117,197-acre Santa Rosa Wildlife Area in Riverside County. Of particular interest are Department properties in the coastal mountains of San Diego County, including Rancho Jamul Ecological Reserve, Sycuan Peak, Crestridge Ecological Reserve, and Hollenbeck Canyon Wildlife Area. ***Mountain lion densities appear to be high in these areas*** *as indicated by the concentration of vehicle strikes (Fig. 11). The Santa Margarita River Ecological Reserve was rated as the* ***best potential site*** *for a* ***wildlife crossing over I-15 to help link the Santa Ana Mountains to the Palomar Mountains in the Eastern Peninsular Range*** *(Riley et al. 2018b). Other significant Department properties within the petitioned ESU include the Cottonwood Creek, Cañada de Los Osos and San Luis Reservoir Wildlife Areas in Merced and Santa Clara Counties; the Chorro Creek Ecological Reserve in San Luis Obispo County; the Burton Mesa Ecological Reserve in Santa Barbara County; and San Jacinto Wildlife Area in Riverside County.*

5.6.2 California State Parks

California's State Park System encompasses more than 607,000 ha (1.5 million acres) in approximately 280 parks. *These parks are managed for public use and enjoyment and species and habitat protection through an integrated program of planning, restoration projects and evaluation, ongoing maintenance, and long-term monitoring.*

A state park must have an approved general plan before major park facilities can be developed. These general plans direct the long-term management of the park. Some parks may also develop a more specific resource management plan. Big Basin Redwoods State Park in Santa Cruz County designates mountain lions as a species of special management concern, and the Park's Management Guidelines call for the protection of known wildlife habitat linkages to permit movement of wildlife, increase ***species abundance*** *and diversity, and monitor the functionality of core wildlife habitat areas and wildlife linkages (California State*

Parks (CSP) 2013). Big Basin Redwoods State Park and surrounding parks including The Forest of Nisene Marks, Año Nuevo, Henry Cowell Redwoods, Wilder Ranch, Portola Redwoods, and Castle Rock State Park encompass over 22,250 ha (55,000 acres) of the Santa Cruz Mountains in the CC-N. Anza-Borrego Desert State Park in the EPR is the largest park in the state system at over 240,000 ha (600,000 acres) and contains over 161,000 ha (400,000 acres) of land managed as wilderness. Park system-wide management goals include being proactive in biological conservation and managing for subspecies, evolutionary units, ecologically functional units, populations, or other levels of biological organization to conserve biodiversity; and management that encourages natural ecological process such as hydrologic processes, wildfire, and biotic community interactions to continue. Other wildlife-related goals and guidelines include species inventory and monitoring programs, protection of special status plants and animals, control of non-native plants and animals, and the protection of habitat buffers and movement corridors (CA Parks 2005). Other notable parks within the petitioned Southern California/Central Coast ESU boundary include Butano, Garapata, Andrew Molera, Julia Pfeifer Burns, Portola, Henry W. Coe, Henry Cowell, Castle Rock complex, Montaña de Oro, Point Mugu, Malibu Creek, Topanga, Chino Hills, Lake Perris, and Cuyamaca Rancho.

5.6.3 Management on County and City Lands

Although generally smaller in size than conserved state and federal land units, city and county owned and managed lands conserve many key linkage areas or expand and buffer adjacent conservation lands. For example, a series of properties owned by the City of Los Angeles—including Runyon Canyon Park, Franklin Canyon Park and Stone Canyon and Encino Reservoirs—conserve portions of the easternmost extent of the CC-S and provide partial linkage to Griffith Park (also owned by the City of Los Angeles).

And Ventura County's Happy Camp Canyon Regional Park conserves an important part of the southern Santa Susana Mountains that may serve as a key piece of future linkages between the Santa Monica Mountains/Simi Hills and the Santa Susanas. In the Santa Anas, parks and preserves owned and managed by Orange County serve as linkages and buffers to larger conserved areas in the Sana Ana Mountains. Important units include Whiting Ranch and Irvine Ranch Open Space Preserves and the Ronald Casper Wilderness Park. In the coastal EPR of San Diego County, the County's open space preserves in the Otay area and mitigation bank in Marron Valley complement the Department's Rancho Jamul Ecological

Reserve and the BLM's Otay Wildlife Management Area to create a large block of contiguous conserved lands in the San Ysidro Mountains adjacent to the Mexican border.

5.7 Management in Neighboring States and Nations

5.7.1 Arizona

Mountain lions are found throughout Arizona in desert and forested mountain habitat. They are not considered endangered or threatened in Arizona and are classified as a big game species by the Arizona Game and Fish Department (AGFD), with regulated hunting zones throughout the state. The population was recently estimated at 1,166 to 1,175 (95% CI = 622-2,558) adults and subadults statewide exclusive of the 28% of the state that is tribal land (Howard et al. 2020). Mountain lions have recently expanded into previously unoccupied areas in western Arizona near the California border where they were previously thought to be transient including the Kofa, Castle Dome, New Water, Palomas, and Eagle Tail Mountains where no evidence of mountain lions was detected during 1987 surveys (Thompson et al. 2008; Naidu et al. 2011).

The AGFD collects age and sex information and genetic material from harvested mountain lions to monitor populations and to evaluate metapopulations, connectivity and dispersal. Mountain lions are regulated by several statutes and Arizona Game and Fish Commission Orders. It is unlawful to harvest a female lion with kittens or to harvest a spotted kitten in Arizona. AGFD has established several mountain lion management zones in the state with harvest thresholds that require closing the season when the threshold is reached. Five different zones exist on the western border of Arizona abutting the California boundary, with a total of eight separate harvest units within those zones. For the 2022–2023 harvest season, the threshold quota for each of these units ranged from 3–17 mountain lions. AGFD has analyzed harvest data and considers the mountain lion population to be stable to increasing in many parts of the state.

5.7.2 Nevada

Mountain lions are classified as a game mammal in Nevada and both sexes can be hunted under special regulations. Hunting is allowed statewide, except for on the Sheldon National Antelope Refuge and within specific hunt zones in the Las Vegas area. There was a limit of 247 mountain lions in 2023–2024. From 1987 to 2015 the estimated mean population size statewide was 3,000–4,000, with the population generally found to be stable (Mahoney and

Benson 2021). Andreasen et al. (2012) found that mountain lion populations in western Nevada commonly interbreed with individuals in the Sierra Nevada of California, and those populations are somewhat isolated from other Nevada populations by inhospitable playas in the Lahontan Basin. The authors also found that the Sierra Nevada population appears to receive more mountain lions from central and eastern Nevada than it contributes in return. In contrast, Gustafson et al. (2019) found evidence of more movement from the Sierra Nevada to Nevada than vice versa.

5.7.3 Mexico

Mountain lions are distributed throughout Mexico in many areas and habitats including mountains, deserts, sub-tropical and tropical forests, and deciduous dry, conifer, and oak forests (Valdez and Ortega-Santos 2019). Populations are found in most states except in urban areas with large human populations and areas of intensive agricultural production, including central Mexico and much of the Mexican Altiplano (Chávez and Ceballos 2014).

Threats to mountain lion survival in Mexico include habitat fragmentation, prey depletion, and illegal hunting (Valdez 1999; Rosas-Rosas et al. 2003; Rosas-Rosas et al. 2008). Additionally, widespread cattle ranching, agriculture expansion, and unlawful human settlement in protected natural areas threaten their survival in the long term (Galindo et al. 2016). Ranchers often resort to predator control without following a scientific management plan due to a lack of federal and state conservation intervention programs (Rosas-Rosas et al. 2003; Rosas-Rosas et al. 2008; Rosas-Rosas and Valdez 2010; Chávez and Ceballos 2014).

Despite the international border wall, some contemporary connectivity is known to exist between EPR and the contiguous Mexican lion populations where there is not a US Border fence (Vickers et al. 2015). While the 226 km (140 mi.) border is largely fenced, significant areas, primarily in more rugged mountainous terrain occupied by mountain lions, remain unfenced. In 2009, a radio collared male from EPR crossed into Mexico at an unfenced section (Fig. 21). However, it is unknown if he fathered cubs in Mexico, and genetic exchange between lion populations on either side of the border has not been examined in close detail. Genetic contributions from Mexico to EPR in the absence of concerted mountain lion conservation efforts in northern Mexico are not ensured, and cooperative international wildlife conservation efforts should be explored to ensure the persistence of this linkage.

Figure 21. *US/Mexico border showing locations of GPS-collared mountain lions within 15 miles of the border, including M53, the only tracked mountain lion to have crossed the border (W. Vickers data used with permission). Locations of border fences are also shown. The sections marked pedestrian are made of materials designed to stop the movement of people which would likely present a significant barrier to mountain lions. The vehicle fence likely does not create a significant barrier to mountain lions.*

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6. Assessment of Listable Groups

6.1 Assessment of Evolutionary Significant Units

The petitioners propose listing the petitioned area, which includes the approximate area occupied by six genetic populations, as a single ESU. Alternatively, they request the Commission consider whether any of the six genetic populations, individually or in combination, comprise one or more ESUs and meet the criteria for listing under CESA (see Fig. 1).

To determine whether a population could be considered an ESU under CESA, the Department has typically followed the general approach used by the federal government for the ESA (Waples 1991) which consists of two main criteria:

1) The population must be substantially reproductively isolated from other conspecific population units.

2) It must represent an important component in the evolutionary legacy of the species.

For criterion 1, isolation does not have to be absolute, but it must be strong enough to permit evolutionarily important differences to accrue in the different population units. It must also be of substantial ecological/genetic importance to the species as a whole (criterion 2). To make the determination for criterion 2, the following questions are relevant:

Is the population genetically distinct from other conspecific populations?
Does the population occupy unusual or distinctive habitat?
Does the population show evidence of unusual or distinctive adaptation to its environment?

Waples (1991) highlights the following types of information as useful for answering the above questions15

15 Waples's examples are written to be specifically relevant to Pacific salmon, so the Department has altered the language to make them more applicable to terrestrial organisms.

1) Genetic traits. Examples include presumably neutral characters detected by protein electrophoresis or DNA analyses as well as other genetically based traits that are more difficult to quantify.

2) Phenotypic traits. Examples include morphological and meristic characters, occurrence of parasites, and disease and parasite resistance.

3) Life-history traits. Examples include time, size, and age at reproduction; reproductive behavior; fecundity; migration patterns; and timing of emergence and outmigration.

4) Habitat characteristics. This category includes such physical characteristics of habitat encountered during the entire life cycle.

Waples (1991) notes:

"The existence of substantial genetic differences from other conspecific populations based on protein electrophoresis or DNA analyses would strongly suggest that evolutionarily important, adaptive differences also exist. The failure to find such differences (or the absence of genetic Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California, California Department of Fish and Wildlife data) would not rule out the possibility that such adaptive differences exist, but it would place a greater burden of proof on data for other characters. Data for habitat characteristics should be interpreted in a similar fashion: habitat differences suggest (but do not prove) the possibility of adaptive differences, whereas the inability to detect habitat differences constrains the scope of possible local adaptations but does not prove they do not exist. In evaluating data for phenotypic and life-history traits, every effort should be made to account for environmental effects that are manifested in periods shorter than one generation (and therefore do not reflect adaptations)."

When evaluating the petition, CDFW's first consideration was whether the petitioned ESU meets the criteria for being considered an ESU. The second consideration was whether any of

the populations within the petitioned ESU area meet the definition of an ESU, singly or in combination.

It is important to understand the adaptive differences described in the ESU criteria are unlikely to develop when populations are isolated over short time scales (i.e., decades, or even hundreds of years). Mountain lions occupy much of California, except for heavily urbanized areas, intensively farmed areas of the Central Valley, and low elevation areas of the southern deserts. As noted earlier, when the landscape is permeable, they can disperse over long-distances (Sweanor et al. 2000; Hawley et al. 2016) and they inhabit all major mountain ranges in California (Dellinger et al. 2020b). This widespread distribution and dispersal potential suggest local adaptation is unlikely to develop, and there is little evidence of morphological, mitochondrial, or adaptive genomic differences between mountain lions within the petitioned ESU or any of the genetic populations and the broader statewide population to suggest the presence of distinct evolutionary lineages (Gustafson et al. 2022). While gene flow between the petitioned ESU and the NC and SN groups is limited, it does still occur (Gustafson et al. 2019; Gustafson et al. 2022). Several of the fine-scale genetic populations are small and somewhat isolated as connectivity to the statewide population has been drastically reduced in the last 50–100 years due to expanding human development. However, based on current scientific information there are no groups of mountain lions within the petitioned ESU boundary that have been isolated for much longer periods such that they represent important portions of the evolutionary legacy of the mountain lion species.

The Department used several lines of genetic and ecological evidence to evaluate the potential ESU, however, taken as a whole, the genetic evidence does not support applying the ESU concept to the overall petitioned area nor to any of the genetic populations individually, as a subspecies or ESU for the following reasons:

1) There is only one recognized subspecies of mountain lion in North America (P. c. cougar) based on mitochondrial DNA data (Culver et al. 2000; Caragiulo et al. 2014; Kitchener et al. 2017), suggesting a reduced potential for adaptive localized genetic variation among North American mountain lion populations.

2) Genetic investigations conducted by Gustafson et al. (2022) failed to detect local adaptation, suggesting that the identified California genetic populations do not represent an important component of the evolutionary legacy of the species. 3) Genetic data indicate habitat fragmentation and dispersal barriers have recently limited the ability of mountain

lions to move freely between certain geographic areas and local populations in Southern California and the central coast area (Gustafson et al. 2019). However, this fragmentation has mostly occurred within the last 200 years and has not yet resulted in genetic differentiation sufficient to represent an important component of the evolutionary legacy of the species. Gustafson et al. (2022) found no outlier loci, which, when present, suggest local adaptation (Ibid.). The same study used SNPs to characterize variation across more of the genome, which suggests many of these local genetic populations separated by barriers have considerable shared ancestry (Figs. 7, 8) and are more genetically similar than was suggested by the result of Gustafson et al. (2019).

While the Department concludes that the mountain lion populations within the petitioned area do not comprise one or more listable ESUs, the Department recognizes that several of those populations are imperiled due primarily to small population sizes and isolation. In the sections below the Department uses other criteria to further evaluate whether mountain lions within the petitioned area warrant potential listing under CESA.

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6.2 Assessment of Distinct Population Segments

While the petition is focused on ESUs and the Department has recommended listing ESUs in the past, the ***Department has also previously recommended listing other sub-species entities, such as DPSs*** *(e.g., Southern California steelhead) and clades (e.g., foothill yellow-legged frog). The U.S. Fish and Wildlife Service (USFWS) and NMFS (the Services) have also identified and listed DPSs pursuant to the ESA and have developed a policy for evaluating DPSs pursuant to the ESA (61 Fed Reg. 4722-4725 (February 7, 1996)). Per that policy, a DPS is a vertebrate population or group of populations that is* ***discrete from other populations of the species and significant in relation to the entire species. DPSs have been used 137 times by USFWS to list imperiled populations*** *rather than listing a species across its full range. Examples from California include the Southern Sierra Nevada fisher (85 Fed. Reg. 29532-29589 (May 15, 2020)), the Peninsular bighorn sheep (63 Fed. Reg. 13134-13150 (March 18, 1998)), and the Sierra Nevada bighorn sheep (64 Fed. Reg. 19300-19309 (April 20, 1999)). While the ESU designation and supporting policy has primarily been applied to fish populations, the DPS designation has been more widely applied to, and policy is more relevant for, terrestrial species.16*

16 The Department has previously found DPSs to be a helpful approach for assessing certain populations and concludes it is an appropriate approach to consider for mountain lion.

To guide its evaluation of whether a possible DPS might warrant listing as threatened or endangered, the Services first evaluate two elements to determine if the population segment should be considered a DPS:

1) Discreteness of the population segment in relation to the remainder of the species.

2) Significance of the population segment in relation to the remainder of the species.

If the population segment being considered is a DPS, then the Services then evaluate its conservation status (i.e., is the population segment, if treated as if it were a species, endangered or threatened?) (61 Fed. Reg. 4722-4725 (February 7, 1996)).

The elements are interpreted as follows:

***Discreteness**: A population segment may be considered discrete if it meets either of two conditions:*

It is markedly separated from other populations of the same taxon because of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.

It is delimited by an international government boundary, and there are significant differences between the countries in control of exploitation, management of habitat, conservation status, or regulatory mechanisms.

***Significance:** If a population segment is found to be discrete under one or more of the above conditions, its biological and ecological significance will then be considered. This consideration may include, but is not limited to, the following:*

Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon.

Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon.

Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range.

Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

***Imperiled Status:** If a population segment is found to be both Discrete and Significant, and if treated as a species, could it be found to be threatened or endangered based on the listing factors established in the ESA?*

Adopting this approach, the Department evaluated the petitioned area to determine if it should be considered a DPS.

6.2.1 Boundary Assessment

Considering the petitioned area as a potential DPS is consistent with the Petitioners' interest in examining the status and viability of major genetic groupings of mountain lions in California and is also consistent with prior Department evaluations of portions of widely distributed species' ranges. The Department has previously recommended listing the Southern California steelhead DPS for listing, as well as several clades (groups descended from a common ancestor) of foothill yellow-legged frog (Rana boylii). As a first step in the DPS assessment, the Department considered the boundary of the petitioned ESU. The boundary must be supported by the best available science and be demarcated unambiguously. After consideration, the ***Department developed a potential DPS boundary that is modified from the ESU boundary proposed in the petition.***

The petitioned ESU boundary includes extensive areas of California's southeastern deserts in eastern San Bernardino, Riverside, and Imperial Counties where mountain lion detections are few*. Although Gustafson et al. (2019) and Gustafson et al. (2022) include this area in the EPR, the authors did not examine genetic material from mountain lions east of the Eastern Peninsular Mountains (see sample locations in Fig. 6). Mountain lions are known to occur in the desert regions of California and in Death Valley National Park (Lundgren et al. 2022), but camera trap data suggest they exist at low densities (Dellinger et al. 2019). Genetic material from the eastern deserts has not been systematically collected, and, consequently, mountain lions in those areas have not been assigned to a genetic population nor has local gene flow been characterized.*

The next nearest location from which genetic samples have been analyzed is the Mojave Desert region of southern Nevada (Andreasen et al. 2012). In a statewide genetic study of mountain lion population structure, Andreasen et al. (2012) found that animals from southern Nevada were genetically similar to individuals from the Great Basin and the Sierra Nevada region of California. However, the analysis did not include samples from the EPR or other genetic populations within the petitioned area, so it did not shed light on the genetic relationships between the mountain lions of EPR and Nevada. Another study compared samples from the coastal areas of the SC group (including EPR) and southwest Arizona (Naidu 2015). There was minimal evidence of gene flow between the mountain lions in the coastal area of the SC group and those along the border or in Arizona. In fact, the individuals sampled in south coastal California were found to be more genetically similar to those sampled from the North Rim of the Grand Canyon than those directly across the desert in southwest Arizona (Naidu 2015). However, the study had a small sample size, and did not include samples from the inland desert regions of California. Therefore, the results provide little information regarding the genetic assignment of mountain lions in the desert regions of California.

Due to this limited information, it is not currently possible to assign the mountain lions occupying the deserts of southeastern California to one of the genetic populations *described by Gustafson et al. (2019). Since mountain lions in this region cannot be assigned to the petitioned genetic populations,* ***the Petitioners' boundary which included the deserts east of the Peninsular Ranges would not meet the DPS criteria for discreteness as mountain lions in those deserts may belong to other genetic populations.*** *The* ***Department, therefore, does not find it appropriate to include large portions of the Mojave and Sonoran deserts within the area to be assessed as a DPS.*** *When considering where to bound the proposed DPS, the Department also evaluated the distribution of suitable mountain lion habitat in the Mojave and Sonoran Deserts (Dellinger et al. 2020) as well as the distribution of verified mountain lion camera trap detections from recent Department monitoring projects related to drought impact monitoring and bobcat management. The petitioned ESU boundary extended from the Tehachapi Mountains east along I-15 to the Nevada border and then south along the Colorado River to Mexico, while our proposed Central Coast and Southern California DPS boundary instead runs south from the Tehachapi Mountains and then closely follows the eastern bases of the San Gabriel, San Bernardino, and Little San Bernardino Mountains before extending south along the western edge of the Salton Sea (Fig. 22).*

*The **petitioned ESU boundary also includes an area of intensively farmed agricultural land in San Joaquin, Sacramento, and Solano Counties.** This area contains little native vegetation and little cover for mountain lions, and **while there are few contemporary records of mountain lions occurring there**, they are likely transient individuals. Therefore, this area is **not included in the proposed DPS** (Fig. 22). For a more detailed description of the proposed Central Coast and Southern California DPS boundary see section 9 (Listing Recommendation).*

CDFW boundaries for the ESU Area and the DPS Area are arbitrary in order to encompass the largest area in the petitioned listing. Neither Area is appropriate, and would be detrimental to California's integrity and sovereignty. ***"Department developed a potential DPS boundary that is modified from the ESU boundary proposed in the petition… The petitioned ESU boundary includes extensive areas of California's southeastern deserts in eastern San Bernardino, Riverside, and Imperial Counties where mountain lion detections are few… Due to this limited information, it is not currently possible to assign the mountain lions occupying the deserts of southeastern California to one of the genetic populations*** *… Since mountain lions in this region cannot be assigned to the petitioned genetic populations, **the Petitioners' boundary which included the deserts east of the Peninsular Ranges would not meet the DPS criteria for discreteness as mountain lions in those deserts may belong to other genetic populations**. The **Department, therefore, does not find it appropriate to include large portions of the Mojave and Sonoran deserts within the area to be assessed as a DPS**…. The **petitioned ESU boundary also includes an area of intensively farmed agricultural land in San Joaquin, Sacramento, and Solano Counties.** This area contains little native vegetation and little cover for mountain lions, and **while there are few contemporary records of mountain lions occurring there**, they are likely transient individuals. Therefore, this area is **not included in the proposed DPS.***

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Figure 22. *Proposed boundary of Central Coast and Southern California Distinct Population Segment.*

6.2.2 Assessment of Proposed DPS Discreteness

The first test of whether a portion of a species' range constitutes a DPS is whether the population segment is discrete or markedly separate from the remainder of the species range. The Department concluded the proposed DPS is a discrete population based upon the evidence below.

Physical, physiological, ecological, or behavioral factors:

Physical boundaries separating mountain lion populations within the evaluated DPS from other lion populations include the San Francisco Bay and Sacramento-San Joaquin Delta, the intensive agriculture in the Central Valley, large areas of unsuitable habitat in portions of the inland deserts in the east, high density urban areas, the wall along parts of the southern border with Mexico, and significant highways such as Interstates 5, 10, and 15. These are not absolute barriers but, in combination with existing geographic and habitat features, represent sufficient hindrance to gene flow that the mountain lions within the potential DPS represent two of the four broad-scale distinct genetic groups in California identified by Gustafson et al. (2022). These two broad-scale groups (SC and CC) are moderately genetically differentiated from the other broad-scale groups in California as measured by FST values (see section 2.4). This points to separation and isolation of the populations over time due to the barriers discussed above. There is evidence of historical gene flow between the genetic populations in the evaluated DPS and the Western Sierra Nevada (which is in turn connected with the Eastern Sierra Nevada and North Coast) in the ancestry assignment data using SNPs (see section 2.4). The Tehachapi Mountains and surrounding areas are considered the only area where contemporary gene flow is known to occur between the evaluated DPS and the other genetic populations in California (via the western Sierra Nevada Mountains; Fig. 10). Current substantial barriers to mountain lion movement in that area include I-5 and Highway 58, the latter of which is identified by the Department as an area of top priority for connectivity for mountain lions (Fig. 12, Vickers unpublished data).
Connectivity between mountain lions in the EPR and those in Baja California, Mexico and Arizona is poorly understood. Although most of the 226 km (140 mi.) border with Mexico is fenced, portions in the rugged San Ysidro and Jacumba Mountains remain unfenced. Mountain lions have been observed on the California–Baja California border (J. Dellinger pers. comm.), and in 2009, one GPS-collared study animal was documented crossing the border multiple times in the vicinity of Jacumba, California, indicating the opportunity for the cross-border exchange of individuals still exists (Fig. 21, Vickers et al. 2015). In the Mojave and Sonoran deserts, sporadic detections of individuals suggest at least the potential for genetic exchange between mountain lions in the EPR and those living along the Colorado River in California and Arizona. However, such movement has not been studied or confirmed to date.

International Border: The assessment of discreteness in the federal DPS policy includes the criterion of the presence of an international border. However, the jurisdiction of CESA is the

State of California, and considerations of differences in management or regulatory mechanisms across borders are not usually a major part of the listing decision process. In this case, however, the border between California and Mexico is relevant to the EPR genetic group. While portions of the international border are marked by walls and fences that attempt to manage human migration, significant sections of the border, including a large section of the Eastern Peninsular Mountains, remain unfenced (Fig. 21). However, the status of the mountain lion population in Baja California, Mexico, and the frequency of lion movement across the border is unknown. One collared mountain lion is known to have crossed from the Eastern Peninsular Range into Mexico and back in 2009. While the frequency of genetic exchange between Californian and Mexican mountain lion populations is unstudied and unknown, it is likely that the border wall serves as a semi-permeable obstacle to lion movements. However, without more information about gene flow, California should not make assumptions about Mexican mountain lions' contribution to genetic diversity in the EPR and South Coast populations.

6.2.3 Assessment of Proposed DPS Significance

Having established that the proposed DPS is a discrete population, the Department next evaluated the biological and ecological significance of the segment in consideration using the following factors.

Unique Ecological Setting: While there are diverse environments including many unique plants and vegetation types within the proposed DPS, the relevance of these unique areas to the mountain lion—an adaptable, wide-ranging, habitat generalist—is unclear. The mountain lion's primary prey (deer) occurs across the many habitats of the potential DPS and there is little evidence that mountain lions have adapted their general behaviors or occupied different ecological niches to exploit specific habitat types. Mountain lions typically have large home ranges that may include many habitat types, and an individual lion may disperse and establish a home range dominated by a habitat type other than the one that dominated its home range when it was a juvenile. Mountain lions within the proposed DPS largely make use of habitats that are compositionally and structurally similar to habitats outside the evaluated DPS, and they tend to exhibit the same hunting, feeding, breeding, and denning behaviors both within and beyond the proposed DPS boundary, including making use of the interface between natural habitats and cities by occasionally occupying urban and suburban areas.

Gap in Range: The evaluated DPS represents 97,230 km2 (37,541 mi2), which is 23.7% of the state of California. *The loss of the mountain lions from this area would be a significant overall loss in range in California and would further limit the statewide population's connectivity with populations in Mexico and Arizona. Within the petitioned area, mountain lions occur in many mountain ranges, valleys, deserts, parks, and Wilderness areas, and the loss of the largest carnivore from these areas would fundamentally change wildlife community dynamics across a large portion of the state.*

Only Surviving Natural Occurrence: Mountain lions within the proposed DPS are not the only surviving natural occurrence of the species in the state.

Markedly Different Genetic Characteristics: The petitioned area consists of two of the four broad genetic groups identified in Gustafson et al. (2022), which are "moderately differentiated from each other based on FST estimates." Those two broad groups can be further divided into six smaller genetic populations. While there are multiple lines of evidence that these genetic groups have different characteristics from each other and from the groups outside of the petitioned area, to date there is no evidence that these discernible genetic differences are evidence of adaptations to local conditions (see section 2.4 Genetic Structure).

Conclusion: The mountain lions in the petitioned area are markedly separated from other populations in the state due to natural and human-created barriers. There are six distinct genetic populations in the petitioned area that broadly nest into two broad-scale genetic groups that are discernible from those in the rest of the state. The mountain lion population within the petitioned area is significant due to its markedly different genetic characteristics, and the very large, geographically diverse area that it occupies, comprising nearly one quarter of California's land area. Therefore, the petitioned area meets the criteria to be considered a Distinct Population Segment and treated as a subspecies for CESA listing purposes.

6.2.4 Assessment of Whether Proposed DPS is Imperiled

The ***final test for determining if listing a population segment as a DPS is warranted is assessing whether the population segment, if treated as species, could be found to be threatened or endangered.*** *The Department estimates the total population of the six genetic populations within* ***the proposed DPS to be 947 mountain lions (95% CI: 777–1,123).*** *Each of the genetic*

*populations has some degree of isolation from, and limited genetic exchange with neighboring populations. Thus, mountain lions within the proposed DPS are not a single, well-mixed population. For long-term conservation planning, effective population size (Ne) is a better metric for evaluating the risks of isolation and inbreeding than census population size. The estimated total effective population size of these six genetic populations combined has been estimated in two studies: Ne = 70.6 (Gustafson et al. 2022), and Ne = 128 (Gustafson et al. 2019). However, **the petitioned area is not a single intermixed population, instead it is a collection of smaller, somewhat isolated genetic populations which each have effective population sizes** that are too low to prevent the risks of inbreeding over the long-term. This fact, coupled with the other threats to the genetic populations such as vehicle strikes, management killing, diseases, and the interrelated effects of fire and climate change has led the Department to conclude that the proposed DPS is imperiled.*

See Section 7 for a more detailed discussion of threats.

6.3 Assessment of Significant Portion of Range

***CESA provides that the Department and the Commission must consider whether a species is endangered or threatened "throughout all, or a significant portion, of its range."** (Fish & G. Code, §§ 2062, 2067.) If the Commission ultimately determines a species is endangered or threatened throughout all of its range, the Commission need not analyze whether the species warrants listing throughout a significant portion of its range, an area subsumed within the entire range. For purposes of this analysis, the "range" to be assessed depends on the level at which listing is being analyzed by the Department and the Commission (i.e., the entire species, an ESU, a DPS, or another subspecies unit). Petitioners submitted a petition requesting the listing of one or more ESUs of mountain lions located in areas of the Southern California and the Central Coast. The Department has considered the petitioned unit(s) and determined that the correct subspecies unit for mountain lions in this area of California is a DPS, not an ESU.*

CDFW is not following the CESA guidelines in consideration of whether the species are endangered or threatened. Through the use of the Commission, as an interagency review, CDFW eliminates the requirement that a species is endangered or threatened, must apply throughout, or a significant portion, or its range. *CESA provides that the Department and the Commission must consider whether a species is endangered or threatened "throughout all, or a significant portion, of its range." …* The *Department recommends that the Commission list the entirety of the proposed DPS described in Sections 6 and 9 and shown in Figure 22. Therefore, an analysis of*

whether a significant portion of the species' range within the described DPS warrants listing is not required.

7. Summary of Listing Factors

CESA's implementing regulations identify key factors relevant to the Department's analysis and the Commission's decision on whether listing a species as threatened or endangered is warranted. A species will be listed as endangered or threatened if the Commission determines that the species' continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) present or threatened modification or destruction of its habitat; (2) overexploitation; (3) predation; (4) competition; (5) disease; or (6) other natural occurrences or human-related activities (Cal. Code Regs., tit. 14, § 670.1, subd. (i)).

This section provides summaries of information from the foregoing sections of this status review, arranged under each of the factors to be considered by the Commission in determining whether listing is warranted.

7.1 Present or Threatened Modification or Destruction of Habitat

*The **main threats affecting mountain lions in the proposed DPS are habitat loss and fragmentation** from historical and ongoing transportation infrastructure development (including residential and commercial structures, intensive agriculture, highways and freeways, high-speed rail lines, canals, and reservoirs), and lack of sufficient connectivity between remaining habitat patches, which has resulted in isolated populations with reduced genetic exchange. **The amount of suitable habitat available to mountain lion populations has been significantly reduced in and adjacent to areas such as the Central Valley, San Francisco Bay area, and the greater Los Angeles and San Diego urban areas.** Over time significant barriers have developed which impede mountain lion movement and isolate populations, and ongoing residential and commercial development is projected to exacerbate isolation. The lack of sufficient gene flow between isolated populations has resulted in inbreeding in some smaller populations which may reduce survival and reproductive fitness, as evidenced by physical abnormalities in some mountain lions in the small and isolated Santa Ana and Santa Monica Mountains populations.*

Long-term maintenance of genetic variation within the genetic populations in the proposed DPS is reliant on habitat conservation and connectivity. Maintenance and enhancement of gene flow between the proposed DPS and the larger, more genetically diverse mountain lion

populations in the Sierra Nevada through the Tehachapi Mountains is required to maintain viable populations in the proposed DPS. Additionally, there needs to be increased connectivity between and within the fine-scale genetic populations in the proposed DPS to counteract or prevent the negative impacts of inbreeding.

As noted earlier in this report, some smaller genetic populations have well-documented significant risk factors at this time. In the most isolated habitat patches (e.g., Santa Monica Mountains, Santa Ana Mountains), it is estimated that there is a substantial probability of local extirpations within less than 50 years in the absence of efforts to improve habitat connectivity and remove barriers to movement. Developing broad wildlife crossing infrastructure will require adequate funding and concerted and sustained commitment by many parties to ensure proper design, placement, maintenance and monitoring of crossing structures for effectiveness.

CDFW has lost any perspective on reality. *"The* ***main threats affecting mountain lions in the proposed DPS are habitat loss and fragmentation… The amount of suitable habitat available to mountain lion populations has been significantly reduced in and adjacent to areas such as the Central Valley, San Francisco Bay area, and the greater Los Angeles and San Diego urban areas."*** **Yes that is true, and those should not be mountain lion territories. The mountain lion populations need to be managed in relation to available prey, appropriate habitats, and in safe proximity to urban and rural communities.**

7.2 Overexploitation

From the early 20th century until ***1964, mountain lions were a bountied predator in California. During the bounty period approximately 12,580 mountain lions were killed*** *across California. When California bounties ended in* ***1964, mountain lions were classified as a nuisance or vermin species and mountain lions could be killed year-round*** *without a hunting license and with no limits, but there was no longer paid incentive for removal. Lions were classified as game and two legal hunting seasons were held in 1970 and 1971 before a legislative moratorium on hunting was enacted. In 1986, mountain lions were reinstated as a game species, but before a hunting season was held a ballot initiative (Proposition 117) approved by California voters classified mountain lions as a "specially protected mammal species" in 1991 (Fish & G. Code, § 4800). That classification continues today.*

Poaching and other unpermitted take is rarely reported but has been observed in the CC-S, SA, and EPR as well as in the CC-N. 26 out of 199 mortalities from known causes in the years 1974–2020 were due to poaching, a 2%-3% annual rate of mortality. Overexploitation alone likely poses little threat to the statewide population or to any of the genetic populations, although additive mortality from poaching may exacerbate the inherent threats faced by small, isolated populations.

Mountain Lion management is essential. History has shown that depredations and hunting are tools of managing mountain lion populations. They can create a healthier mountain lion population, where older and/or more aggressive lions can be taken, and the young can takeover those areas, which otherwise they are pushed out of. *"From the early 20th century until* ***1964, mountain lions were a bountied predator in California. During the bounty period approximately 12,580 mountain lions were killed*** *across California. When California bounties ended in* ***1964, mountain lions were classified as a nuisance or vermin species and mountain lions could be killed year-round*** *without a hunting license and with no limits, but there was no longer paid incentive for removal.* ***Lions were classified as game and two legal hunting seasons were held in 1970 and 1971*** *before a legislative moratorium on hunting was enacted.* ***In 1986, mountain lions were reinstated as a game species****, but before a hunting season was held a ballot initiative* ***(Proposition 117) approved by California voters classified mountain lions as a "specially protected mammal species" in 1991."*** **Time and change are constant, what was appropriate in 1991, and what CDFW is petitioning, may not be appropriate now. The mountain lion has a place in the ecosystem, which needs to stay in balance with of other wildlife. CDFW should be the keeper of the gate to keep mountain lions in habitats with abundant natural prey, and out of populated and developed areas.**

7.3 Predation

As large-bodied predators, adult mountain lions in California are subject to little predation pressure. *Gray wolves sometimes kill both adult and juvenile mountain lions, and black bears are known to occasionally kill mountain lion kittens but rarely adults. However, predation by wolves and black bears is not known to be a significant cause of California mountain lion mortality nor is it known to threaten the persistence of lion populations. Therefore, and given the current absence of gray wolves within the proposed DPS, predation is not currently considered to present a significant threat to California mountain lion populations, although*

this topic may need to be revisited if wolf packs establish within the proposed DPS in the future.

The mountain lion is the predator of primarily deer, also many species of wildlife. The mountain lion in the proposed area does not have a predator, it is the predator. Livestock, farm animals, and pets are becoming victims of hungry mountain lions.

7.4 Competition

Black bears and gray wolves are known to sometimes displace mountain lions from their kills, which potentially forces mountain lions to expend additional energy hunting to procure more prey. Given the current absence of wolves in the proposed DPS, wolf competition currently has no effect on central coast or Southern California lion populations. The potential impact of black bears in these areas remains unknown and warrants further study. Within the proposed DPS, intraspecific competition between mountain lions is likely the chief source of competition. In the Santa Monica Mountains within the CC-S, intraspecific conflict has been identified as the leading cause of mortality for the nearly isolated population. Statewide, there is a 3% risk of annual mortality attributable to intraspecific strife resulting from competition. Intraspecific aggression appears to be a significant mortality factor where individual mountain lions occupy small patches of suitable habitat within habitat-limited landscapes, and therefore, this form of competition should be considered a threat to lion populations in the Santa Monica and Santa Ana Mountains.

7.5 Disease

Mountain lions are susceptible to various viral, bacterial and parasitic pathogens. While there are documented lion mortalities and sickness from multiple pathogens, mortalities from disease alone are not likely to threaten the genetic populations in the proposed DPS. Diseases pose a less than 1% annual mortality risk to California mountain lions. The Department does not consider disease, in isolation, a significant threat to the species in California. However, pathogens may be harmful to individuals and small populations, and, when combined with other threats (e.g., habitat loss and fragmentation, climate change, wildfires, inbreeding and genetic drift, etc.), their impacts potentially further reduce the likelihood of long-term persistence for small, isolated mountain lion populations.

7.6 Other Natural Occurrences or Human-related Activities

7.6.1 Vehicle-Related Mortality

Vehicle-related mortality is the second most frequent cause of known death for mountain lions in California. It is difficult to accurately assess the actual magnitude of the problem due to lack of systematic data collection. One estimate is that 100 mountain lions are killed every year by vehicle strikes, while a more recent report puts that number at 70 per year during the period from 2015 to 2022. Between 2001-2013 vehicle strikes were the leading known cause of death for radio collared mountain lions in SA, and the second leading known cause of death in EPR. In the Bay Area (CC-N), vehicle strikes are also a significant source of mortality. California State Routes (SR)-12, SR-17, SR-1, and especially Interstate-280 have high numbers of mountain lion mortalities. The 20 mile stretch of I-280 northwest of San Jose was the deadliest highway in California for mountain lions from 2015-2022 with 20 reported deaths. Well-designed wildlife crossing structures in association with fencing to funnel animals to the crossing can reduce vehicle-related mortalities. While such structures are costly and require careful planning, an undercrossing on Highway 17 in the Santa Cruz Mountains (CC-N) has been completed, construction of the Wallis Annenberg Wildlife Crossing is underway in the CC-S, and several other structures are being planned in the EPR. If wildlife crossing structures and fencing become widespread within the proposed DPS, mortality from vehicle strikes may be substantially reduced.

7.6.2 Permitted Take

***From 1974 to 2020, permitted take of mountain lions** was the leading known cause of death for radio collared mountain lions statewide. **Permitted take is primarily composed of lethal lion removals in response to depredation of livestock and pets,** although lethal removals to protect endangered bighorn sheep populations and lethal removals for human safety are also included in the category. However, changes in 2017 and 2020 to the Department's approach to issuing mountain lion depredation permits have significantly reduced the number of animals killed statewide in recent years. Under current management, occasional lethal take of individual mountain lions due to repeated depredations on a single property or for public safety in the proposed DPS is foreseeable and may exacerbate the detrimental effects associated with habitat loss, small population size and limited genetic exchange, and other threats in isolated mountain lion populations such as the Santa Monica Mountains, SGSB and SA.*

CDFW's current three-tier depredation is next to worthless, it makes it almost impossible to take a mountain lion by lethal means. There are coordinated tracking systems of mountain lions, but the data and information is not used to protect the rancher or the public.

7.6.3 Toxicants

Mountain lions throughout California are exposed to toxic chemicals in their environment which can be lethal, debilitating, or have no clinical effect, depending on the quantities ingested. Lions with toxicant-impaired functions may be more susceptible to other forms of mortality such as starvation and vehicle strikes. Lions can encounter ARs used to control vertebrate pests throughout the state, including remote locations where legally prohibited rodenticides are used to protect illicit cannabis plantations. Necropsies have verified that nearly all tested mountain lions in California have been exposed to ARs. While toxicants are not known to directly cause significant mortality statewide, their effects may be additive to other sources of mortality. In the relatively small population in the Santa Monica Mountains National Recreation Area, AR toxicosis was the third leading cause of death after vehicles strikes and intraspecific strife.

7.6.4 Wildland Fire and Fire Management

The effect of wildfire on mountain lions is complex. Fire is a regular ecological process in many California vegetation types, and many native plants display adaptations to fire such as thick fire-resistant bark, post-fire crown-sprouting, and smoke-induced seed germination. Many native plants grow vigorously after wildfires, which can improve forage for deer, the main prey of mountain lions. Mountain lion response to recently burned areas appears variable with one study showing use of burned landscapes more frequently than expected based on availability during the first nine years following a wildfire, and others showing less use during the first few years post fire, then more use as vegetation recovers over time. Wildfires can also cause mountain lion injury and direct mortality, which is likely additive to other sources of mortality. Fires are projected to become more frequent and severe as the climate changes, potentially resulting in the conversion of some preferred mountain lion woodland and shrubland habitat to grasslands, which are documented to be largely avoided by lions. The impact of wildfire on the statewide mountain lion population or on individual genetic populations is difficult to predict; however, small lion populations in some relatively small mountain ranges (e.g., the Santa Monica and Santa Ana Mountains) may be vulnerable to large, severe fires (e.g., the Woolsey Fire Los Angeles and Ventura Counties in 2018) that

could substantially modify large areas of extant lion habitat rapidly, and large fires in key connectivity zones such as the Tehachapi Mountains may temporarily ,reduce the probability of genetic exchange between populations.

Mountain lion predations on livestock increase wildland fire potential. Ranchers are devasted by mountain lion kills, it affects the herd, and is more than an animal loss. Ranchers sometimes pull their stock off the lands that are subjected to multiple predations, therefore making those lands more susceptible to fires.

7.6.5 Climate Change

Projections indicate the California climate will continue to warm, and precipitation events will become less predictable and droughts more frequent. These changes will influence the condition and distribution of vegetation types and the animal communities that depend upon them. For example, warming temperatures and/or changing precipitation patterns could affect the quality and density of forage plants relied on by deer in certain areas, thereby potentially affecting mountain lion density. However, the Department is not aware of any bioclimatic modeling studies investigating projected changes in the geographic range of the mountain lion nor their main prey species (mule deer) based on climate variables. As large-bodied mammals, it may be that both mountain lions and mule deer are sufficiently large enough not to be adversely affected directly by moderate increases or decreases in environmental temperature, which more drastically affect small-bodied mammals with higher surface area to volume ratios. The generally nocturnal habits of mountain lions and their prey also help alleviate impacts from warmer environments. Mountain lions are known to occur across a wide variety of ecoregions ranging from deserts to temperate and coastal rainforests in California demonstrating their ability to tolerate a wide range of climates. The mountain lion's body size, foraging habits, and climatic breadth suggests the direct effects of climate change are unlikely to lead to near-term shifts in distribution of the species or population declines.

7.6.6 Risks to Small, Isolated Populations

Small, isolated populations are inherently vulnerable to extinction due to demographic stochasticity, inbreeding depression, and genetic drift. In small populations, these factors, individually or collectively, can result in a loss of genetic variability and a reduced genetic capacity for the population to adapt to changes in the environment. A lack of immigration

can also prevent isolated populations from recovering from stochastic extinctions or population declines, independent of genetic effects. In wildlife populations, genetic variation has been shown to be strongly correlated with high survival and reproduction rates, as well as decreased extinction risk. Genetic effects can amplify the impact of the other identified threats and random environmental effects to further reduce population sizes and accelerate populations towards extirpation in what has been termed an extinction vortex.

There are an estimated 947 mountain lions (95% CI: 777–1,123) in the proposed DPS area, with some of the areas like the CC-C and EPR estimated to contain hundreds of mountain lions. However, the smaller and more isolated areas like CC-S, SA, and SGSB each have estimated populations of fewer than 75 individuals each. These genetic populations have effective population sizes less than 50 and may already be adversely affected by inbreeding. In contrast CC-C, and EPR genetic populations show little evidence of inbreeding. Enhancing gene flow between the genetic populations in the proposed DPS and the Sierra Nevada broad-scale group would enhance the potential of long-term persistence of mountain lions throughout the proposed DPS, but until connectivity is significantly improved, the risks associated with small populations will threaten the long-term persistence of mountain lions in the proposed DPS.

8. Protection Afforded by Listing

It is the policy of California to conserve, protect, restore, and enhance any endangered or threatened species and its habitat (Fish & G. Code, § 2052). If the Commission votes to list mountain lion populations as threatened or endangered under CESA, the act would prohibit take *[17]*

17 "Take" is defined as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish & G. Code, § 86). except under certain circumstances where both CESA and Fish and Game Code section 4800, et seq. allow CDFW to authorize take.

Additional protection of mountain lions following listing would also occur during required state and local agency environmental review under the California Environmental Quality Act (CEQA). ***CEQA requires affected public agencies to avoid or substantially reduce project related environmental effects and contains specific requirements for analyzing and mitigating impacts to listed species. Where significant impacts are identified under CEQA, the Department***

expects the required avoidance, minimization, and mitigation measures included in approved projects will afford additional protections that would be absent if mountain lions are not listed.

CESA listing may also result in ***increased priority for limited conservation funds such as those administered by the Wildlife Conservation Board, Local Assistance, and State Wildlife Grants, along with land acquisition assistance from non-governmental organizations (NGOs) such as The Nature Conservancy.***

CDFW attempt to get a thriving predator listed as endangered or threatened is duplicitous.

9. Listing Recommendation

CESA directs the Department to prepare this report regarding the status of the mountain lion in the petitioned Southern California/Central Coast ESU based upon the best scientific information available (Fish & G. Code, § 2074.6). CESA also directs the Department, based on its analysis, to indicate in the status report whether the petitioned action (i.e., listing as threatened) is warranted (Id., § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f)).

Under CESA, an endangered species is defined as "a native species or subspecies…which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease" (Fish & G. Code, § 2062). A threatened species is defined as "a native species or subspecies…that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]" (Id., § 2067).

The Legislature left to the Department and the Commission, which are responsible for providing the best scientific information and for making listing decisions, respectively, the interpretation of what constitutes a "species or subspecies" under CESA (Cal. Forestry Assn. v. Cal. Fish and G. Com. (2007) 156 Cal.App.4th 1535, 1548-49; Central Coast Forest Assn. v. Fish & G. Com. (2018) 18 Cal. App. 5th 1191, 1198-99). The Commission's authority to list necessarily includes discretion to determine what constitutes a species or subspecies (Id. at p. 1237).

The Department has determined, based upon the best available scientific evidence, that there is currently insufficient evidence that the mountain lions within the petitioned area and the genetic populations within the petitioned area boundary meet the criteria to be considered

ESUs. *The* ***petitioned ESU, or any combination of its genetic populations, cannot be considered ESUs because they are not both substantially isolated from other populations and important components of the evolutionary legacy of the mountain lion species.*** *Although movement of individuals beyond the petitioned area is increasingly restricted, there has been some gene flow between the petitioned ESU and other mountain lion populations, and neither the petitioned ESU nor the genetic populations within it are totally reproductively isolated. Nor are the mountain lions within the petitioned area sufficiently genetically or morphologically differentiated from the larger California population to suggest the presence of distinct evolutionary lineages or evolutionarily important differences.* ***Therefore, the Department concludes there is insufficient scientific evidence to classify the portions of the California mountain lion population petitioned for listing as one or several ESUs.***

The ***Department also examined the petitioned ESU area and population through the lens of federal DPS policy. While the Department did not find the petitioned area to meet the federal criteria to be considered a DPS****, the best available scientific evidence shows that a separate but similar area is discrete and biologically significant and meets the criteria to be considered a DPS. Furthermore, evidence indicates that mountain lions in the proposed DPS will become imperiled if management actions do not conserve habitat and restore connectivity between the genetic populations within the DPS as well as with the larger statewide population. Therefore, the Department recommends that the Central Coast and Southern California DPS of mountain lions, as delineated below, be listed as threatened under California law.*

In their own words CDFW/Department states, *"The Department has determined, based upon the best available scientific evidence, that there is currently insufficient evidence that the mountain lions within the petitioned area and the genetic populations within the petitioned area boundary meet the criteria to be considered ESUs." … Nor are the mountain lions within the petitioned area sufficiently genetically or morphologically differentiated from the larger California population to suggest the presence of distinct evolutionary lineages or evolutionarily important differences. Therefore, the Department concludes there is insufficient scientific evidence to classify the portions of the California mountain lion population petitioned for listing as one or several ESUs."*

"*The* ***Department also examined the petitioned ESU area and population through the lens of federal DPS policy. While the Department did not find the petitioned area to meet the federal criteria to be considered a DPS…"*** **How can CDFW/Department justify spending the time and money to continually try to get the mountain lion listed as being threatened or endangered?**

The Department's proposed DPS boundary (Fig. 22) would deviate from the petitioned ESU boundary near Mojave California where the petitioned ESU boundary runs east along Highway 58 to Interstate 15 to the California-Nevada border. Instead, the Department proposes a boundary that extends south from Mojave along Highway 14 to its intersection with Highway 138, then east to the intersection with Highway 18, along Highway 18 (which briefly becomes 7th Street in Victorville) to its intersection with Highway 247 in Lucerne Valley, then along Highway 247 to Highway 62, east along Highway 62 to Utah Trail/Park Boulevard/Pinto Basin Road south through Joshua Tree National Park to Interstate 10, then west along I-10 to Highway 86, and south along Highway 86 to the Westside Main Canal of the Imperial Irrigation District near Brawley, then south along the Westside Main Canal to its intersection with the All American Canal; from that intersection due south to the Mexico border and then west to the Pacific coast.

The ***Department also recommends deviating from the boundary at Interstate 5 near Stockton and using Highway 4 to the west as the DPS boundary until it intersects with Highway 160, then north along 160 to the Contra Costa County line, and from there along the Contra Costa and San Francisco County lines (which are in the middle of San Pablo and San Franciso bays) to the Pacific Coast.***

The Department recommends including parts of the Tehachapi Mountains south of Highway 58 in the proposed threatened DPS (as was proposed as the boundary for the petitioned ESU). The genetic characteristics of mountain lions in this and adjacent areas show evidence of connectivity between the primary genetic populations within the DPS and the Western Sierra Nevada genetic population. Therefore, the Department concludes the area is critical for maintaining connection between the proposed DPS and the rest of the state. Highway 58 has been identified as a major barrier to movement of mountain lions (CDFW 2022c), and recent GPS collar location data indicated most lions with home ranges adjacent to or near the highway do not cross it (Vickers unpublished data). Therefore, Highway 58 appears to be the functional boundary between the large Western Sierra Nevada genetic population and smaller genetic populations of the central and south coast of California, and as such, the area south of the highway should be considered part of the proposed threatened DPS.

California does not need or want CDFW ESU or DPS boundaries.

10. Management and Recovery Action Recommendations

California's statewide mountain lion population is complex and diverse. Large areas of the state appear to have robust, genetically diverse, and well-connected lion populations (e.g., NC and SN groups) while other populations show evidence of inbreeding depression and genetic isolation (e.g., SA, Santa Monica Mountains of the CC-S Genetic investigations have demonstrated the importance of the Sierra Nevada region as a reservoir of genetic variation and a source of migrants into other regions of California (Ernest et al. 2003; Gustafson et al. 2019). The overarching goals of mountain lion management in the state should be:

- *Maintaining and enhancing landscape connectivity between robust core populations and the smaller, more isolated populations within the proposed threatened Central Coast and Southern California DPS*
- *Protecting important patches of remaining habitat within the DPS from development and enhancing degraded habitats where feasible*
- *Reducing human-related mortality rates within the populations of the DPS*

Increased connectivity would help offset the risks to small populations that result from demographic and genetic factors. Benson et al. (2019) found that sustaining mountain lion populations in isolated mountain ranges in greater Los Angeles (Santa Monica and Santa Ana Mountains) is feasible with relatively modest increases in landscape connectivity.

One area critical to restoring and maintaining genetic exchange between genetic populations is the Tehachapi Mountains which serve as the link between the relatively robust Western Sierra Nevada genetic population and the more tenuous Transverse Range populations in the CC-S and SGSB. Mitigating the barriers of Highway 58 and Interstate 5 to allow safer and easier dispersal across those roads should be considered high priorities, as well as the conservation of suitable habitat in the Sierra Pelona, Topatopa, and San Emigdio Mountains. Another critical area is the connection between EPR and SA. The EPR is the only genetic population known to exchange migrants with the SA population, and management actions which enhance gene flow between these areas will be critical to the sustainability and recovery of mountain lions in SA. Dispersal into and out of EPR is limited and the degree of dispersal across the border between the U.S. and Mexico remains unknown (Gustafson et al. 2019). While self-sustaining connectivity through a network of corridors, highway wildlife crossings, and habitat patches with functional ecosystem processes would be ideal for long term sustainability, assisted gene flow between populations through targeted translocations should

be considered as a short-term management action to augment the genetic variation of the most isolated small populations.

The specific recommendations below are compiled from sources including the Petitioners, mountain lion researchers, Gustafson et al. (2022), the Department, and others, and are designed to facilitate the above goals.

CDFW has developed a plan to protect one species, with an unbalanced method and means.

10.1 Connectivity

- ***Identify the most strategic locations for wildlife crossing structures at existing roads and highways to improve wildlife connectivity and permeability, and design and build those structures while also protecting adjacent habitat to ensure perpetual wildlife access to the crossing structures and connections*** *(South Coast Wildlands 2008).* ***Crossing infrastructure should include, but is not limited to, overcrossings, underpasses, culverts, and exclusionary fencing that guides animals to safer crossing areas*** *(Vickers et al. 2015). The following crossing locations have been identified by mountain lion experts and should be among the top priorities for the implementation of crossing infrastructure:*
- ***1)Highway 58 near the town of Tehachapi***
- ***2) I-5 between the Grapevine and Gorman***
- ***3) I-15 Freeway at Temecula Creek Bridge to enhance the Palomar Linkage and connect the Santa Ana and Eastern Peninsular Range*** (Ernest et al. 2014; Gustafson et al. 2017; Zeller et al. 2017; Riley et al. 2018b)
- ***4) I-280 between San Bruno and Cupertino****, which is the "deadliest highway for mountain lions in California" according to Shilling et al. (2023)*
- ***5) Highway 101 in the Coyote Valley south of San Jose and at the recently conserved Rocks Ranch in Monterey and San Benito Counties***
- ***6) Highway 152 at Pacheco Pass***
- ***7) I-15 Freeway at the Santa Margarita Ecological Reserve near Temecula.***
- *In recognition of the importance of the Sierra Nevada region as a reservoir of genetic variation and significant source of migrants into other regions of California (Ernest et al. 2003; Gustafson et al. 2019; Gustafson et al. 2022),* ***acquire, maintain, and enhance corridors and patches of suitable habitat linking*** *the SN, CC-S, and SGSB,* ***as well as corridors that connect*** *the SA and EPR populations to one another*

and to SGSB. ***Emphasize the retention and expansion of protected habitat*** *in the* ***Tehachapi, Sierra Pelona, San Emigdio, Santa Ana, Santa Monica, and San Gabriel Mountains.***

- *Encourage land use and planning agencies at federal, state, county, and local levels of government to identify important corridors within their area of concern, to develop management plans, and to analyze connectivity impacts from projects, especially in the Tehachapi and Sierra Pelona Mountains (Gustafson et al. 2019) and between the SA and EPR (Vickers et al. 2015).*
- *Explore conservation translocations of outbred animals (i.e., genetic rescues) to quickly increase genetic variation in small, isolated mountain lion populations such as the Santa Monica Mountains (CC-S) and SA (Johnson et al. 2010). Translocations should only be used as a short-term strategy to help rescue declining populations from the adverse genetic effects of isolation and small population size (e.g., inbreeding). Translocations should not be considered a substitute for actions needed to support self-sustaining viable, genetically diverse populations over the long term, such as removing barriers and increasing landscape connectivity.*
- *Fund monitoring programs to evaluate the success of wildlife crossing structures, including monitoring the genetic variation and movements of mountain lion populations on either side.*
- *Dedicate sufficient funding from the Wildlife Conservation Board, Habitat Conservation Fund, and other state funding sources towards acquiring key mountain lion and wildlife habitat and for establishment of highway crossing infrastructure.*
- ***Encourage the maintenance and restoration of riparian vegetation and habitats in the DPS to provide prey habitat, resting and feeding cover, and viable movement corridors between remaining patches of mountain lion habitat. This could include limiting water diversions in these areas if such diversions adversely affect riparian vegetation and wildlife communities.***

This massive maze of connectivity is a land and power grab, infringement on private property, misuse of funds, and endangerment to the public. This is CDFW creating an architecture based on expanding the mountain lion population on one quarter [DPS] of the state. This is a methodically planned invasion of mountain lions in multiple areas of California. *"The* ***world's largest wildlife crossing*** *is under construction over the 101 freeway in an attempt to reconnect mountain lion habitat… a* ***$90 million wildlife crossing*** *is completed over an area where the animals were being slaughtered attempting to cross one of the busiest sections*

of Highway 101 near LA." – SF Gate article 10/5/2022 **The Highway 17 Wildlife Crossings Project was estimated at $12M, it is now over $26M, and new estimates to complete it are $38M to $42M, funds are being sought from the Federal Government and other sources to determine the final design. This is being done in collaboration with CalTrans. In the end CalTrans will own all the construction, Midpen will own the directional fencing. It is unimaginable what the seven listed corridors might have and/or will cost. All the while, California roads and infrastructure are in left in major disrepair.**

10.2 Research and Monitoring

While the recommendations below apply statewide, priority should be given to projects that enhance understanding of mountain lion populations and behaviors in the proposed DPS.

- *Periodically replicate genetic analyses similar to Gustafson et al.'s (2019 and 2022) work to monitor genetic variation within the genetic populations and signals of mountain lion immigration and emigration.*
- *Investigate whether heritable local adaptations are present within any of the identified broad-scale and/or fine-scale mountain lion genetic populations.*
- *Determine mountain lion distribution, abundance, resource selection at multiple spatial scales, movements and dispersal patterns, foraging ecology, and landscape genetics in the Sonoran and Mojave deserts, including the lower Colorado River region. Work collaboratively with tribes, adjacent states, Baja California, universities, other government entities (e.g., Caltrans, BLM, NPS, State Parks, USGS, Military), IUCN and IUCN Species Survival Commission Cat Specialist Group, and other NGOs.*
- *Develop rigorous population estimates for the individual genetic populations using available demographic data and/or population modeling techniques.*
- *Monitor wildfire responses to assess how mountain lions, other carnivores, and their prey will be affected by changes in fire frequency and severity.*
- *Evaluate trans-highway movements, resource selection, home range placement, and vehicle-related mortality of adult and subadult mountain lions (Cougar Management Guidelines Working Group 2005; McKinney 2011). Focus primarily on interstates in the South Coast Group (i.e., I-5, I-10, I-15, 101, 405).*
- *Investigate the influence of variation in black bear seasonal density on mountain lion kill rates and prey selection, habitat use, and kitten and adult survival. Also investigate areas where bears and mountain lions overlap with gray wolves to understand interactions.*

- *Design and fund collaborative surveillance programs to rapidly detect, diagnose, and determine the significance of disease outbreaks and emerging diseases such as avian influenza.*
- *Continue AR screening of livers from mountain lion carcasses to further study the locations and effects of AR exposure on mountain lion health and mortality. Continued monitoring should also measure the effectiveness of regulatory changes intended to reduce exposure of non-target wildlife to rodenticides (Rudd et al. 2018).*
- *Investigate potential correlations between habitat, genetics, and prevalence of health and disease issues.*
- *Refine understanding of the conditions associated with human-mountain lion conflict hotspots.*
- *Assess efficacy of non-lethal measures for mitigating/deterring mountain lions from depredating domestic animals.*

CDFW is building a monstrous structure of research, monitoring, studies, all on the backs of the mountain lions. CDFW is creating conflicts, especially human-mountain lion conflicts, thereby creating the endless conflict and endless funding.

10.3 Regulations and Policy

- *Work with the California Department of Pesticide Regulation to improve the regulation of, and foster improved management of, second-generation ARs such as brodifacoum, bromadiolone, difenacoum, and difethialone to reduce mountain lion exposure, with an emphasis on Southern California and central coast mountain lion habitat areas and linkages and explore outreach efforts on this issue.*
- *Improve law enforcement for areas where second-generation AR use is restricted to ensure compliance with the state's regulations.*

California does not want CDFW regulations and policy to be imposed on our lands, the mountain lion is the CDFW tool to gain power.

10.4 Partnerships and Coordination

- *Continue to collaborate with Caltrans and others to analyze how projects in the State Highway Operation Protection Program and State Transportation Improvement Program can be designed to facilitate wildlife connectivity through wildlife passage*

features such as culverts, under crossings, overcrossings, bridges, directional fencing, scuppers, barrier breaks, roadside animal detection systems, signage, etc.

- *Continue to collaborate with Caltrans and the Road Ecology Center at UC Davis to help collect and analyze roadkill data to identify hotspots where mountain lions, deer, and other animals are killed. Investigate funding channels for creating an open access statewide roadkill database for data download and analysis as needed by multiple interested parties.*
- *Encourage local governments to place conditions on new developments to minimize negative impacts on riparian systems and native vegetation by buffering the riparian areas to allow use by mountain lions and their prey. Conditions and measures should include provisions for the long-term management of such areas to maintain their viability as wildlife corridors and minimize wildfire threat and human disturbances. Promote efforts to restore riparian ecosystems and protected lands in the vicinity of wildlife crossing structures.*

CDFW, like Mid Peninsula Regional Open Space, use existing infrastructures, such as roads, culverts, and trails, then use, and/or take, them over for their use. In this case, the useful mountain lion is used to expand areas of control. This is designed and calculated to impose regulations and policies, on developed or developing areas.

Public Education

- *Continue to promote awareness and education regarding mountain lions, human safety, pet and livestock conflict prevention, pesticide exposure, and conservation messaging throughout the central coast and Southern California.*
- *Develop and implement outreach and education activities to promote use of predator-resistant enclosures for domestic animals (Vickers et al. 2015).*

CDFW, like Mid Peninsula Regional Open Space, are only focused on the protection of the mountain lion with an expansionist ideology. CDFW, and Midpen, shield themselves from liability, while they create conflicts. This is a dangerous game. CDFW and Midpen are actively working on the HUMAN-MOUNTAIN LION INTERACTIONS STUDY.

The mountain lion needs to be managed – the mountain lion needs to be contained within appropriate areas of their natural habitat in balance with their natural prey. Management plans should be in place when mountain lion populations get too large. The mountain lion is

also a victim in this situation, with lion saturation and prey decimation, survival needs are expanded.

Ranchers grazing / livestock operations need to be protected, profitable, and productive. People, children and pets need to live in safe environments. Communities are built to bring people together to live in areas which are welcoming, appealing, and have amenities to support and enrich their lives. We have the right to the sanctity of our homes, and not to have to create a fortress to survive. Fear of a predator at anytime, anywhere is not acceptable. We have done better than this.

California is 48% federal land, then there are state lands, and other land designations, with wildlife abundance. Mountain lions do not need to be in urban areas or big cities.

Appendix A – Acronyms, Abbreviations, and Definitions

Caltrans – *California Department of Transportation*

CAL FIRE – *California Department of Forestry and Fire Protection*

CDFW – *California Department of Fish and Wildlife*

CEQA – *California Environmental Quality Act*

CESA – *California Endangered Species Act*

Commission – *Fish and Game Commission*

Department – *California Department of Fish and Wildlife*

Distinct Population Segment (DPS) *– A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species.*

Effective Population Size (Ne) *– The number of individuals in a population that effectively participate in producing the next generation.*

Evolutionary Significant Unit (ESU) *– A term related to the federal Endangered Species Act originally applied to anadromous fish populations that designates a population that is substantially reproductively isolated from conspecific populations and represents an important component of the evolutionary legacy of the species.*

FST *– Fixation index. A statistic that measures population differentiation based on genetic structure.*

Fine-Scale Genetic Populations *– Populations of conspecifics whose growth rate depends predominantly on local births and deaths rather than immigration. Genetic populations discussed in this report include:*

Central Coast North (CC-N) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes mountain lions in the Santa Cruz Mountains and east bay hills, extending south to approximately the Monterey County line.*

Central Coast Central (CC-C) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which generally includes the mountain lions in the coastal mountain ranges from southern Monterey Bay to Ventura County.*

Central Coast South (CC-S) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in the Santa Monica Mountains, Santa Susana Mountains, Sierra Pelona Mountains, and Simi Hills.*

Eastern Peninsular Range (EPR) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in eastern San Diego County to the Colorado River and the border with Arizona and is bounded on the south by the border with Mexico.*

Eastern Sierra Nevada (ESN) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which includes the mountain lions in the mountains of San Diego County, extending east possibly as far as the Colorado River and the Arizona border, and bounded on the south by the border with Mexico.*

Nevada (NV) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses which encompasses mountain lions in most of the state of Nevada.*

San Gabriel and San Bernardino Mountains (SGSB) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses and includes mountain lions in the San Gabriel and San Bernardino mountain ranges.*

Santa Ana Mountains (SA) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that encompasses mountain lions in the Santa Ana Mountains.*

Western Sierra Nevada (WSN) *– The genetic population identified by Gustafson et al.'s (2019) microsatellite marker analyses that includes mountain lions from the Oregon border through the Cascades and Sierra Nevada Mountains to the Tehachapi Mountains and includes the Sierra Nevada foothills and much of the Central Valley.*

Genetic Groups / Broad-Scale Genetic Groups *– The four genetic groups for which Gustafson et al. (2022) found the strongest support through SNP analysis. These groups include:*

Central Coast Group *– Mountain lions from the San Francisco Bay and Sacramento-San Joaquin Delta south through the Santa Monica Mountains inclusive of Gustafson et al.'s (2019) Central Coast-North, Central Coast-Central, and Central Coast-South genetic populations.*

North Coast Group *– Mountain lions north of San Francisco Bay through the Coast Ranges to border with Oregon. Largely coincident with Gustafson et al.'s (2019) North Coast genetic population.*

Sierra Nevada Group *– Mountain lions from the Klamath, Cascades, and Sierra Nevada mountains from the Oregon border south through the Tehachapi Mountains inclusive of Gustafson et al.'s (2019) Western Sierra Nevada and Eastern Sierra Nevada genetic populations.*

Southern Coast Group – *Mountain lions in the San Gabriel and San Bernardino, Santa Ana, and Eastern Peninsular mountains inclusive of Gustafson et al.'s (2019) San Gabriel-San Bernardino, Santa Ana, and Eastern Peninsular Range genetic populations.*

Microsatellite Markers – *Repetitive segments of DNA scattered throughout the genome in noncoding regions between genes or within genes.*

NMFS – *National Marine Fisheries Service*

NPS – *National Park Service*

Principal Component Analysis (PCA) – *A statistical multivariate technique which transforms a large number of correlated variables into few uncorrelated variables which represents the whole data set.*

Single Nucleotide Polymorphism (SNP) – *a variation in nucleotides at a single position in a DNA sequence among individuals. Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California, California Department of Fish and Wildlife*

State Wildlife Action Plan – *California's comprehensive plan for examining the health of wildlife populations and prescribing actions to conserve wildlife and vital habitat before they become more rare and more costly to protect.*

USFS – *U.S.D.A. Forest Service*

USFWS – *United States Fish and Wildlife Service*

WDFW – *Washington Department of Fish and Wildlife*

In conclusion, life is a balance, and is constantly changing. Human rights of life, liberty and the pursuit of happiness are fundamental to our existence. The mountain lion is a beautiful and significant animal, as are so many other animals and creatures. The mountain lion is a powerful predator which needs to be kept in balance with nature, in areas where their natural prey can sustain the lions' appetite. Over population of the mountain lion has caused diminished wildlife prey. The result is the lions' search for alternate sources, which becomes destructive to agriculture and communities. Urban areas, a well as rural areas, should be protected against mountain lion population encroachments. This country was built with great men managing resources and wildlife, and developing lands and business, to create a safe and prosperous country. Corridors dispersing the mountain lions across California, is the creation of conflicts. CDFW has the opportunity to manage the mountain lion population, and help balance wildlife in a sustainable manner, while protecting agriculture and communities. The ESU and DPS are both requested under false pretenses with inaccurate data, both increase conflicts, both endanger other wildlife, livestock, farm animals, pets and the public.

Sincerely,



Lucy White

PO Box 222 . La Honda, CA 94020 | lucywhitedesign@gmail.com

ATTACHMENTS

A] News Articles Related to Mountain Lions | Page 116

1] 2026/1/5 | SF Gate | Mountain lions menaced hikers, pets for months near national park before fatal attack | Autopsy shows mountain lion killed Colorado hiker near national park | January 5, 2026

2] 2026/1/5 | NewsBreak | A Central California Town on Edge After Repeated Mountain Lion Attacks | January 5, 2026

3] 2026/1/2 | APN News | Colorado | Man fought off a mountain lion weeks before a suspected fatal Colorado attack | January 2, 2026

4] 2025/8/31 | SF Chronicle | This Northern California county is 'overrun' with mountain lions. What should be done? | August 31, 2025

5] 2025/8/22 | SF Gate | 15 alpacas dead, 3 cougars on the loose: NorCal ranch under siege | August 22, 2025

6] 2025/8/11 | SF Gate | California mountain lion bite sends 11-year-old to hospital | August 11, 2025

7] 2025/7/22 | SF Chronicle | Mountain lion prowling around Contra Costa County home | July 22, 2025

8] 2025/3/3 | SF Gate | Mountain lion evades double electric fence, kills pets at Northern California homestead | March 3, 2025

9] 2025/1/17 | SF Gate | California park closed after mountain lion shot with dog in its mouth | Another mountain lion was seen 300 yards from a Calif elementary school | January 17, 2025

10] 2024/9/3 | SF Gate | Mountain lion attacks 5-year-old boy at popular California park | Family members helped fight off the animal as it tried to pull the child away | September 3, 2024

11] 2024/3/25 | SF Gate | California brothers in deadly mountain lion attack identified | March 25, 2024

12] 2024/3/24 | SF Gate | California for first time in 30 years | March 24, 2024

13] 2023/10/27 | SF Gate | California hiker injured when stopping mountain lion attack on dog | October 27, 2023

14] 2023/8/12 | SF Gate | Mountain lion tears dog on leash away from its owner in California neighborhood | August 12, 2023

15] 2023/2/15 | SF Gate | Mountain lions seen eating deer on Hillsborough property | February 15, 2023

16] 2023/2/1 | SF Gate | Bay Area boy attacked by mountain lion was 'fighting for his life' | February 1, 2023

17] 2022/12/8 | SF Gate | 'Shock': Mountain Lion enters Bay Area home, drags dog outside | December 8, 2022

18] 2022/12/4 | SF Gate | Mountain lions seen eating deer on Hillsborough property | December 4, 2022

19] 2022/10/5 | SF Gate | 'They're out there': Why California mountain lion sightings are on the rise | October 5, 2022

20] 2022/6/8 | SF Gate | Dog who saved owner in Northern California mountain lion attack dies | June 9, 2022

21] 2022/6/2 | SF Gate | Mountain lion found at Bay Area high school moves to Oakland Zoo | June 2, 2022

22] 2022/3/21 | SF Gate | Video shows - Mountain lion wandering around California family's swimming pool | March 21, 2022

23] 2022/1/20 | SF Gate | Mountain lion seen in Bay Area neighborhood after killing other lion | January 20, 2022

24] 2022/1/10 | SF Gate | Mountain lion seen near Bay Area school| January 10, 2022

25] 2021/12/28 | SF Gate | Mountain lion spotted in Pacifica backyard gorging on pet chicken | December 28, 2021

26] 2021/10/20 | SF Gate | Mountain lion that shut down 2 Bay Area schools tranquilized | October 10, 2021

27] 2021/7/1 | SF Gate | Petaluma resident shares video of huge mountain lion in his yard | July 1, 2021

28] 2021/5/26 | SF Gate | Mountain lion breaks into SF Bay Area house filled with taxidermy trophy heads | May 26, 2021

29] 2021/5/20 | SF Gate | Wayward San Francisco mountain lion captured after being found in tree | May 20, 2021

30] 2021/5/19 | SF Gate | Mountain lion spotted roaming San Francisco's Bernal Heights | May 19, 2021

31] 2021/3/18 | SF Gate | Woodside resident drives onto lawn to stop mountain lion attack | March 18, 2021

32] 2021/1/14 | SF Gate | California deputy kills mountain lion that stalked family in broad daylight | January 14, 2021

33] 2021/1/6 | SF Gate | Sick, 'desperate' mountain lions are being seen around Santa Cruz | May 19, 2021

34] 2020/9/22 | SF Gate | Video shows mountain lion watching child play on bike in Bay Area | September 22, 2020

35] 2020/6/22 | SF Gate | Mountain lion spotted again in San Francisco's Mission Bay | June 22, 2020

36] 2020/6/19 | SF Gate | 3 marsupials found dead at SF Zoo, a mountain lion cub is a suspect | June 19, 2020

37] 2020/5/12 | SF Gate | Hiker encounters 2 mountain lions on popular trail | Sightings of wild animals increase as humans shelter in place | May 12, 2020

38] 2020/2/20 | SF Gate | Mountain lion that attacked six-year-old girl in Cupertino is euthanized | Rancho San Antonio Park will re-open Friday morning | February 20, 2020

39] 2020/2/19 | SF Gate | Parent reportedly punched a mountain lion in the ribs to save injured 6-year-old girl | February 20, 2020

40] 2019/4/29 | SF Gate | Mountain lion discovered near Santa Rosa Macy's store is sedated | April 29, 2019

41] 2019/1/12 | SF Gate | Mountain lion reported in backyard near Pacifica park | January 12, 2019

42] 2016/5/1 | East Bay Times | East By Times Santa Cruz Mountains residents watch cougar attacks with concern | May 1, 2016

B] Mountain Lion Sighting Maps | Page 205

1] Bay Area Bobcat and Mountain Lion Sightings

2] Schuamcher California Mountain Lion Sightings Map

C] California Department of Fish and Wildlife Petition Maps | Page 209

1] California Department of Fish and Wildlife Petitioned ESU Map

2] California Department of Fish and Wildlife Petitioned DPS Map

D] Mountain Lion Camera Captures | Page 211

1] Mountain Lion Captures near Lobitos Grazing Ranch

E] Mountain Lion Predations | Page 218

Vince Fontana Chronology of Predations 2020 - 2025

▶ ATTACHMENT A

News Articles Related to Mountain Lions

Research solely on SF Gate and San Francisco Chronicle, with AP News and NewsBreak in 2026. This is the tip of the iceberg. Visit links to see actual articles.

The following articles show mountain lions in various locations and different times of day. Most are near or in urban areas. Mountain Lion's have a large range area, and their behavior is extremely unpredictable.

2026

1] January 5, 2026

[redacted]

https://www.sfgate.com/national-parks/article/colorado-fatal-mountain-lion-attack-21277852.php

Mountain lions menaced hikers, pets for months near national park before fatal attack | Autopsy shows mountain lion killed Colorado hiker near national park

SF Gate By **Amanda Heidt** , *Southwest Contributing Parks Editor* Jan 5, 2026

[Photo - At least four mountain lions, including an adult and three juveniles, have been seen in the area surrounding Glen Haven and Estes Park, Col. Photo Georgia Evans/IStockphoto via Getty]

A woman hiking near Rocky Mountain National Park was killed by a mountain lion on New Year's Day, according to an autopsy released Jan. 5. The hiker, identified as Kristen Marie Kovatch of Fort Collins, Colorado, died due to asphyxia caused by external neck compression, the autopsy states.

The fatal attack came just weeks after a man fought off a mountain lion in the same area, and after a group of hikers was surrounded by multiple mountain lions on the same trail. The fatality, which occurred in the woods near the eastern entrance to the national park, is the first death attributed to a mountain lion in the state since 1999.

While such attacks are extremely rare, sightings of the animals are common around the mountain towns of Glen Haven and Estes Park, near where the woman was killed. This is particularly true in winter, when deer and elk move from the mountains down into the lowlands, drawing their predators with them.

"This is a very common time of year to take mountain lion sightings and reports and especially in Larimer County, where this is very good mountain lion habitat," Colorado Parks and Wildlife spokesperson Kara Van Hoose told the Associated Press. "Trails in this area are in pretty remote land, so it's wooded, it's rocky, there's elevation gains and dips."

The fatal attack on New Year's Day occurred near the mountain towns of Estes Park (pictured) and Glen Haven, Colo. Photo Tupungato / istockphoto via Getty

Shortly before noon on Jan. 1, two hikers encountered a mountain lion near a woman's body along the Crosier Mountain Trail, a 10-mile stretch that climbs through Roosevelt National Forest. The pair threw rocks at the animal to scare it away, and one of the hikers, a physician, attended to the victim. She did not have a pulse and was later declared deceased.

The attack follows a handful of other aggressive encounters in the area over the past few months. On Nov. 11, a resident of nearby Glen Haven, Colorado, was running along the same trail when a mountain lion stalked and attacked him. The man, Gary Messina, told the Associated Press he threw his phone, kicked dirt and yelled before using a large stick to club the animal.

"I had to fight it off because it was basically trying to maul me," Messina said. "I was scared for my life and I wasn't able to escape. I tried backing up and it would try to lunge at me."

Messina reported the encounter to officials, who posted signs in the area. The signs were later removed, however.

This photo provided by Gary Messina shows a mountain lion in the brush between two trees along the Crosier Mountain Trail in the Arapaho and Roosevelt National Forests near Glen Haven, Colo., on Nov. 11, 2025. Illustration Gary Messina/AP/ SFGATE

Local news station CBS Colorado (KCNC-TV) also reported that at least three other people have been threatened. One woman was hiking alone on Oct. 29 when a mountain lion attacked and killed her dog, and a couple was surrounded by a group of three mountain lions on the Crosier Mountain Trail at the end of November. A nearby homeowner recently caught a group of four mountain lions, including a mother and three juveniles, on a home camera system. Locals say that the group has been killing dogs for several months.

The hiker's death has shaken up nearby mountain communities. "It's really opened my eyes that we're in nature," the homeowner, Kelly Mahoney, told CBS Colorado, adding that mountain lion activity seems to be increasing over time. "We have to change the way we do things. It's scary."

It's unclear how many mountain lions may have been involved in the fatal attack on Jan. 1, but in the days following the woman's death, wildlife officials attempted to locate mountain lions in the area. A nearby biologist conducting aerial deer surveys was able to assist, and officials also deployed dogs. Two mountain lions found nearby were euthanized, and a search for a third is ongoing. A necropsy will help determine whether any of the animals attacked the woman and whether they had neurological diseases such as rabies or avian flu.

Nearby trails, including Garden Gate Trailhead, Gravel Pit/Rainbow Trailhead and Piper Meadows/Glen Haven Trailhead, were closed for a time, but reopened Jan. 4.

Locals of Estes Park noted on social media that sightings of the big cats — which are also known as pumas or cougars, and can weigh as much as 130 pounds — are common. It's possible, one Reddit user noted, "that the cats in that area are getting too comfortable around people."

Photo A view of Lake Estes, a reservoir in Estes Park, Colo. Sandra Leidholdt/Getty Images

Byron Weckworth, chief conservation officer for the California-based Mountain Lion Foundation, made a similar assessment, telling the Associated Press that "as more people live, work, and recreate in areas that overlap wildlife habitat, interactions can increase, not because mountain lions are becoming more aggressive, but because overlap is growing."

Still, interactions between people and mountain lions remain extremely rare. The Mountain Lion Foundation notes that only about 30 fatal mountain lion attacks have been documented in North America since 1868, and that some of those deaths are only suspected to have been caused by the large cats. A mountain lion attacked two brothers in California's Sierra Nevada foothills in 2024, killing one and significantly injuring the other.

In Colorado, where as many as 4,400 mountain lions live, 28 attacks have occurred in the past 35 years, with no fatalities for the past several decades. In 1997, a 10-year-old was mauled in Rocky Mountain National Park, while in 1999, a three-year-old went missing from a group about 60 miles west of Fort Collins.

When entering mountain lion territory, Weckworth says it's best to travel in groups, keep children close and avoid dawn and dusk when the big cats are most active. If you do find yourself threatened, maintain eye contact with the animal, make yourself appear larger and back away slowly. Fleeing may trigger the animal to attack, so stand your ground and avoid stooping.

Amanda Heidt Southwest Contributing Parks Editor Amanda Heidt (she/her) is the Southwest contributing parks editor at SFGATE, covering parks and public lands across Utah, Colorado, New Mexico, Arizona and Nevada. She is also an award-winning freelance science journalist, with bylines in The New York Times, National Geographic, Nature, Science and NPR, among other outlets. When away from her desk, you can find Amanda kicking around in the desert near Moab or otherwise chasing beautiful scenery. Send story tips to amanda.heidt@sfgate.com, or message her securely on Signal at aheidt.16.

2] January 5, 2026

[redacted]

https://www.newsbreak.com/news/4426365314559-a-central-california-town-on-edge-after-repeated-mountain-lion-attacks?noAds=1&_f=app_share&s=i3

A Central California Town on Edge After Repeated Mountain Lion Attacks

NEWSBREAK By Sumi Sarkar, 1/5/2025

In the quiet rural community of Corral de Tierra, just east of Monterey in Central California, a series of mountain lion attacks on pets and livestock has rattled residents and wildlife officials alike, prompting warnings and safety advice from the California Department of Fish and Wildlife. Over recent weeks, dogs, a miniature horse and goats have been killed in multiple incidents — prompting concern about predator behavior and backyard coexistence in areas where human and mountain lion territories intersect.

While witnesses and residents reported eerie sounds and sightings in the late night hours, experts emphasize that these big cat conflicts are occurring at times when mountain lions are typically active and that many of the targeted animals were not secured at night, highlighting the importance of proper animal management in predator range.

Early Attacks Stir Alarm in Corral de Tierra

The first attack took place on December 21 around 12:30 a.m., when a resident heard movement on their porch and soon after discovered their family dog had been taken. The following night, the same lion reportedly returned — this time taking a goat to the same spot — without consuming either animal, leading locals to believe the predator may be acting out of instinct rather than hunger.

Other community members have seen the large cat lurking in yards and near homes, prompting a mix of fear and fascination as residents capture fleeting glimpses of this apex predator. These close encounters reflect the expanding interface between human habitation and mountain lion habitat in California.

Wildlife Officials Advise Simple Safeguards

The California Department of Fish and Wildlife hasn't confirmed how many mountain lions are involved in the incidents or if one animal is responsible for all of the attacks. However, department spokesperson Krysten Kellum stressed that the attacks occurred when livestock and pets were left unsecured — a key factor in mountain lion conflict scenarios.

Authorities urge residents to bring pets indoors at night, night-pen livestock in secure enclosures and document all lion encounters through official reporting channels. These basic steps can significantly reduce opportunities for predators to access vulnerable animals.

Reducing Attractants and Hiding Spots

In addition to securing animals, wildlife officials recommend that residents deer-proof their properties to reduce the presence of the mountain lion's natural prey. Deer attract these big cats, so removing dense vegetation, installing outdoor lighting, and eliminating attractants like unsecured pet food can make an area less appealing to roaming lions.

Such habitat modification strategies mirror coexistence approaches used around the world that involve reducing food attractants and human-lion encounters without resorting to lethal measures. These include structural deterrents and community education about lion behavior.

Nonlethal Deterrence Options

If basic precautions fail, wildlife officials say other measures — such as trapping the animal or using nonlethal projectiles like paint balls or noise devices to haze or scare the predator away — might be considered. However, Kellum emphasized that the situation in Corral de Tierra hasn't reached a level requiring these more intensive tactics.

Nonlethal deterrence — ranging from motion-activated lighting to livestock guardian dogs — is increasingly recommended by conservationists as a way to protect animals while allowing mountain lions to remain in their native ranges without undue risk of conflict.

Balancing Safety and Wildlife Presence

Mountain lions are natural predators found throughout much of California, and as human developments encroach deeper into wilderness areas, incidents like these are likely to become more common unless proactive steps are taken. Experts note that mountain lions generally prefer wild prey such as deer, but when domestic animals are accessible and unsecured, they can become opportunistic targets.

This intersection of expanding human habitation and big cat habitat raises broader questions about how communities can coexist with apex predators, balancing safety and wildlife preservation as landscapes and ecosystems change.

Coexistence Starts With Preparedness

The recent mountain lion attacks in Corral de Tierra serve as a stark reminder that wildlife doesn't respect property lines, and that coexistence requires awareness, preparation and respect for nature's boundaries. Securing pets and livestock at night isn't just good practice — it's essential in areas where predators roam.

Rather than viewing mountain lions as unwanted intruders, communities should engage with wildlife agencies and adopt proactive, evidence-based coexistence strategies that protect both people and predators. With thoughtful planning and community cooperation, it is possible to share landscapes with these magnificent cats — but it begins with understanding their behavior and adjusting human practices accordingly.

3] January 2, 2026

[redacted]

https://apnews.com/article/mountain-lion-attack-woman-killed-colorado-81191e197ebe2d0da59b64351760c3aa

U.S. News

AP NEWS | COLORADO

Man fought off a mountain lion weeks before a suspected fatal Colorado attack

AP NEWS By MATTHEW BROWN

Updated 11:55 AM PST, January 2, 2026

[Photo - This photo provided by Gary Messina shows a mountain lion in the brush between two trees along the Crosier Mountain trail in the Arapaho and Roosevelt National Forests near Glen Haven, Colo., on Nov 11, 2025. (Gary Messina via AP)]

A solo hiker who authorities believe was killed by a mountain lion on a remote Colorado trail on New Year's Day was not the first person to encounter one of the predators in the area in recent weeks.

Gary Messina said he was running along the same trail on a dark November morning when his headlamp caught the gleam of two eyes in the nearby brush. Messina used his phone to snap a quick photo before a mountain lion rushed him.

Messina said he threw the phone at the animal, kicked dirt and yelled as the lion kept trying to circle behind him. After a couple of harrowing minutes he broke a bat-sized stick off a downed log, hit the lion in the head with it and it ran off, he said.

The woman whose body was found Thursday on the same Crosier Mountain trail had "wounds consistent with a mountain lion attack," said Kara Van Hoose with Colorado Parks and Wildlife. An autopsy is scheduled for next week, said Rafael Moreno with the Larimer County Coroner's Office.

Prior warnings and the hunt for a culprit

Wildlife officials late Thursday tracked down and killed two mountain lions in the area — one at the scene and another nearby. A necropsy will help determine if either or both of those animals attacked the woman and whether they had neurological diseases such as rabies or avian flu.

A search for a third mountain lion reported in the area was ongoing Friday, Van Hoose said. Nearby trails remained closed while the hunt continued. Van Hoose said circumstances would dictate whether that lion is also killed.

Based on the aggressiveness of the animal that attacked him on Nov. 11, Messina suspects it could be the same one that killed the woman on New Year's Day.

"I had to fight it off because it was basically trying to maul me," Messina told The Associated Press. "I was scared for my life and I wasn't able to escape. I tried backing up and it would try to lunge at me."

The 32-year-old man from nearby Glen Haven, Colorado, reported his encounter to wildlife officials days later who posted signs to warn people about the animal along trails in the Crosier Mountain area northeast of Estes Park, Van Hoose said. The signs were later removed, she said.

Mountain lions don't often attack humans

Mountain lion sightings in that area east of Rocky Mountain National Park are common, Van Hoose said, because it offers good habitat for the animals: It's remote with thick forests, rocky outcroppings and lots of elevation changes.

Yet attacks on humans by the animals are rare, and the last suspected fatal encounter in Colorado was in 1999, when a 3-year-old boy disappeared in the wilderness and his tattered clothes were found more than three years later. In 1997, a 10-year-old boy was killed by a lion and dragged away while hiking with family members in Rocky Mountain National Park.

Two hikers on Thursday saw the victim's body on the trail at around noon from about 100 yards (meters) away, Van Hoose said. A mountain lion was nearby and they threw rocks to scare it away. One of the hikers, a physician, attended to the victim but did not find a pulse, Van Hoose said.

The victim will be publicly identified following the autopsy by the coroner, who is also expected to provide a cause of death.

Mountain lions — also known as cougars, pumas or catamounts — can weigh 130 pounds (60 kilograms) and grow to more than 6 feet (1.8 meters) long. They primarily eat deer. Colorado has an estimated **3,800 to 4,400** of the animals, which are classified as a big game species in the state and can be hunted.

Back away slowly. Do not run

Thursday's killing would be the fourth fatal mountain lion attack in North America over the past decade, and the 30th since 1868, according to information from the California-based Mountain Lion Foundation. Not all of those deaths have been confirmed as mountain lion attacks.

Most attacks occur during the day and when humans are active in lion territories, indicating the animals are not seeking out the victims, according to the advocacy group. About 15% of attacks are fatal.

"As more people live, work, and recreate in areas that overlap wildlife habitat, interactions can increase, not because mountain lions are becoming more aggressive, but because overlap is growing," said Byron Weckworth, chief conservation officer for the foundation.

To reduce the risk travel in groups, keep children close and avoid dawn and dusk when lions are most active, Weckworth said. During an encounter, maintain eye contact with the lion, make yourself appear larger and back away slowly; don't run, he said.

Last year in Northern California, two brothers were stalked and attacked by a lion that they tried to fight off. One of the brothers was killed.

MATTHEW BROWN Brown is based in Billings, Montana. He covers breaking news, the environment, politics, energy, crime and more.

2025

4] August 31, 2025

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https://www.sfchronicle.com/california/article/mountain-lion-el-dorado-county-21018501.php?cmpid=gsa-sfgate-result

U.S. & World//California

This Northern California county is 'overrun' with mountain lions. What should be done?

[Videos 4 - Mountain lion sightings in El Dorado County. Residents are divided over how to respond as the big cats' behavior appears to be changing around humans. Photo Clockwise from top-left: Maureen Mckindley; Wendy Stabile-Leduc; Fred Buhlert; Kaylee Ries]

San Francisco Chronicle By Lucy Hodgman, Staff Writer Aug 31, 2025

Haley Molzahn remembers the first time she heard a mountain lion's mating cry. The high-pitched wail can't be captured in a YouTube video, she said — in person, it sends "an icy feeling down your spine, like you've just been put back into the Pleistocene Era and you are not at the top of the food chain."

It wasn't unusual to hear mountain lions when Molzahn was growing up in Foresthill (Placer County). The big cats, which are also called pumas and cougars, are native to the area and roam widely through its forests and foothills. But Molzahn said it was rare for her neighbors to actually lay eyes on a mountain lion unless one ran across their path while they were hiking in the woods. That's changed in the last few years.

"Post-2020, you start having people see the lion cross their property, maybe in the late evening or during the day," said Molzahn, who now lives in El Dorado County, about 30 minutes from her hometown. "What's more disturbing is that beforehand, people could yell and scream, and the lion would take off. Now people are yelling and screaming and the lion's just staring at them, like, 'Why are you yelling at me?'"

Growing concern about mountain lions in El Dorado County inspired her to start tracking them last summer. When she posted about her research on Facebook, one commenter called her "an overeducated housewife with too much time on her hands." Molzahn jokes that the description isn't far from the truth: She's worked as a wildlife biologist and a veterinarian, but she was a stay-at-home mom to a toddler when she started the El Dorado County Carnivore Project.

The project has grown to a small team of volunteers that collects data on mountain lions in the area and maintains a map of reported sightings. Molzahn has driven much of the county with her

son in tow, interviewing locals about their run-ins with the lions. She's heard extreme stories about mountain lions following people down their driveways, or in one case, coming inside and hopping onto a kitchen counter. The consensus is that there's been a recent "behavioral change," she said — the area's mountain lions seem less wary of humans than ever.

Molzahn's findings line up with El Dorado County data. For the 13 years prior to 2023, the county recorded an annual average of about 33 mountain lion attacks on domestic animals. The number of attacks spiked to 97 in 2023, then climbed to 202 in 2024. County Agricultural Commissioner LeeAnne Mila said the latest numbers were still unusually high, with 50 attacks reported between Jan. 1 and April 14 of 2025. The lions' primary targets have been sheep and goats, but they've also killed horses, llamas and household pets (six last year).

"A lot of people are of the thought that the mountain lions will only kill what they're going to eat, and that's not true — they also kill for sport," Mila said. "When they're coming in and taking a German shepherd mix at 5 o'clock in the afternoon in front of the owner, they're not afraid of anything."

It's unclear whether there are actually more mountain lions in the county, or whether it's just their behavior that has changed. Peter Tira, a spokesperson for the California Department of Fish and Wildlife, also suggested that growing awareness about the issue in the county could lead more people to report attacks than in previous years.

A population survey published last year estimated that there were between 3,200 and 4,500 mountain lions in California, a number that's stayed relatively consistent since the last count 40 years prior. **The Department of Fish and Wildlife estimates that around 40% of the state is habitable for the lions, which favor forests, brushlands and mountains.**

Reports of mountain lions in El Dorado County tend to note that they look "really skinny," Mila added, **leading her to wonder if they're driven toward humans out of desperation for food.** Mila and Molzahn both pointed to the state's booming population of black bears, which steal and eat the deer that mountain lions kill for dinner. The lions are also likely to find goats and sheep easier to catch than fleet-footed wild animals; Molzahn compared a field of livestock to a mountain lion McDonald's.

The uptick in reported attacks has spawned several Facebook groups where people in the county share stories of their sightings and run-ins. Anxiety reached a fever pitch last year, after brothers Taylen Brooks, 21, and Wyatt Brooks, then 18, were **mauled by a mountain lion** while looking for shed deer antlers on a forest service road in El Dorado County, outside Georgetown. Taylen died at the scene and Wyatt was seriously wounded.

It was the first time since 2004 that a mountain lion has killed a human in California. According to state records, only three other people have died in mountain lion attacks in the last four decades. The incident was also unusual because Taylen and Wyatt were grown men with years of experience hunting and fishing in the area. Their uncle, Malcolm Brooks, said the brothers followed the recommended procedure as soon as they spotted the lion, shouting and waving their arms as they backed away.

"They did everything that you're supposed to do in a face-to-face confrontation, and none of it worked," Brooks said. "It landed like a bomb in that community."

Brooks testified in the state Senate this spring on behalf of **"Taylen and Wyatt's Law,"** a bill sponsored by state Sen. Marie Alvarado-Gil, R-Jackson (Amador County). **The legislation, which died in May, aimed to create a pilot program in El Dorado County allowing trained dogs and their handlers to chase mountain lions until they could escape to safety in a tree.**

Known as "tree-and-free," the practice is intended to restore the lions' fear of humans. **Brooks noted that chasing lions with dogs was common in California until Proposition 117** made mountain lions a "specially protected" species in 1990. He'd ultimately like to see that protection repealed.

Wildlife advocates are skeptical that the tree-and-free method is as humane as proponents claim. Robin Parks, a longtime volunteer with the Mountain Lion Foundation, a Sacramento-based nonprofit devoted to mountain lion conservation, fears many of the chases would end with lions being shot.

"If a mountain lion goes after their dogs, they're going to shoot it," Parks said. "If it goes after one of them, they're going to shoot it. The odds are really good that one of those two things will happen. The idea here is that there will be mountain lions killed, not just mountain lions 'treed.'"

Parks offered a simple explanation for the increased mountain lion presence in El Dorado County: Humans are encroaching on their territory, and the lions have less space to retreat to than ever. He's found that simple scare devices like light and noise alarms serve as effective deterrents, and he laments the fact that people seem more interested in chasing the lions up trees "for fun."

On the other end of the spectrum are locals who say the tree-and-free method doesn't go far enough. That's the position of Fred Buhlert, who's 74 and has lived in the county his whole life. For most of that time, "there wasn't a lion anywhere," he said. Now, the county is "overrun." Buhlert would like to see a **"controlled hunt" of mountain lions, requiring hunting tags and a quota on the number that can be killed.**

"Every predator should be managed," Buhlert said. "It's just obvious that you have to control the population or there's going to be more problems."

California remains the only state where hunting mountain lions for sport is banned outright. Instead, state residents can apply for permits to haze or shoot mountain lions that have injured or killed their livestock or pets. Last year, the California Department of Fish and Wildlife issued 68 of those permits in El Dorado County, about a third of the 208 total statewide. 19 of those permits authorized killing lions, according to Tira.

Wendy Stabile-Leduc, who's lived in the county for 10 years, is wary of the "red tape" around killing mountain lions. But she's also not convinced of the effectiveness of light and sound alarms when it comes to protecting her animals — her doorbell cameras sometimes catch lions passing the house, and they don't flinch when her security light flashes on. **Now, when she goes out to feed her horses, she braces herself for a "massacre."**

"I love wildlife," Stabile-Leduc said. "I don't really want to see them killed. But I would like to see something come back where they're afraid of people again."

Staff writer Lucy Hodgman is a Hearst Fellow on the Climate Team at the San Francisco Chronicle, covering seismic building issues, homeowners insurance and breaking energy and environment news. She previously covered politics for the Times Union, in Albany, New York, and breaking news for Politico and the Sacramento Bee.
Originally from Brooklyn, Lucy graduated from Yale University with a degree in English. Reach her at lucy.hodgman@hearst.com.

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5 | Aug 22, 2025

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https://www.sfgate.com/northcoast/article/northern-california-mountain-lion-alpaca-attacks-20889731.php

News | North Coast

15 alpacas dead, 3 cougars on the loose: NorCal ranch under siege | The attacks occurred over three nights on a Lake County ranch in Northern California

SF Gate By **Matt LaFever**, *North Coast Contributing Editor*

A two-hour drive north of San Francisco, on a 340-acre ranch tucked into the hills outside **Middletown** in **Lake County**, Julie Barr has spent nearly a decade raising alpacas. A retired Navy nurse, she moved her herd from Texas in 2015, filling the pastures with animals she describes as "so adorable."

She told SFGATE she had "never lost an animal to attack." But that peace ended last weekend, when a spree of mountain lion attacks over three consecutive nights left 15 of her alpacas dead.

She remembered stepping onto her porch the evening of Sunday, Aug. 17, when she heard a crash. Barr and her husband rushed out to inspect the alpaca enclosure and found a section of fence smashed from the inside out. Only later did she realize it was made by her alpacas, stampeding in the dim light and slamming against the boards in a blind panic as the lions struck.

What stunned her most wasn't just the scale of the killing, but the nature of it. "It's not like they just killed one and ate it," she said. "They just killed" and ate nothing. She has Great Pyrenees guard dogs on the property, but, as she put it, "there's no way my dogs could take care of all that.'"



[Photo - Alpacas graze peacefully in a Lake County meadow, nestled in the quiet hills of Northern California. Photo Julie Barr]

Her neighbor, Jesse Cude, was called to Barr's ranch the following morning and told SFGATE he found "eight dead and four still breathing." He said he was forced to "put down like four or five of them."

Cude returned that night to stand guard, shotgun in hand. As dusk settled, he sat quietly, waiting.

"I'm just sitting there being quiet," he said, "and I see out of the corner of my eye two cats run right by me like 20 feet away. It's straight towards the alpacas."

They were “big cats, probably 100 pounds, running at full speed right by me," he added. "Didn’t notice me, smell me, nothing.”

The alpacas screamed as the lions struck again. Two more animals would die that night, and another pair the following evening, bringing the toll to 15.

[Photo -In the peaceful hills of Northern California's Lake County, a herd of alpacas pauses their grazing to greet the camera. Photo Julie Barr]

California Department of Fish and Wildlife spokesperson Peter Tiara confirmed the scope of the attacks. “We showed up after the first incident, 11 alpacas killed, three more injured as well as injuries to one of their livestock guardian dogs,” he said. “**It was a mountain lion attack and we issued a non-lethal permit.**”

After the lions returned, CDFW escalated its response. “At that point, we issued a lethal depredation permit to take one adult lion.”

Tiara told SFGATE that the mountain lions were not likely killing for sport, but due to their prey drive. “If they get into a pen and there’s multiple animals, they’re in kill mode, right? As long as there’s movement, they’re taking out every animal they can get,” he explained. “It’s just a predatory response.”

On Barr's ranch, the aftermath lingers — empty pens beside scattered survivors, the remaining alpacas uneasy in pastures once filled with calm routine. She said animal experts have told her mountain lions don’t kill for sport. But her eyes told her something else.

“They killed 15 animals," Barr said. "They’re not going to eat 15 animals. They came back two nights and killed.”

She grew up in West Virginia, where her family hunted. “We eat what we kill,” she said. “But this just seemed a shame.”

Matt LaFever North Coast Contributing Editor

Matt LaFever is a former SFGATE contributing editor for the North Coast. A Humboldt State grad and 20-year Emerald Triangle resident, he's previously reported on California’s North Coast in print and radio for nearly a decade.

6] August 11, 2025

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https://www.sfgate.com/la/article/california-mountain-lion-bite-20812509.php

News | Los Angeles

California mountain lion bite sends 11-year-old to hospital

SF Gate By Olivia Hebert, *News Reporter* Aug 11, 2025

A Sunday evening on the Malibu coast took a chaotic turn when an 11-year-old was bitten by a mountain lion, sparking an emergency response that ended with the animal's death.

The attack occurred around 5:40 p.m., the Los Angeles County Sheriff's Office told SFGATE. Deputies with the Malibu and Lost Hills Sheriff's Station responded to the scene, along with members of the Los Angeles Fire Department, after getting a call reporting the attack.

"Deputies provided scene security, while fire provided medical aid to the juvenile," the sheriff's office said in a statement.

Officials with the California Department of Fish and Wildlife also helped, tracking down the mountain lion and killing it, according to KTLA-TV. DNA samples were collected from the child to confirm the animal's involvement in the attack. The child suffered a bite to the arm and was rushed to the hospital for treatment but "is expected to be OK," KTLA-TV reported.

Requests for further information from Fish and Wildlife were not answered by the time of publication.

Olivia Hebert **News Reporter** Olivia Hebert is a news reporter at SFGATE, where she covers breaking news and a diverse array of topics. Before joining SFGATE, she wrote lifestyle news for the Independent, often exploring the intersection of health, technology, pop culture, travel and style. She's also written entertainment news for Collider, Distractify and StyleCaster. You can reach her at olivia.hebert@sfgate.com.

7] July 22, 2025

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https://www.sfchronicle.com/bayarea/article/video-shows-mountain-lion-prowling-around-contra-20781593.php

Bay Area

Video shows mountain lion prowling around Contra Costa County home

San Francisco Chronicle By Jerry Wu, Staff Writer July 22, 2025

Brentwood residents are being advised to stay vigilant — and keep an eye on pets — after a home security camera caught a mountain lion walking just outside a home in the area of Fairview Avenue and San Jose Drive on Tuesday morning.

A Facebook post from Brentwood Police Department displayed a video of one of the felines prowling on what appeared to be a recycling bin in the side alley of a house.

Police said that the California Department of Fish and Wildlife was notified.

Anyone who sees the mountain lion is asked to report the sighting to the California Department of Fish and Wildlife at 707-428-2002 or contact Brentwood Police Dispatch at 925-809-7911.

Staff Writer Jerry Wu is a breaking news intern at the Chronicle. He is a rising junior at Northwestern University, where he studies journalism and international studies. He previously interned at his hometown newspaper, the San Diego Union-Tribune, on the government and watchdog team. At his college newspaper, the Daily Northwestern, Jerry has served as managing editor, campus editor, diversity and inclusion chair and a senior beat reporter covering local labor unions and student activism. He is also a senior editor for NWAZN, Northwestern's Asian American magazine. Outside of journalism, he enjoys street photography, fishing and playing pickleball. After spending his youth in San Mateo, he is excited to return to the Bay Area this summer.

8] March 3, 2025

[redacted]

https://www.sfgate.com/northcoast/article/mountain-lion-kills-goats-sheep-mendocino-coast-20199972.php

Mountain lion evades double electric fence, kills pets at Northern California homestead | A mountain lion breached a fenced enclosure and killed two goats and a sheep

SF Gate By Matt LaFever, *North Coast Contributing Editor* March 3, 2025



[Photo - The mountain lion a Mendocino Coast resident believes is responsible for killing two goats and a sheep. Photograph contributed by Nadia El Adili]

In the early hours of Feb. 28, Mendocino Coast resident and biologist Nadia El Adili awoke to a grim scene: two goats and a sheep — all cherished family pets — had been killed by a mountain lion. Despite a double electric fence and a three-sided enclosure, the predator managed to breach their defenses. "We thought it would be safe enough and it obviously wasn't," El Adili lamented to SFGATE.

Later that night, the game camera on the rural property captured a chilling sequence: the mountain lion, undeterred by its earlier kill, stealthily returning to the scene.

Nadia and her husband have cultivated a homestead on Fort Bragg's Airport Road for the past decade, sharing their lives with a variety of animals, including goats, sheep, a dog, and chickens. Their property, while not heavily forested, is part of a region where wildlife sightings are not uncommon.

Reflecting on the incident, El Adili noted the broader implications of human encroachment on wildlife habitats. "As they're getting less and less habitat, we're definitely going to have more interactions," she observed.

Having hiked extensively in the area since 2020, she recounted only one prior mountain lion encounter, during which the animal fled upon seeing her. "They tend to be pretty scared of humans," she added, acknowledging that while such attacks are rare, they may become more frequent as human development continues to infringe upon natural territories.

In the aftermath of the attack, El Adili reported the incident to the California Department of Fish and Wildlife and consulted with neighbors to raise awareness. She hopes that sharing her experience will prompt others in the community to take proactive measures in safeguarding their animals and coexisting responsibly with the region's wildlife.

Peter Tira, a spokesperson for the CDFW, told SFGATE in a statement the agency's commitment to assisting residents and ranchers in protecting their pets and livestock from mountain lion attacks. He notes that CDFW employs a full-time wildlife biologist in Mendocino County to provide technical assistance and preventative recommendations. "Attacks need to be reported to us within 48 hours so there is evidence around to confirm it was indeed a mountain lion attack," Tira advises. He adds that the department will investigate reported incidents, as "sometimes attacks are attributed to mountain lions when other animals – coyotes, even dogs – are responsible."

When it comes to managing confirmed mountain lion depredations, Tira explains that **CDFW issues both non-lethal and lethal depredation permits.** However, he stresses that **"lethal depredation permits, however, are a measure of last resort** as we prioritize effective non-lethal actions." In cases where mountain lions pose a direct threat to public safety, Tira indicates that these incidents are typically addressed immediately by CDFW's Law Enforcement Division. He advises that "anyone in an emergency situation fearing for their safety due to a mountain lion should always call 911."

CDFW claims that mountain lions attacking humans is exceedingly rare. Statistically, a person is 1,000 times more likely to be struck by lightning than attacked by a mountain lion. **Since 1890, there have been fewer than 50 verified mountain lion attacks in California, and only six have been fatal**. In most cases, the victims were alone at the time of the encounter.

According to the CDFW, the most recent mountain lion attacks on humans in Mendocino County occurred in August 1994, with two incidents reported that month.

El Adili's background as fisheries biologist on the Mendocino Coast provides her with a unique perspective on the loss of her sheep and goat. She understands the delicate balance between

human expansion and wildlife preservation, but also misses her animal friends. “It's a huge bummer,” she said.

Matt LaFever **North Coast Contributing Editor** Matt LaFever is a former SFGATE contributing editor for the North Coast. A Humboldt State grad and 20-year Emerald Triangle resident, he's previously reported on California’s North Coast in print and radio for nearly a decade.

9] Jan 17, 2025

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https://www.sfgate.com/california/article/mountain-lion-attack-dog-small-california-town-20041042.php

California

California park closed after mountain lion shot with dog in its mouth | Another mountain lion was seen 300 yards from a Calif. elementary school

SF Gate By Julie Brown Davis, *Mountain Towns Editor* Jan 17, 2025

[Photo - FILE: The day after a mountain lion was shot and killed in Downieville, another mountain lion sighting was reported near an elementary school in a neighboring town. Moose Henderson / Getty Images/iStockphoto]

A mountain lion was attacking a dog at a residence in Downieville early in the morning on Monday when a neighbor shot and killed it, according to the California Department of Fish and Wildlife.

Two other mountain lions were nearby during the attack, Peter Tira, spokesperson for the California Department of Fish and Wildlife, confirmed. Likely, the three mountain lions were a mother and her offspring.

The mountain lion had the dog in its mouth when it was shot and killed, Tira said. Downieville’s newspaper, the Mountain Messenger, reported that the dog did not survive. The California Department of Fish and Wildlife is investigating the shooting.

The attack occurred in a **residential area,** in the north part of the small Sierra Nevada town, near a county park and the upper portion of Main Street, a road that runs along Downie River.

“It’s prime mountain lion habitat,” Tira said. “It’s rural, mountainous.”

After Monday's attack, the Sierra County Sheriff's Office closed down the county park in Downieville, including the playground, tennis courts and basketball court. SFGATE called Sierra County Sheriff Mike Fisher multiple times for comment but did not hear back before publication.

"We urge all residents and visitors in the Downieville area to exercise caution and report any mountain lion sightings to the Sheriff's Office," the sheriff's office wrote on Facebook.

Local newspaper reports there were 2 shooters

Downieville's newspaper, the Mountain Messenger, published a detailed account of Monday's attack, reporting that two people shot the mountain lion that morning.

The Messenger did not name any of the individuals involved in the attack, but the publication reported that a Downieville resident who lives on Main Street heard her two dogs make noises around 3 a.m. on Monday. She opened her back door to let them go outside into a fenced backyard. That's when she saw a pair of eyes staring at her from the hillside. She told the Messenger that she called her dogs back into the house. One obeyed. The other didn't make it back.

A mountain lion in the woman's backyard seized her dog in its mouth, the Messenger reported. Shortly after, a neighbor arrived with a loaded shotgun. The neighbor shot the mountain lion and injured it, the Messenger reported.

[Photo - FILE: A mountain lion was shot and killed in Downieville on Monday, Jan. 13. Kevin Schafer/Getty Images]

At that point, another family friend arrived at the house with a hunting rifle, according to the Messenger. This person also shot the mountain lion, this time killing it.

State law allows people to protect themselves, as well as their pets and property, from any attack by a wild animal, Tira said. "Mountain lions are a specially protected species in California. But obviously public safety is a huge priority," he said.

Another mountain lion sighting reported near an elementary school

On Tuesday, the day after the shooting, another mountain lion sighting was reported in broad daylight in Loyalton, almost 50 miles away from Downieville, the Sierra County Sheriff's Office said on Facebook. This mountain lion was seen just 300 yards from the elementary school, near Church and Zollinger streets.

"This incident happened just after school was released for the day," the sheriff's office wrote on Facebook.

Because the mountain lion posed a public safety concern, sheriff's deputies attempted to euthanize it but were unable to. Instead, **they used hazing techniques to scare the mountain lion out of the area.**

Longtime resident says mountain lion sightings are on the rise

Mountain lion sightings are happening more frequently than in years past, said Lydia Miyasato, a 35-year resident in the area. The general manager of a hotel in Downieville, Miyasato lives in Camptonville, a small town 20 miles west. She's seen mountain lions multiple times while driving the rural highways that crisscross the mountains.

Last summer, a mountain lion broke into her mother-in-law's home and nearly killed the dog. The mountain lion had the dog in its mouth when Miyasato's mother in law screamed, "Oh my God!" Miyasato said she thinks her mother-in-law's scream made the mountain lion drop the dog. The mountain lion hissed at Miyasato's mother-in-law and left.

"The words that came out of her mouth, she feels like, is the only way of saving grace," Miyasato said.

The increasing presence of mountain lions in the area is unnerving, Miyasato said. While the region has also experienced traumatic incidents from bear attacks — in 2023, a bear broke into a woman's home in Downieville and killed her — Miyasato said mountain lions scare her much more than bears.

"A bear will leave if you make enough sound," she said. "A mountain lion, if you do eye contact, it makes them want to approach you more."

Sheriff Fisher told the Sacramento Bee that he wouldn't recommend jogging outside in the Sierra foothills, especially at the beginning or the end of the day. Tira also advised that people travel in groups to remote, rural areas of the woods and communicate with family members or friends about their whereabouts. He also advised keeping pets on a leash.

"These are wild animals and this is their habitat. There's no need to be fearful about recreating outdoors, but you do need to pay attention to your surroundings and have a plan," Tira said.

Last year, a mountain lion killed an adult man for the first time in 30 years.

Julie Brown Davis **Mountain Towns Editor** Julie Brown Davis is the California mountain towns editor at SFGATE. She has been writing about mountain towns in the Sierra Nevada for more than 15 years. Julie has written for a variety of publications, from the New York Times and Washington Post to Powder Magazine and Tahoe Quarterly, to name just a few. She grew up on Lake Tahoe's West Shore. Her corgi is named Squirrel.

2024

10] Sep 3, 2024

[redacted]

https://www.sfgate.com/la/article/malibu-mountain-lion-attacks-boy-19739610.php

News | Los Angeles

Mountain lion attacks 5-year-old boy at popular California park | Family members helped fight off the animal as it tried to pull the child away

SF Gate By **Erin Rode**, *Contributing LA Outdoors Editor* Sep 3, 2024

A 5-year-old boy is recovering from his injuries after a terrifying mountain lion attack at Malibu Creek State Park in the Santa Monica Mountains on Sunday afternoon.

The state park is located within the largely unpopulated Santa Monica Mountains between Calabasas and the Malibu coast.

The children were "playing in the immediate vicinity of the family's picnic table" when a mountain lion attacked the young boy, causing "significant but non-life-threatening injuries."

After some of the adults charged at the lion, it let go of the boy and then retreated up a tree.

"Somebody screamed the baby's name, and his dad started running," the boy's aunt told KTLA. "The father grabbed the mountain lion with his hands, and he just fought. Then the mountain lion let go."

"The lion remained in the tree until State Parks rangers arrived. In consultation **with CDFW wildlife officers, they deemed the mountain lion a threat to public safety and a ranger euthanized it via firearm,**" the California Department of Fish and Wildlife said.

The 5-year-old was airlifted to Northridge Hospital Medical Center and released in the early morning on Monday.

Mountain lion attacks on humans are rare, with a person "one thousand times more likely to be struck by lightning than attacked by a mountain lion," according to the **California Department of Fish and Wildlife**. There have been less than 50 verified mountain lion attacks on human in California since 1980, six of them fatal. **In March of this year, a mountain lion killed a 21-year-old man in El Dorado County, the first fatal attack by a mountain lion in Northern California in three decades. In Southern California, the last fatal attack was in 2004, when a mountain lion killed a 35-year-old man in Orange County's Whiting Ranch Wilderness Park.**

The Santa Monica Mountains are home to about 10 to 15 adult and subadult mountain lions at any given time, in addition to kittens. The population is increasingly threatened by habitat that's been lost to development in the hills and fragmented by major freeways. **The world's largest wildlife crossing is under construction over the 101 freeway in an attempt to reconnect mountain lion habitat.**

The department recommends that hikers, campers and picnickers "stay alert on trails" while out in the wilderness, adding that pets should remain leashed and adults should walk closely with small children. If a mountain lion becomes visible, do not approach it and do not run or turn your back. Instead, face the animal and make loud noises while trying to appear as large as possible. Ensure the mountain lion has an escape route as well.

Erin Rode **Contributing LA Outdoors Editor** Erin Rode is SFGATE's Contributing Los Angeles Outdoors Editor. Erin grew up in Los Angeles County and has hiked area trails for over a decade. She previously covered the environment for The Desert Sun in Palm Springs.

11] March 25, 2024

https://www.sfgate.com/bayarea/article/california-brothers-mountain-lion-attack-19367715.php

California brothers in deadly mountain lion attack identified

News | Bay Area & State

SF Gate By Katie Dowd, *Managing editor* March 25, 2024



[Photo - Brothers Taylen Robert Claude Brooks, left, and Wyatt Jay Charles Brooks of Mt. Aukum, Calif., were attacked by a mountain lion on March 23, 2024. Photo El Dorado County Sheriff's Office/Handout]

Two brothers have been identified in an exceptionally rare **mountain lion mauling in Northern California**.

Taylen Robert Claude Brooks, 21, and Wyatt Jay Charles Brooks, 18, of Mount Aukum, California, were the victims in the attack, the El Dorado County Sheriff's Office confirmed Monday. **Taylen Brooks' death was the first by a mountain lion in California in two decades; there have been only three verified killings by a mountain lion in the state since 1986, according to California Department of Fish and Wildlife records.**

"We would like to express our sincere thanks for the outpouring of support and prayers from family, friends and the community," the brothers' family said in an emailed statement. "We are all devastated by the tragic loss of Taylen yet thankful Wyatt is still with us and are well-aware the outcome could have been even worse."

According to the sheriff's office, the pair were antler shed hunting along Skid Road, a rural part of the county about 30 minutes north of Placerville. While walking, they noticed a mountain lion alongside them. "Both Taylen and Wyatt did what they had always learned," the sheriff's office said in a statement. "They raised their hands in the air to appear larger, yelled at the lion and Wyatt even threw his backpack at the lion, all in an attempt to scare the lion away."

The mountain lion charged at Wyatt and began biting his face. Taylen attempted to pull the animal off his brother, and amid the tussle, "the lion released Wyatt, got up and charged Taylen." The mountain lion grabbed Taylen by the throat and wouldn't let go, prompting Wyatt to get his phone to call 911. But with poor cell service, Wyatt had to run back to where the pair had parked their car to try to get the call to connect. When first responders arrived 15 minutes later, Wyatt had "traumatic injuries to his face," the sheriff's office said, and Taylen was nowhere to be found.

After a search of the area, **sheriff's deputies** discovered a mountain lion "crouching" next to Taylen. **They fired their guns to chase the animal off, but Taylen was already dead.** Wyatt was rushed to a hospital and underwent "reconstructive surgery of the major lacerations to his face and neck," the sheriff's office said. "Wyatt is home recuperating from the tragic ordeal."

The mountain lion was tracked down and euthanized, CDFW confirmed Sunday.

Taylen worked as a house painter with his father, loved the outdoors and was "an extremely talented guitar player," his family said in a statement. Wyatt is enrolled at the Mt. Adams fire

academy and hopes to someday work for Cal Fire. A fund has been set up to support the family, and a memorial will be held at a later date.

“A brother is a friend given by nature,” his family said. “These two brothers were driven by nature.”

Katie Dowd **Managing editor** Katie Dowd is the SFGATE managing editor. She started her career at SFGATE in 2011 shortly after graduating from UC Berkeley. She was born and raised in the Bay Area.

12] March 24, 2024

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lion-kills-man-northern-california-19365657.php

California for first time in 30 years

By **Katie Dowd, Amanda Bartlett** Updated March 24, 2024 12:32 p.m.



[Photo - Darling Ridge Road in rural El Dorado County, where two brothers were attacked by a mountain lion on March 23, 2024. Photo Google Street View]

LATEST March 24, 5:04 p.m. California officials confirmed that a mountain lion they euthanized in the vicinity of a fatal attack in a remote area near Georgetown was the same animal that killed a 21-year-old man Saturday afternoon.

DNA samples collected by the California Department of Fish and Wildlife at the scene matched those taken from the lion's carcass, the agency's wildlife forensics laboratory found. The

animal was a male, weighed approximately 90 pounds and "appeared to be in healthy condition," the CDFW said.

At the time of the attack, the man was said to be antler shed hunting with his 18-year-old brother, who was severely injured but survived and was able to call for help. **CDFW officials dispatched a professional trapper to the scene, who found and euthanized the animal within a few hours**, but it wasn't until the test results were released that they could know it was the mountain lion involved.

Forensic scientists with the CDFW are still analyzing necropsy results to determine whether the animal had any underlying health conditions. The agency said it plans to continue investigating the attack in conjunction with the El Dorado County Sheriff's Office while standard pathology and other assessments are completed.

"First and foremost, our hearts go out to the families and loved ones affected by this tragic incident," CDFW director Charlton H. Bonham said in the news release. "Our thoughts are with them during this difficult time."

March 24, 6:16 a.m. For the first time in 30 years, someone has been killed by a mountain lion in Northern California.

According to the El Dorado County Sheriff's Office, dispatchers received a desperate 911 call around 1:15 p.m. Saturday from Darling Ridge and Skid roads in a rural part of the county about 30 minutes north of Placerville. The caller was an 18-year-old who said he and his older brother had just been attacked by a mountain lion. During the fight for their lives, the two brothers were separated, and the young man wasn't sure where his 21-year-old brother was.

Shortly after 1:30 p.m., help arrived. Paramedics discovered the younger brother with "traumatic injuries to his face" and began giving him medical attention. Sheriff's office deputies started looking for the missing brother. About 15 minutes into the search, they encountered a "crouched mountain lion next to a subject on the ground." They fired their guns to scare the animal off and rushed to help the man, but he was already dead.

The sheriff's office told SFGATE in a statement that neither man will be identified right now. "The 18-year-old brother has undergone multiple surgeries for his injuries and is expected to make a full recovery," the statement read. "The family is grateful for the prayers and condolences from the community however wishes for privacy in order to process this tragic event."

According to the California Department of Fish and Wildlife, the last **verified deadly mountain lion encounter** in Northern California was three decades ago. In April 1994, Barbara Schoener, 40, was jogging on a trail near the town of Cool in El Dorado County when a mountain lion

jumped on her from behind. Evidence gathered by investigators indicated that the animal dragged Schoener downhill and covered her body with leaves, initially causing detectives to think she had been killed by a person. An autopsy showed she was bitten on the head and neck, suffering a fatal skull injury. At the time of her death, the Sacramento Bee reported it was the first deadly mountain lion attack in the state since 1909.

More recently, a man was killed by a mountain lion in Orange County in Jan. 2004. The 35-year-old was biking in Whiting Ranch Wilderness Park when he stopped to fix a broken bike chain. As he crouched down, investigators believe a mountain lion pounced on him, killing him in an ensuing struggle. Not long after, the same mountain lion attacked a 30-year-old woman biking through the area, grabbing her head in its jaws before other cyclists were able to fight off the animal and rescue the woman. The woman survived.

Although there **are thousands of mountain lions in California**, they're rarely seen by humans. "They are reclusive and solitary animals, mostly avoiding people when possible," CDFW says on its website. "A person is one thousand times more likely to be struck by lightning than attacked by a mountain lion," the agency adds. About 50 **verified** attacks have been **recorded by CDFW** since 1890. Six of them were fatal; if verified, Saturday's would be the seventh.

According to the El Dorado County Sheriff's Office, the mountain lion that attacked the two brothers was located and "dispatched."

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On X

California Department of Fish and Wildlife

@CaliforniaDFW

Following the mountain lion attack today, Sat., March 23, 2024, in Georgetown, California, a mountain lion was euthanized near the scene of the attack. The mountain lion has been sent to the CDFW forensics laboratory to obtain DNA information and general health of the lion.

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CDFW recommends people do not hike, bike or jog alone or at dawn, dusk or nighttime. Crouching should also be avoided, as this may mimic four-legged animals that are more common prey for cougars. Should you encounter a mountain lion, never run away, as this may trigger its instinct to chase. “Face the animal, make loud noise and try to look bigger,” CDFW recommends.

2023

13] Oct 27, 2023

[redacted]

https://www.sfgate.com/bayarea/article/california-hiker-injured-by-mountain-lion-18452236.php

California hiker injured when stopping mountain lion attack on dog

SF Gate By Amy Graff, *Senior News Editor* Oct 27, 2023

[Photo - FILE: This Feb. 9, 2015, photo, released by the National Park Service, taken from a remote camera in the Santa Monica Mountains National Recreation Area, shows a mountain lion. Photo AP]

A California hiker was injured Tuesday when stopping a mountain lion's attack on a dog, officials said.

The individual was walking a small dog in Solstice Canyon in the Santa Monica Mountains National Recreation Area when the mountain lion attempted to pounce on the dog. Upon intervening, the person was scratched by the mountain lion and received a puncture wound on the hand, a social media post from the recreation area said.

National Park Service rangers treated the person's injuries. The dog was unharmed.

The Solstice Canyon area was closed until Thursday. "The area closure was instituted to give the lions time to leave the area and minimize the chances of any further conflict," park officials said.

Mountain lions are generally shy animals, and conflicts with humans are uncommon. "If you do encounter a mountain lion, make yourself appear as large and intimidating as possible by yelling, waving your arms, and even throwing objects in the direction of the animal," park officials said. "Slowly back away and allow space for the mountain lion to move away. Do not turn your back and run!"

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

14] Aug 12, 2023

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lions-hillsborough-18293218.php

Mountain lions seen eating deer on Hillsborough property

News | Bay Area & State

SF Gate By **Sam Mauhay-Moore**,*National Parks Reporter* Aug 12, 2023

[Photo - FILE: Mountain lions have recently been spotted in the Bay Area community of Hillsborough. Photo Moose Henderson/Getty Images/iStockphoto]

Multiple mountain lions have been spotted recently in a Hillsborough neighborhood, including two wild cats that were seen eating a deer in a residential area, officials said.

A resident on the 1400 block of Marlborough Road reported seeing two mountain lions eating a deer on their property, the Hillsborough Police Department announced in a Facebook post. A neighbor also reported seeing mountain lion cubs in a nearby den.

Mountain lions are known to frequent the hills and green belts that surround Hillsborough, police said. Though their primary food source is deer, they've been seen on trail cameras attacking other animals, including pets.

According to the county of San Mateo, local mountain lion sightings are rare, but the animals may be encountered at parks throughout the area. Police recommend that residents who live in known mountain lion habitats keep their pets indoors during dawn, dusk and evening hours, and lock their doors at night. Police also advise residents to not feed local deer and to keep a close eye on small children when hiking.

"If you see a mountain lion DO NOT APPROACH IT, especially one that is feeding or with offspring. Most mountain lions will try to avoid confrontation," Hillsborough police said in the Facebook post.

Though population estimates of mountain lions in California are relatively stable, there has been **an increase in reported sightings of the cats over recent years** due to an increase in home security cameras and personal trail cameras, according to the **California Department of Fish and Wildlife**. Mountain lions have been considered a "specially protected" species in the state since the passing of the California Wildlife Protection Act in 1990.

Sam Mauhay-Moore **National Parks Reporter** Sam Mauhay-Moore is a National Parks reporter for SFGATE. He grew up in Long Beach and studied journalism and ethnic studies at San Francisco

State. When he's not home in East Oakland, he's truck camping in the mountains or soaking in a hot spring. You can email him at sam.moore@sfgate.com.

15] Feb 15, 2023

[redacted]

https://www.sfgate.com/bayarea/article/california-mountain-lion-tears-away-dog-17786091.php

Mountain lion tears dog on leash away from its owner in California neighborhood

News | Bay Area & State | SF Gate By **Amy Graff**,*Senior News Editor*

[Photo - A mountain lion ran off with a dog on a walk with its owner in San Luis Obispo on Feb. 11, California Fish and Wildlife said. Photo Kevin Schafer/Getty Images]

A woman was out for a walk with her dog in a Central California neighborhood when a mountain lion emerged from the brush and pounced on her dog, officials said. She held onto the leash in an attempt to save the animal, but she was knocked to the ground and the mountain lion ran off with her pet, according to the California Department of Fish and Wildlife. The woman was injured in the fall.

The incident occurred at 5:30 p.m. near Laguna Lake Mobile Estates in San Luis Obispo; the residential area neighbors open space that is "suitable mountain lion habitat," California Fish and Wildlife said.

CDFW spokesperson Ken Paglia said the agency set a trap and if the mountain lion is caught, it will be relocated to a remote area of San Luis Obispo County.

"With this plan, we're trying to strike a balance between giving the mountain lion the best chance at living a life in the wild and minimizing the chance that an incident like this occurs again," Paglia wrote in an email.

The mountain lion may be the same animal that has been spotted in the same area a couple time in the past two months.

"It is believed to be an adult mountain lion," he wrote. "It's also possible that there are two mountain lions in the area. San Luis Obispo is mountain lion habitat ... and generally speaking, wherever there are deer there are mountain lions ... so the presence of mountain lions itself is not out of the ordinary."

Mountain lions are generally shy animals that avoid humans. The size of the state's cougar population is unknown. A 1996 Fish and Wildlife study found **4,000 to 6,000** mountain lions live in the state. **The agency started a new population count in 2014 and it has not been completed.**

Conflicts with humans are uncommon. Paglia said that while the data does not suggest that mountain lion conflicts are increasing, it may appear that they are because the ways to capture images and video of wildlife, such as with home security cameras and cellphones, have expanded.

If you encounter a mountain lion, Fish and Wildlife advises that you do not run away or turn your back to the animal. Instead you should try to make yourself look bigger by putting your hands over your head and make the loudest noises possible.

Amy Graff **Senior News Editor** Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

16] Feb 1, 2023

[redacted]

https://www.sfgate.com/bayarea/article/bay-area-mountain-lion-attack-17757602.php

News | Bay Area & State

Bay Area boy attacked by mountain lion was 'fighting for his life'

SF Gate By Amy Graff, *Senior News Editor* Updated Feb 1, 2023 7:08 p.m.



[Photo - Five-year-old Jack was attacked by a mountain lion in Half Moon Bay, Calif., on Jan. 31, 2023. Photo Courtesy Trexler Family]

A 5-year-old **California** boy was discharged from the hospital after surviving a terrifying mountain lion attack, a family member told SFGATE Wednesday.

The attack came on Tuesday evening when the family was on a hike in their hometown of Half Moon Bay, 30 miles south of San Francisco. The animal tore into Jack, leaving deep lacerations on his face and body, before his mother scared it off.

"It's my understanding that the boy was fighting for his life and his mom charged at the lion. As far as I know, before the mom made physical contact with the lion, it released the son," **Capt. Patrick Foy, a public information officer with the California Department of Fish and Wildlife's Law Enforcement Division**, told SFGATE.

Foy said Fish and Wildlife had not had a formal interview with the family as of late Wednesday morning; the agency's details on the attack were limited.

Jack's aunt Amie Wagner provided more information on what happened on Tuesday. Wagner told SFGATE over the phone that her nephew was hiking with his mother and grandparents in the hills on the Potrero Nuevo Farm when he ran a little ahead. "He must have scared the mountain lion," said Wagner, who posted a GoFundMe to cover Jack's medical bills. "[Jack's mother] ran up and was able to scare the mountain lion off. She said that she believed it was a juvenile."

The San Mateo County Sheriff's Office said it received a call about the incident at 6:50 p.m. on Tuesday. "When deputies arrived on scene, the boy had already been transported to the hospital," Sgt. Javier Acosta, a spokesperson for the sheriff's office, said. The boy had multiple puncture wounds and was taken to a hospital in Redwood City and then transferred to Stanford Medical Center, officials told SFGATE. Wagner said Jack had lacerations and bruises all over his body; the worst injuries, including deep wounds and a fracture, are on his face.

"Jack is an adventurous courageous little boy," Wagner said. "Physically he's going to heal from these injuries. Most importantly, we want his adventurous spirit to remain through all of this."

Foy said wildlife officers conducted an interview with Jack's mother today and collected appropriate evidence including clothing the child was wearing and swabs of the wounds.

"The evidence is in route to our Sacramento forensic laboratory," he said.

Jack's parents, Suzie and Jay Trexler, manage a farm on Tunitas Creek Road that grows and donates organic produce to low-income families in the Half Moon Bay area. Potrero Nuevo Farm also employs people who are unhoused.

"They're a special family who have dedicated their lives to serving the community," Wagner said. "The farm, everything it produces goes to support people experiencing homelessness."

Fish and Wildlife is seeking permission to access the private property where the attack occurred and look for the animal, **Foy** said.

An estimated 4,000 to 6,000 mountain lions call California home, according to the most recent survey by Fish and Wildlife, conducted in 1996. They are shy, solitary animals that typically avoid humans.

On X

San Mateo County Sheriff's Office

@SMCSheriff

@SMCSheriff was dispatched to a report of a mountain lion attack and we can confirm a child was transported to a local trauma center after the attack. Incident occurred on the 1000 blk of Tunitas Creek Rd. in unincorporated SMC. @CaliforniaDFW actively investigating the incident
7:46 PM · Jan 31, 2023

"Mountain lion attacks are exceedingly rare, and I would never discourage a family like this from going on a nature hike," Foy said. "Compared to the attacks we see from domestic dogs, I think you're going to have a far greater chance of your child being attacked by the neighbor's dog than by a mountain lion."

"I've been doing this almost **20 years,"** Acosta said of working for the sheriff's office. **"We have sightings all the time. To the best of my recollection, this is the only attack that I'm familiar with."**

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

2022

17] December 8, 2022

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lion-bay-area-home-17637691.php

'Shock': Mountain Lion enters Bay Area home, drags dog outside

By **Amy Graff**, *Senior News Editor* Updated Dec 8, 2022 10:32 a.m.

Video *[This video screenshot shows a mountain lion attacking Rebecca Kracker's dog Sherman at her home in Bennett Valley, a rural neighborhood in Santa Rosa, on Nov. 28, 2022. Photo Courtesy of Rebecca Kracker]*

A mountain lion that entered a Santa Rosa home and dragged a dog outside on Nov. 28 was euthanized by a Sonoma County trapper on Dec. 3, officials said. California Department of Fish and Wildlife spokesperson Ken Paglia said the agency had issued a depredation permit to the county for the animal, which had also killed goats on the same property.

Rebecca Kracker, the owner of the dog and goats, was relieved the wild animal was killed but wrote in a lengthy Dec. 4 Facebook post that she wishes the issue had been resolved sooner.

"This animal was undeniably sick and in need of being put down," Kracker wrote on Facebook. "... Losses happen, but this cat was out of control. It posed a safety threat considering that it was bold enough to enter my home and take a 70 lb border collie. Then had no concern for the presence of humans and continued stalking my house for hours following the attempted kill."

Video footage of a recent mountain lion attack of a dog in a Santa Rosa home. Video courtesy of Rebecca Kracker

Kracker shared a detailed account of the mountain lion's attack on Facebook. She wrote that she was in her living room watching her two dogs play when at 5:55 p.m. her older border collie, Sherman, started to growl in the kitchen.

When she went to check on him, she wrote, she found that he was "convulsing" as a mountain lion was pulling him by his neck out of the house. The mountain lion had entered the home through an open door in the kitchen.

"I stood shaking and documenting the ordeal while I waited for backup with the mountain lion hissing, baring her teeth, and continuing to strangle my poor Sherman," Kracker wrote. "My neighbor was able to get here 10 minutes later and took a shot at the mountain lion. He missed by all accounts, but it did make the mountain lion run off… as did Sherman!"

The dog survived but was rattled and in a state-of-shock.

It's unknown exactly how many mountain lions live in California. According to a 1996 Fish and Wildlife study, anywhere from 4,000 to 6,000 mountain lions live in the state, but Paglia thinks this number may be inflated. He said the agency is conducting a new study that will provide more up-to-date numbers. Mountain lions are elusive solitary animals that avoid humans; they mainly feed on deer and wildlife but in some cases prey on pets and livestock, according to the agency. Mountain lions usually live up to 10 years in the wild, according to the National Wildlife Foundation. This particular mountain lion was was an estimated 15 to 16 years old and that may have contributed to its unusual behavior.

"We of course can't get in the mind of a mountain lion, but it's safe to assume the mountain lion was simply taking advantage of an opportunity that it saw," Paglia wrote in an email. "It was an older mountain lion so perhaps it wasn't as good at chasing down deer as it used to be."

Living with Lions, a North Bay nonprofit monitoring the behavior of local mountain lions, said the animal on Kracker's property was collared, tracked and identified as P1.

"Clearly, something was wrong with P1," Living with Lions principal investigator Dr. Quinton Martins said in a statement. "She was very old for a mountain lion which may have led to issues related to aging, including tooth wear, slowed responses, weakened senses, and possibly other health issues. In recent weeks, she was more willing to put herself near human activity with people having frequent sightings of her, as well as feeding almost exclusively on livestock, all of which is very unusual behavior."

Kracker told SFGATE on the phone that in her 30 years of living on the property in Bennett Valley, a rural neighborhood in Santa Rosa, she had never seen a mountain lion.

"We've always known they were around, but we've never seen one, which would be normal mountain lion behavior," Kracker said.

Coincidentally, two days before the animal attacked her dog, she had lost a 100-pound, 9-month-old goat to a puma.

"I never thought the mountain lion would be bold enough to enter my home to take my 70 lb border collie," she wrote on Facebook.

Kracker said the word "shock" describes how she felt when she realized a mountain lion was attacking her dog inside her home.

"I thought he was having a seizure or something along those lines," she told SFGATE on the phone. "And when it all clicked in my head, I realized this is different than I thought. ... What do I do now?"

After the attack, Kracker immediately filed a report over the phone with the Sonoma County Fish and Wildlife Commission and set up a meeting for the next day. She was told to stay inside and make any trips outdoors quickly and infrequently.

Later that evening, she stepped outside with the dogs and saw the mountain lion sitting about 20 feet away on a neighbor's fence.

"She stood up and hissed at us as we moved away," she wrote on Facebook. "We quickly moved all the animals inside and watched the mountain lion through our kitchen windows. She sat vigil watching the house for a solid 30 minutes."

Kracker requested a depredation permit and posted on Facebook that her ask was delayed by one day; she didn't receive it until Nov. 30. She wrote that the animal was showing erratic, unsafe behavior, and she wished the situation had been addressed more quickly.

"We lost a whole night," she wrote. "This cat could have moved on and potentially caused more significant damage to another community member."

Under California law, property owners can apply for a depredation permit with Fish and Wildlife to kill a problematic predator causing damage to their property.

"We want to provide people with what they're looking for, but it's also our duty to exercise caution in issuing a lethal permit," Paglia told SFGATE on the phone. "In this case, it took a day."

The mountain lion wasn't spotted on the property again until Dec. 3. Kracker wrote on Facebook that she was sitting at her computer when just after 7 p.m., she heard a goat screaming. She called the county trapper, who arrived on the property a half-hour later, trapping and killing the animal as it was attacking a goat. The mountain lion had killed two goats that night.

"I shudder to think what could have happened in our community if she hadn't been killed last night," Kracker wrote.

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

18] Dec 4, 2022

https://www.sfgate.com/bayarea/article/Rare-footage-captured-of-4-mountain-lions-17630338.php

Rare footage captured of 4 mountain lions together in Santa Cruz County

News | Bay Area & State

SF Gate By **Brisa Colón**, *KSBW* Dec 4, 2022



[Photo - A trail camera captured a group of four mountain lions following behind a deer in Soquel. Photo KSBW/Courtesy]

SOQUEL, Calif. — A trail camera captured a group of four mountain lions following behind a deer in Soquel. The California Department of Fish and Wildlife says this is the first time they've heard of them being spotted in a while.

"I knew that we had wildlife mountain lions in this area but I've never seen one so the neighbors have seen it and we've lived here for 13 years so I thought maybe I can get one on the camera," said Lars Pierce, Soquel resident.

Lars Pierce and his family were out for Thanksgiving and came home to find the footage. "I've seen them for over the last year. They visit about once every two months, but just a single mountain line I've never seen more than one at a time," Pierce said.

The California Department of Fish and Wildlife says mountain lion sightings are not typical but not unusual because of the landscape they call urban edge, because it's near the city but also nature.

"This is the first time that we are hearing about mountain lions at least recently in Santa Cruz," said Ken Pagia, public information officer for The California Department of Fish and Wildlife.

Biologists at The Department of Fish and Wildlife believe the four are most likely a mom and her cubs that are about to be a year old. Officials are warning, the public to stay on alert.

"Don't let your pets outside, unsupervised, especially at dusk till dawn, and as far as like what we can do to keep safe you know, be mindful of your surroundings when you're outside," Pagia said.

The department isn't seeing an increase in mountain lion spotting in the Santa Cruz area, but they say they are in other parts of the state.

"We feel really privileged to be able to live in their neighborhood just privilege to be around a big top of the food chain predators like that I think it makes us hopeful that we have a healthy ecosystem here," Pierce said.

It is incredibly rare for humans to be attacked but for now, Pierce says he's going to be extra careful. "I think a little bit more and keep my eyes open a little bit more," Pierce said.

Pierce says neither he nor his neighbors have found remains of the deer and as for the mountain lions, the whereabouts are currently unknown.

19] Oct 5, 2022

[redacted]

https://www.sfgate.com/centralcoast/article/california-mountain-lion-population-growing-17486279.php

'They're out there': Why California mountain lion sightings are on the rise

Central Coast

By Andrew Pridgen,*Central California Editor*Updated Oct 5, 2022 6:14 a.m.



[This July 10, 2016, photo shows an uncollared adult female mountain lion photographed with a motion sensor camera in the Verdugos Mountains in in Los Angeles County, Calif. Photo 212032020021/AP]

A popular **Central Coast** urban hiking destination was shut down over the weekend amid numerous mountain lion sightings.

Now California wildlife experts say the spate of recent encounters represents just a fraction of the animals' current activity. Mountain lions are using the wildland area that borders San Luis Obispo's densely populated corridor and Highway 101 as a thoroughfare of their own to get to less densely populated areas or search for food or water.

And it could be indicative of the animals' careful movements through the state's many urban-wildland interface areas.

"Mountain lions here have pretty wide regions, but their habitat is splintered by urbanization," Ken Paglia, a spokesperson for the California Department of Fish and Wildlife, told SFGATE. "But often it's going from one patch of suitable habitat to another patch of suitable habitat — that's why we now see cross through neighborhoods and the urban edge of communities."

This Feb. 9, 2015, photo, released by the National Park Service, taken from a remote camera in the Santa Monica Mountains National Recreation Area near the Los Angeles and Ventura county line, shows a female mountain lion identified as P-33. She is one of several mountain lions observed in and near urbanized areas in greater Los Angeles. Photo AP

In the Bay Area, a mountain lion strolled through the **Bernal Heights neighborhood** in San Francisco in 2021, followed by another sighting at a **Daly City school in 2022.** There are so many recent sightings that the **Bay Area Puma Project, in partnership with the UC Santa Cruz**

and the Department of Fish and Wildlife, has an active map with the places where mountain lions have been spotted in recent weeks.

The epicenter of the recent sightings on the Central Coast is Cerro San Luis, a modest peak better known to locals as Madonna Mountain. The landmark rises 1,292 feet above sea level, features miles of trails for beginner and intermediate hikers and offers unobstructed views of downtown San Luis Obispo, Edna Valley's vineyards to the southeast and the Pacific Ocean to the northwest.



[This Monday, March 26, 2018, aerial image made from video provided by KABC-7 shows a mountain lion darting from one residential house into another in in the eastern Los Angeles County community of Azusa, Calif., near the San Gabriel Mountains wilderness. Photo Live Air 7/AP]

Those who are familiar with the region's most famous roadside attraction, the over-the-top mid-century icon Madonna Inn, will recognize the hill's nickname, that of the eponymous family that still owns and grazes horses and cattle on a pastoral swath of the lower mountain today.

The popular destination can be easily accessed by foot or bike from downtown San Luis Obispo. Office workers are known to take a long lunch break to summit it. And area mountain bikers can't wait for the first rain of the season that pats down the dirt into tacky mud and slicks up the granite surfaces.

But over the weekend, the popular hike was closed due to multiple reports of mountain lions in the area, the city said.

"It is unusual for us to close a trail, but it's not unusual for us to receive so many sightings in this short amount of time," Bob Hill, the city's sustainability and natural resources official, told the San Luis Obispo Tribune. "Some of the sightings have been during the day and at dusk."

By Monday afternoon, San Luis Obispo Parks and Recreation's Ranger Service had reopened the trails to visitors. On social media, the agency advised users to "remain highly alert, keep their dogs on leash, and stay on designated trails while hiking on Cerro San Luis."

[Cerro San Luis, a small peak right across Highway 101 in San Luis Obispo, posts a warning after a recent mountain lion sighting. Urban-adjacent open space in California has had a high number of sightings and encounters this year. Photo By Andrew Pridgen]

A sign posted at the trailhead kiosk looks like a wanted sign of yesteryear, with a stock image of a mountain lion at the top, along with the date of the most recent sighting (Sept. 25) written in black Sharpie. The notice has a handful of advisory bullet points in case of an encounter:

-Don't hike, bike or jog alone.
-Don't crouch down or bend over.
-Don't run from the animal.
-Don't approach one.
-Pick up and hold small children.
-If there is an encounter, face the animal, make noise and look bigger. Throw rocks or other objects.

If the full parking lot adjacent to the Higuera Street trailhead of the recreation area was any indicator, visitors returned to the trails with vigor.

"I've lived here for five years and remember my roommate saying she's seen one, but I'm not sure she was right," Mary Steele, a Cal Poly grad student, told SFGATE upon completion of her mid-afternoon hike. "I know there's always been mountain lions nearby. During the daytime and afternoon, you're not really going to see them. But it's just wild to think that we're here in the middle of the city and we're forcing them to use that space too.

"It's not an active concern, but you know they're out there."

[Signs are posted on the Borrego Canyon trailhead at the entrance to Whiting Ranch in Foothill Ranch, Calif. Game wardens trapped a mountain lion Tuesday, July 17, 2012, that was spotted several times in Whiting Ranch. Photo Mark Boster/Los Angeles Times via Getty Image]

Steele's intuition is correct. Mountain lions prefer to prowl at dawn, dusk and night. They can roam a radius up to 200 square miles in search of prey. Most of all, they don't want anything to do with humans.

But if you actually see a mountain lion, wildlife experts warn that it's probably too late.

"Lions see us all the time," Doug Updike, then the state's mountain lion coordinator for Fish and Wildlife, told the San Francisco Examiner in 2008. "They're well camouflaged and shy, it's not easy to spot them ...and typically, we look right at them and never see them."

Last week's sightings in San Luis Obispo weren't the only mountain lion activity in the region. On Monday, Sept. 26, **a 7-year-old boy was attacked by a mountain lion** at the Pico Canyon Park

near Santa Clarita — a suburb bordering the Angeles National Forest about 35 miles northwest of downtown LA.

This undated photo released by the National Park Service shows the adult female mountain lion P-65. Photo AP

The boy and his father were walking up a flight of stairs at the park at dusk when a mountain lion leapt from the brush and bit the boy on the buttocks. The father said he charged the big cat, who let go of the boy and disappeared back into the bushes. The boy was treated at a nearby hospital for non-life-threatening injuries.

The unprovoked attack was an anomaly. In 110 years of recording mountain lion activity in California, only 20 confirmed attacks have taken place — with none recorded between 1910 and 1986. Since 1986, there have been 22 confirmed mountain lion attacks in California; three have been fatalities.

Instead, it's the human inhabitants of California who have been the aggressors. **California shelled out more than half a million dollars in bounties for 12,461 mountain lions, decimating the population for sport from 1907 to 1963, the Los Angeles Times reported.**

Protection of the animals started in 1990 with the passage of Proposition 117. The law put mountain lions under protected status, which means permits to kill the animals can be issued only if the animal mauls livestock or threatens or kills a person.

[This undated remote camera image shows a female mountain lion known as P-53 roaming in the Santa Monica Mountains, Calif. Photo AP]

Thanks in part to Prop. 117, mountain lion numbers in California have risen. **Today the population here is estimated to be 4,000 to 6,000 cats.** But wildlife experts feel there's still a long way to go in protecting the species that once roamed these hillsides by the tens of thousands. **A 2019 petition from the Center for Biological Diversity proposes to list mountain lions as a candidate species under the California Endangered Species Act.**

If approved, the animals would be protected within a designated area known as an evolutionarily significant unit in Southern California and on the Central Coast. Their **population is also protected during the review period.**

In the decades since we've changed our views from destruction of the species to protection, some mountain lions have become celebrities in their own right. In Los Angeles County, a male mountain lion known as P-22 roves the Hollywood Hills. Like anyone who occupies a certain pop culture stratum, he has his own ugly Christmas sweater and unauthorized biography.

[Photo A close-up of a California mountain lion. Despite urban creep into the animals' territory, their population numbers have crept up over the past two decades thanks to protection measures. Photo Stefanie Byrd / EyeEm/Getty Images/EyeEm]

P-22 and his lesser-known cohort may have an even greater chance of survival once a **$90 million wildlife crossing is completed over an area where the animals were being slaughtered attempting to cross one of the busiest sections of Highway 101 near LA.**

"These sightings highlight the need for connectivity, because of urbanization there's some evidence of a genetic mix-up of mountain lions," Fish and Wildlife spokesperson Paglia concluded. "They don't have a ton of space, and that can affect them.

"It doesn't have to be an entire bridge or passageway. Educate. Respect their boundaries and their habitat."

Andrew Pridgen Central California Editor Andrew Pridgen is an editor at SFGATE. He covers Central California. A Bay Area native, Pridgen lived in Lake Tahoe before moving to the Central Coast a decade ago.

20] June 8, 2022

https://www.sfgate.com/bayarea/article/Norcal-dog-who-fought-mountain-lion-dies-17228294.php

Dog who saved owner in Northern California mountain lion attack dies

News | Bay Area & State

SF Gate By Ashley Harrell, *National Parks Bureau Chief* Updated 11:47 a.m.

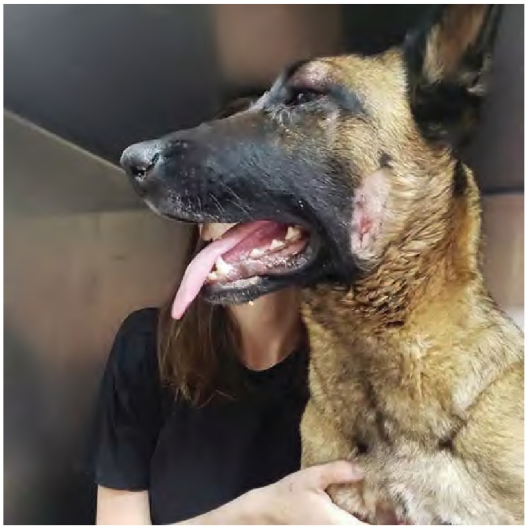


[Photo - This heroic Belgian sheperd saved her owner, Erin Wilson, from a mountain lion attack. Photo Courtesy of Connor Kenny]

The story of Eva — a Belgian shepherd who protected her owner from a mountain lion attack last month — drew attention from media outlets across the nation and prompted an outpouring of emotional and financial support from readers.

Unfortunately, those who donated to help save the dog were in for a heartbreaking update this morning. Over the last several days, Eva's condition deteriorated, and yesterday she slipped into a coma.

"We said goodbye," owner Erin Wilson wrote on the GoFundMe page this morning announcing her passing. "We love you Eva."



[Photo - Eva sustained grave injuries when a mountain lion bit down on her head and refused to let go. Photo Courtesy of Erin Wilson]

Wilson, 24, an avid outdoorsman, had been on a short walk with Eva in mid-May off Highway 299 in Trinity County, some 300 miles north of San Francisco, when the mountain lion attacked Wilson. Responding to Wilson's call for help, Eva had turned the predator's attention on herself, and the cat locked its jaws over the 2-year-old dog's head, refusing to let go.

"The woman attempted to throw rocks, tug, pull, and even attempted to gouge the eyes out of the lion, to no avail," California Department of Fish and Wildlife Capt. Patrick Foy wrote in an email.

Desperate to free her dog, Wilson flagged down passing motorist Sharon Houston, and using pepper spray and a piece of a PVC pipe, the two women managed to fight off the mountain lion. Wilson rushed Eva to the hospital, where the dog received care for her grave injuries, including two skull fractures, a punctured sinus cavity and severe damage to her left eye. Readers moved by Eva's story donated more than $30,000 to help with the dog's treatment.



[Erin Wilson and her dog Eva, who came to the rescue when a mountain lion attacked. Photo Courtesy of Connor Kenny]

Over the last several weeks, Eva appeared to be recovering. According to a GoFundMe post on May 18, she was walking and climbing into her humans' laps, playing outside and eating soft foods. "There was pep in her step," Wilson wrote.

"Goodbye my beautiful sweet girl," Wilson posted on Eva's Instagram page. "You are my world, my light, my best friend. The world is a much darker place."

CDFW searched for the mountain lion for a week, but came up empty, Foy wrote in an email. It has not been seen since the attack.

Ashley Harrell National Parks Bureau Chief Ashley Harrell is the national parks bureau chief at SFGATE, where she's worked since 2020. She recently co-authored the National Geographic book "100 Beaches of a Lifetime: The World's Ultimate Shorelines," and has reported from 17 countries, working on more than 50 travel guidebooks. Her story about human-turtle conflict on

Hawaii's Poipu Beach won gold in the environmental and sustainable tourism category of the Lowell Thomas Awards in 2024. Send story tips or comments to ashley.harrell@sfgate.com

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21] June 2, 2022

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-found-in-high-school-17212441.php

News | Bay Area & State

Mountain lion found at Bay Area high school moves to Oakland Zoo

SF Gate By **Amy Graff** ,*Senior News Editor* Updated 12:04 p.m.

A mountain lion that was hiding out at Pescadero High School was trapped and taken to the Oakland Zoo for care. Photo Oakland Zoo

LATEST June 2, noon A mountain lion that was hiding out at Pescadero High School on Wednesday was trapped and taken to the Oakland Zoo for care.

The 6- to 8-month-old cub was treated at the zoo's veterinary hospital, where a badly fractured tooth was extracted, the zoo said on Twitter.

The zoo said the mountain lion is too young to be able to survive in the wild and he will be placed in an accredited zoo.

On X

Oakland Zoo

@oakzoo

We just received another rescued mountain lion. This 6-8 month old male was discovered at Pescadero High School. (Students and staff were safe and had been dismissed from school at the time).

June 1, 10:38 a.m. A mountain lion that wandered into a San Francisco Bay Area high school Wednesday morning is being safely held in an English classroom until wildlife experts arrive on scene, officials said.

Javier Acosta, a detective for the San Mateo County Sheriff's Office, said custodians discovered the mountain lion at Pescadero High School early this morning.

"As of right now, students and teachers are all safe," Acosta said. "The mountain lion is being contained to the English classroom. We are on scene to make sure everyone is safe."

A mountain lion was contained in the English classroom at Pescadero High School on June 1, 2022. Photo Credit San Mateo County Sheriff's Office

California Fish and Wildlife officials were on the scene by 10 a.m.

The animal is likely a juvenile. "It probably got lost," Acosta said.

Pescadero is a small coastal town about 45 miles south of San Francisco in San Mateo County.

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

22] March 21, 2022

[redacted]

https://www.sfgate.com/news/article/Video-shows-mountain-lion-at-pool-17018569.php

[Video shows - Mountain lion wandering around California family's swimming pool]

News

SF Gate By **Amanda Bartlett**, *Assistant Local Editor* Updated 2:16 p.m.

[Video - A recent video of a mountain lion prowling around a California family's backyard swimming pool before paddling across a nearby lake might seem like a rare occurrence — but Zara McDonald, a wildlife biologist with the Bay Area Puma Project, says it's actually "not all that unusual."]

The mountain lion, which McDonald suspects might be a young male, was spotted on Valerie Strowski's property along Lake Mission Viejo in Southern California at about 1:20 a.m. on

Saturday morning. Strowski told the Mercury News she captured footage of the animal from her balcony after her husband saw it first and woke her up to go take a look.

Even in the darkness, she could see the mountain lion was focusing its attention on a toy fish in the pool that belonged to one of her four children, possibly mistaking it for prey. Then, it wandered down to the dock and gazed out at the lake for about 15 minutes before suddenly leaping into the water with a splash.

Strowski, who had never seen a mountain lion near her home before, called the Orange County Sheriff's Department. She told the Mercury News that police arrived on the scene when the animal was already in the water — it was about 300 yards from the shoreline and had nearly reached the other side of the lake.

"If there wasn't video of this animal swimming across the lake, I wouldn't have believed you if you told me," J.R. Stewart, an animal control sergeant for Mission Viejo Animal Services, told the Mercury News.

A spokesperson for the Orange County Sheriff's Department told SFGATE that they had received a number of calls from residents after the video began to circulate. A statement shared by the city of Mission Viejo on Saturday night confirmed reports of the sighting of the mountain lion at the intersection of Marguerite Parkway and Alicia Parkway near Lake Mission Viejo, adding that the lion had swum across the lake toward the Mallorca Condominium Community.

Mission Viejo Animal Services is currently working with the California Department of Fish and Wildlife and researchers in the area to identify the animal, which has not been seen since, Michelle Claud-Clemente, director of animal services for Mission Viejo, told SFGATE.

"I have a feeling that when sheriffs responded, they may have startled the cat, which is what caused it to jump into the water," said Claud-Clemente, noting that while mountain lions have been seen in the area before, they don't always approach residential properties that closely. "They may have frightened it enough that it doesn't come back."

McDonald said mountain lions don't typically seek out water and prefer not to get wet, but they have flexible spines that allow them to maneuver around multiple obstacles, quickly changing directions if needed as they move through their dwindling habitats and seek out prey.

"If you think about it from this perspective, mountain lions have the largest range of any terrestrial mammal in our hemisphere. It really shouldn't be surprising that they can swim, which they can do really well." said McDonald. "They'll take fish. They'll take seals, sea lion pups, otters… Lots of different sea animals. They're highly adaptable."

More increasingly in California, McDonald said she's seeing mountain lions come into populated areas simply because their habitats have become "severely fragmented." This occurs when fences, highways, dams and other structures intended for human activity are built between quality patches of the mountain lions' habitats, like forests, causing them to move into regions where they typically aren't seen.

"Cover is really important to mountain lions," which trees provide, said McDonald. "They can be secretive. When they pounce on their prey, they're not seen. And when you break up that habitat, it makes it difficult for them to traverse, and human-wildlife contact increases."

The Bay Area Puma Project has "a lot" of documented cases of mountain lions crossing lakes and bodies of water in search of their next meal — or simply to get to the other side and keep moving, said McDonald. She added that deer tend to move around more frequently in residential areas, so mountain lions will naturally follow suit. The fact that this particular mountain lion was wandering around a pool is somewhat atypical, but she said the animal may have been attracted to it if it saw prey there (or in this case, a pool toy that resembled prey).

Anecdotally, McDonald has also received a number of photos of mountain lions swimming in lakes throughout Washington and Canada as well as California. About three or four years ago, she received a report from a man and his son who were in a boat at Shasta Lake and came across two mountain lions swimming right next to them.

"That was an unusual sight for them," said McDonald. "They were taken aback but gave them the space they needed and allowed them to continue on."

Though it may seem like mountain lion sightings have become more frequent, especially throughout the pandemic, McDonald believes that's up for debate.

"What's happening is that we have more technology to view them in the middle of the night when we never could previously — Ring cameras, Nest cameras, that sort of thing," said McDonald. "People are placing these cameras around their residential properties and it allows them to document movements they may not have known about, which is great and interesting, but it makes people think there are more mountain lions, which is not true."

"Lions in some of these areas are in peril, and we need to pay attention," she said.

McDonald encourages people who live in areas populated by mountain lions to be respectful of the animals. While people might be driven by fear if they see one and assume that it is coming after them, McDonald said that couldn't be further from the truth. In many cases, it could be a young male lion striking out to find his own territory, or a mother trying to find a place to raise her cubs.

"I would guess this mountain lion is long gone," she said of the animal spotted in Mission Viejo. "They probably won't see him again. It probably wasn't fun for him to traverse those human-dominated areas."

At the same time, she thought it was "really cool" to see the mountain lion's behavior in the video.

"It wasn't strange at all," said McDonald. "I'm not sure how the couple took it but I hope they saw it as a treat, because it's so rare."

Amanda Bartlett Assistant Local Editor Amanda Bartlett is an award-winning writer and the assistant local editor for SFGATE covering culture, history, science and breaking news. Prior to joining the newsroom in 2019, she worked for the Roxie Theater, Noise Pop and Frameline Film Festival. Outside of the newsroom, she hosts movie nights with Cinema SF as part of a series called "SFGATE Screens" and has also appeared as a guest on the Midnight Mass and Western Neighborhoods Project podcasts. She lives in Oakland with her fiancé and their rescue rabbit, Alberta Einstein. Send her an email at amanda.bartlett@sfgate.com.

23] January 20, 2022

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-slays-other-lion-seen-on-16787947.php

News | Bay Area & State

Mountain lion seen in Bay Area neighborhood after killing other lion

SF Gate By Andrew Chamings, *Editor-at-Large* Updated 8:16 a.m.

An "aggressive" mountain lion was seen walking a residential street in Belmont after killing another lion early Wednesday morning.

According to the Belmont Police Department, the animal was seen on the 2500 block of Hastings Drive between Carlmont High School and Waterdog Lake and Open Space.

"The fight between the lions was heard only by the reporting citizen," Belmont police Lt. Pete Lotti told SFGATE over email. "The deceased lion was later located in the 2500 block of Hastings Dr. by the responding officer, and ultimately collected by the Department of Fish & Wildlife. The location of the remaining mountain lion is unknown at this time."

The police advise the public to use caution in the area.

On X

Belmont Police Dept.

@belmontcapolice

Mountain lion seen in the 2500 block of Hastings. An aggressive mountain lion that fought & killed another mountain lion in the area was seen around 2:00am. Game wardens have responded. Pls use caution!

The U.S Forest Service states that, territorially, mountain lions "maintain spatial separation between each other, thereby assuring each individual has the resources necessary to survive," adding "if these separations are not maintained, mountain lions will kill each other."

A lion was seen in another Peninsula neighborhood in Daly City last week. It's not clear if this is the same mountain lion spotted in Belmont.

The **California Department of Fish and Wildlife states on its website** that in recent years there has been **"ever-increasing interactions between people and mountain lions."**

The wild cats, also know as pumas and cougars, call more than half of California home. Mountain lions tend to live wherever deer are found. "They are solitary and elusive, and their nature is to avoid humans," the CDFW says. If you live in mountain lion country, which includes much of the Bay Area, the agency advises deer-proofing yards, setting up motion sensitive lighting and avoiding letting pets out when mountain lions are most active at dawn, dusk and night.

Andrew Chamings **Editor-at-Large** SFGATE's Editor-at-Large Andrew Chamings is a British writer in San Francisco. Andrew has written for The Atlantic, Vice, SF Weekly, the San Francisco Chronicle, McSweeney's, The Bold Italic, Drowned in Sound and many other places. Andrew was formerly a Creative Executive at Westbrook Studios. You can reach him at andrew.chamings@sfgate.com.

24] January 10, 2022

[redacted]

https://www.sfgate.com/news/article/Mountain-Lion-seen-near-Bay-Area-school-16765066.php

News

Mountain lion seen near Bay Area school

SF Gate By **Andrew Chamings**, *Editor-at-Large* Jan 10, 2022

A mountain lion sighting in Daly City on Monday afternoon prompted police to warn people in a residential neighborhood to use caution when leaving their homes.

Both police and California Department of Fish and Wildlife staffers are on scene in the area, near Westmoor and Baldwin avenues, police said in a news release shortly after 1 p.m.

On X

Daly City Police

@DalyCityPD

Mountain Lion Sighting Daly City Police Officers and Department of Fish and Wildlife are on scene in the area of Westmore Avenue and Baldwin Avenue. We do not have photos. Use caution leaving your house. We will keep you updated as we receive more information.

1:06 PM · Jan 10, 2022

The location is around a mile south of San Francisco and near Westmoor High School and Westmoor Park.

Last week a Mountain Lion was spotted in a backyard in Pacifica eating a pet chicken, after eventually fleeing the scene.

Another cat, who put two schools in the North Bay on lockdown in October, was eventually tranquilized by California Department of Fish and Wildlife.

Mountain lions, also known as cougars or pumas, are native to California. **California Fish and Wildlife estimate that 4,000 to 6,000 mountain lions live in the state**, though there have been only 16 verified mountain lion attacks on people in California since 1890, six of them fatal.

Bay City News contributed to this story.

Andrew Chamings **Editor-at-Large** SFGATE's Editor-at-Large Andrew Chamings is a British writer in San Francisco. Andrew has written for The Atlantic, Vice, SF Weekly, the San Francisco Chronicle, McSweeney's, The Bold Italic, Drowned in Sound and many other places. Andrew was formerly a Creative Executive at Westbrook Studios. You can reach him at andrew.chamings@sfgate.com.

2021

25] Dec 28, 2021

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-in-Pacifica-eats-chicken-16734681.php

News | Bay Area & State

Mountain lion spotted in Pacifica backyard gorging on pet chicken

SF Gate By **Joshua Bote**, *SFGATE*

A mountain lion was spotted in a backyard in Pacifica, gorging on a pet chicken, police say.

Pacifica police arrived at a home on Valencia Way on Sunday morning just after 7:30 a.m., according to a police press release, and found an "adult mountain lion approximately 30 yards" behind the home, standing in the backyard, eating the pet chicken after stealing it from the homeowner's coop.

After the mountain lion had consumed the chicken, police monitored the animal for at least two hours, according to the release. An officer with the California Department of Fish and Wildlife also reportedly arrived to speak with the homeowner. The mountain lion fled the area at about 9:45 a.m., police said.

"The mountain lion did not appear to pose a threat to human life," said police in the release. Still, neighbors were urged to avoid their backyards and not bring pets near the area.

Mountain lions are a constant in Pacifica and throughout the Bay Area, with at least three other confirmed sightings in Pacifica alone this year. In 2020, a viral video showed a mountain lion cub seemingly keeping an eye on a group of children biking outside in Pacifica. Another mountain

lion cub was also believed to have killed three marsupials — two wallaroos and a red kangaroo — at the San Francisco Zoo in 2020.

Joshua Bote **Tech Editor** Joshua Bote is the tech editor at SFGATE. He grew up in the Los Angeles area, went to UC Berkeley and has previously worked as a news reporter at USA Today and SFGATE and as a music writer at NPR. **Email: joshua.bote@sfgate.com** and **Signal: 707-742-3756**

26] Oct 20, 2021

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-Rhonert-Park-schools-16542712.php

Mountain lion that shut down 2 Bay Area schools tranquilized

News | Bay Area & State

By **Amy Graff**, *Senior News Editor* Updated 7:07 a.m.

[Photo - A mountain lion that prompted two schools to close in Rohnert Park was tranquilized by Fish and Wildlife officers and then evaluated by experts at Sonoma County Wildlife Rescue. Photo Sonoma County Wildlife Rescue]

A mountain lion that put two schools in the North Bay on lockdown Monday was tranquilized by California Department of Fish and Wildlife officials and was under medical evaluation by experts on Tuesday after exhibiting behavior that was unusual for an adult cougar, multiple media outlets reported.

"It was crouching, not able to move with a small amount of people, probably eight people, which is a lot with 75 feet," Doris Duncan, executive director of Wildlife Rescue Sonoma County, told KTVU. "That animal would have darted off, just hearing us coming 500 feet away. So to see it just sitting there like that, we know there was something significantly wrong it."



[Photo - Rohnert Park officers were on scene in the area of the Five Creek Trail and Crane Creek Trail just east of Eagle Park and Evergreen School for a mountain lion spotted on the creek path Monday morning. Rhonert Park Police Department]

Rohnert Park officers were on scene in the area of the Five Creek Trail and Crane Creek Trail just east of Eagle Park and Evergreen School for a mountain lion spotted on the creek path Monday morning.

Rhonert Park Police Department

Evergreen Elementary School and Lawrence Jones Middle School in Rohnert Park implemented full campus lockdowns for several hours Monday. The Rohnert Police Department said the mountain lion was first spotted in the area of the Five Creek Trail and Crane Creek Trail just east of Eagle Park and Evergreen Elementary.

The 70-pound adult female is under the care of Wildlife Rescue Sonoma County, one of only four wildlife facilities in California licensed to handle mountain lions.

The Press Democrat reported that the medical evaluation will likely last several days. The state Department of Fish and Wildlife will eventually release her into the wild when she is considered healthy and fully alert.

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

27] July 1, 2021

[redacted]

https://www.sfgate.com/bayarea/article/Petaluma-mountain-lion-video-footage-warning-16285764.php

News | Bay Area & State

Petaluma resident shares video of huge mountain lion in his yard

SF Gate By **Amy Graff**, *Senior News Editor* Updated July 1, 2021 8:22 a.m.

[Video - A Petaluma resident captured video footage of a mountain lion in his yard in June 2021. Photo Joe Luchok]

A mountain lion prowled through the yard of a neighborhood in Petaluma, Calif., early Wednesday morning, and officials are warning the community to use caution.

Joe Luchok said his wife rose early Wednesday morning and was shocked to see the big cat through the window of their home in west Petaluma about 5:45 a.m.

"At first, she says, 'Oh my gosh, that's a gigantic dog.' I'm still asleep and then she says, 'That's not a dog, that's uhuhuh … .' She couldn't get the words out because it was right out front and it was huge. It was a giant cat."

Luchok said he checked footage from his Nest cam set up in the backyard and it showed the animal walking across the lawn. (See a screen capture from the footage above.)

"It was in our backyard, which is all fenced in," he said. "It must have climbed over the back fence. Then it went on the side of the house and climbed into our front yard."

He added, "It was absolutely stunningly beautiful. It was as if it just came out of showroom. It was so pretty. I'm thankful to have seen something like that."

Luchok reported the incident by calling 911.

This wasn't the only mountain lion sighting in Petaluma in the past few days.

The Petaluma Police Department released a warning after a puma was spotted Wednesday in the hillside beyond Hayes Lane. "Please use caution in the area," police said.

The department said a mountain lion was also spotted east of Highway 101 in Petaluma about 10:30 p.m. Tuesday.

It's unknown whether this was the same lion in all three sightings.

Petaluma residents are being asked to call the police if they see a mountain lion and avoid the animal.

Mountain lions are native to California and are generally shy animals that avoid humans.

Amy Graff **Senior News Editor** Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

28] May 26, 2021

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-breaks-into-SF-Bay-Area-house-16204370.php

Mountain lion breaks into SF Bay Area house filled with taxidermy trophy heads

News | Bay Area & State

SF Gate By **Amy Graff**, *Senior News Editor* May 26, 2021

A curious mountain lion broke through the exterior glass window of a residence in the San Francisco suburb of San Bruno early Tuesday.

The homeowner scared the animal out of the house. Authorities were unable to locate it.

The incident occurred at 12:20 a.m. in the 200 block of Ross Avenue, which is near open space that stretches from the coast in Pacifica across the peninsula to the Santa Cruz Mountains.

Mountain lion sightings aren't uncommon in California. The **Department of Fish and Wildlife estimates 4,000 to 6,000 mountain lions live in the state**. But the San Bruno Police Department called what happened Tuesday "out of the ordinary."

The department offered tips for homeowners who live near mountain lion territory to secure their homes. The suggestions including deer-proofing your property to avoid attracting a lion's main food source, removing dense vegetation from around the home to reduce hiding spaces, installing outdoor lighting to make it difficult for mountain lions to approach unseen, and not leaving small children or pets outside unattended.

Last Wednesday a mountain lion was captured in San Francisco after being spotted in a tree. Fish and wildlife said data collected from the puma's radio collar revealed this was the same animal spotted roaming city streets several days last week.

The mountain lion was found in a tree on Santa Marina and Mission streets on the west side of Bernal Heights. Officials darted the animal with a tranquilizer and transported it to the Oakland Zoo where it was observed before being released back into the wild.

Amy Graff **Senior News Editor** Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

29] May 20, 2021

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lion-San-Francisco-captured-Bernal-Height-16190720.php

News | Bay Area & State

Wayward San Francisco mountain lion captured after being found in tree

SF Gate By **Amy Graff**, *Senior News Editor* Updated May 20, 2021 3:06 p.m.



[In the early morning hours of May 20, 2021, the Oakland Zoo took in a 2-year-old male Mountain lion captured in San Francisco's Bernal Heights neighborhood. This male marks the 16th mountain lion rescue for the Zoo through their Bay Area Cougar Action Team (BACAT) alliance. Photo Oakland Zoo]

A mountain lion was captured in San Francisco on Wednesday night and is in the care of the Oakland Zoo.

The California Department of Fish and Wildlife said data collected from the puma's radio collar revealed this is the same animal spotted roaming city streets in the past two days.

The mountain lion was found in a tree on Santa Marina and Mission streets on the west side of Bernal Heights, about two blocks from Holly Park, according to San Francisco Animal Care and Control.

[A wayward mountain lion that was spotted in a tree on Santa Marina Street near Mission Street in San Francisco was captured May 19, 2021. Photo Ken Shelf]

Animal Care and Control was the first on the scene and posted an image of the animal in the tree on social media. Capt. Amy Corso coordinated with the San Francisco Police Department to establish a safe perimeter.

Fish and Wildlife officers arrived next and darted the animal in the hindquarters with a tranquilizer.

KCBS reported the lion got woozy and fell asleep on the front porch of a nearby home before officers tagged and caged it.

San Francisco resident Ken Shelf was on a walk with his wife in the neighborhood when he noticed the Animal Care and Control van and police cars.

"We stopped and somewhat kiddingly asked them if they were out looking for the lion and they told us yes, it was currently in the tree," said Shelf, who snapped the photo of the puma in the tree that was shared by the agency on social media. "I felt frightened, but also somewhat giddy to have the worlds collide in this fashion, a beautiful beast like that, living in the wild, yet wandering the city at night, looking for something to do, and possibly a bite to eat — just like the rest of us."

[A mountain lion was captured in San Francisco on May 19, 2021. Photo Quinn Klaiman]

"The sedated lion was taken to the Oakland Zoo for evaluation and will probably be released in a more suitable location later today," said Deb Campbell, a spokesperson for Animal Care and Control.

The Oakland Zoo added in a statement that the mountain lion is a large, healthy male of about 100 pounds. The animal was met by hospital staff at the Oakland Zoo Veterinary Hospital at about 1 a.m. Thursday.

A mountain lion has been seen in Bernal Heights and the Portola District in the past two days. Earlier this week, a resident in the Portola District captured footage of the animal with a home security camera.

Pumas in search of new habitat and hunting territory occasionally wander into San Francisco from San Mateo County. Over the years, there have been occasional sightings, usually around Lake Merced, but typically the animals quickly realize they don't want to be in the city and head back south.

Last June, a juvenile puma was captured in the SoMa neighborhood.

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

30] May 19, 2021

https://www.sfgate.com/local/article/mountain-lion-bernal-heights-park-gaven-sighting-16186411.php

Local

Mountain lion spotted roaming San Francisco's Bernal Heights

SF Gated By **Katie Dowd**, *Managing editor* Updated May 19, 2021 6:59 a.m.



[Photo - A mountain lion was seen near Bernal Heights Park, pictured here, on Tuesday morning. Photo Justin Sullivan/Justin Sullivan/Getty Images]

A wayward mountain lion has been seen roaming San Francisco's busy Bernal Heights neighborhood, far from the quiet green spaces that it calls home.

The sightings, one from an eyewitness and another via home security video, were between 3 a.m. and 6 a.m. Tuesday. San Francisco Animal Care and Control spokesperson Deb Campbell said cougar sightings are not uncommon in the city but, upon investigation, many turn out to be ordinary pet cats. These sightings, on Gaven Street and near Bernal Heights Park, were the real deal, however.

"If we hadn't seen him on that video, we might have thought it was a big, healthy house cat that the eyewitness saw," Campbell said.

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On X

Andrea Nakano

@AndreaKPIX

I just talked with the homeowner in the Portola District that captured the footage of the mountain lion. She gave me the original video which is a bit clearer than the one I posted earlier.

Campbell said the mountain lion appeared to be a large size and was possibly an adult. A year ago, a mountain lion made it all the way to Mission Bay, but that individual was a gangly teen.

"Lockdown is over," Campbell joked. "Maybe he was looking for some nightlife, didn't find any and went back home."

Home is probably in the South Bay, particularly in the Crystal Springs area. This is likely a very stressful experience for the poor adventurer, as mountain lions are naturally reclusive. That bashfulness also may explain why no one saw the puma cruising through city streets in daylight or dusk hours.

"They are shy, they keep to themselves," Campbell said. "We have more mountain lion visitors than we actually find out about."

Animal Care and Control patrolled the neighborhood and sought more evidence of the furry visitor, but didn't spot him. Campbell says the mountain lion may have already made it back out of the city, but neighbors should take common-sense precautions like keeping their dogs on leash

and watching their small children. If the animal approaches, make yourself big, wave your arms and do not turn your back on it or run.

Anyone who sees the mountain lion should call Animal Care and Control's emergency dispatch number at 415- 554-9400.

Katie Dowd **Managing editor** Katie Dowd is the SFGATE managing editor. She started her career at SFGATE in 2011 shortly after graduating from UC Berkeley. She was born and raised in the Bay Area.

31] March 18, 2021

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lion-san-mateo-county-woodside-dog-16035388.php

News | Bay Area & State

Woodside resident drives onto lawn to stop mountain lion attack

SF Gate By Amy Graff, *Senior News Editor* Updated March 18, 2021 2:35 p.m.

A resident of Woodside, Calif., drove her car onto her lawn Wednesday night to scare off a mountain lion that was attacking her dog, officials said.

The San Mateo County Sheriff's Office said the dog's owners were at home when they heard a commotion in their yard just before 10 p.m.

"When they looked out the window, they saw a mountain lion had the dog by the neck," the sheriff's office said in a statement. One of the owners got into her car and drove onto the lawn to scare the mountain lion off, the sheriff's office said.

The homeowners told the sheriff's office the mountain lion had to climb a 6-foot-tall deer fence to access the property.

The dog was taken to a vet and is expected to make a full recovery, officials said.

The sheriff's office is asking residents to report any mountain lion sightings.

Mountain lion sightings aren't unusual around the San Francisco Bay Area, and the California Department of Fish and Wildlife estimates 4,000 to 6,000 mountain lions live in California.

The animals mainly prey on deer and other wildlife, but they will also feed on vulnerable pets and livestock. **Fish and Wildlife receives hundreds of reports annually about attacks on pets.**

The department advises bringing pets indoors when mountain lions are most active — dawn, dusk and at night. Pet food should also be brought inside to prevent attracting raccoons and other wildlife that mountain lions prey on, according to Fish and Wildlife.

Conflicts between people and lions do occur but are rare. "There have been only 16 verified mountain lion attacks on humans in California since 1890, six of them fatal," Fish and Wildlife said. "The last documented attack occurred in September 2014 in Santa Clara County."

Editor's note: This story was updated on March 18 at 2:30 p.m. after new information was received about the incident from the San Mateo County Sheriff's Office.

Amy Graff **Senior News Editor** Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

32] January 14, 2021

[redacted]

https://www.sfgate.com/bayarea/article/mountain-lion-stalk-family-El-Dorado-Placerville-15869836.php

News | Bay Area & State

California deputy kills mountain lion that stalked family in broad daylight

SF Gate By Amy Graff, *Senior News Editor* Updated Jan 14, 2021 9:10 a.m.



[Photo - An El Dorado County sheriff's deputy killed a mountain lion on Jan. 11 that had been following a family on a bike trail in the foothills of the Sierra Nevada east of Placerville, officials said. Photo El Dorado County Sheriff's Office]

A California sheriff's deputy shot and killed a mountain lion Monday that was stalking a family of four on a bike trail in the Sierra Nevada foothills east of Placerville, county officials said.

The El Dorado County Sheriff's Office said it responded late Monday afternoon to a 911 call from a couple with two small children in a stroller and two small dogs.

The adult mountain lion followed the family for 10 minutes and continued to track them even when they yelled, according to reports.

When a deputy arrived on the scene, he watched the lion pacing back and forth and also tried shouting at the animal, the Sheriff's Office said.

The "lion started walking toward the deputy instead of running away as a normal healthy mountain lion would," according to a report from the Sheriff's Office posted on Facebook.

The deputy fired a shot into the ground in front of the lion but it continued toward the deputy, "further showing that it was not well and dangerous to the public," the office said. "The deputy had no option other than to put down the animal."

The sheriff's office told Fox 40 that "it regrets the incident but called it unavoidable."

The California Department of Fish and Wildlife is examining the mountain lion's remains "to see if there is any explanation of the unusual behavior," Fox 40 reported.

It's unknown exactly how many mountain lions inhabit California, but estimates from Fish and Wildlife range from 4,000 to 6,000. Mountain lion sightings in California aren't unusual, but attacks are uncommon, with six fatal incidents since 1890.

"In most cases, the person was alone when the attack occurred," according to **Fish and Wildlife.** "The last documented human-lion attack occurred June 2020 in San Diego County."

Amy Graff Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

33] January 6, 2021

[redacted]

https://www.sfgate.com/local/article/Sick-desperate-mountain-lions-california-pumas-15847975.php

Local

Sick, 'desperate' mountain lions are being seen around Santa Cruz

SF Gate By **Andrew Chamings**, *Editor-at-Large* Updated Jan 6, 2021 8:23 p.m.

[Photo - The multiple sightings of mountain lions in Santa Cruz County are raising concerns that the cats' condition is linked to last year's wildfires in the region. The mountain lion pictured here is not among the malnourished cougars sought by local wildlife groups. Photo John Conrad/Getty Images]

Just days after a malnourished mountain lion was captured in a downtown Santa Cruz apartment complex, a second sickly cat has been spotted elsewhere in the county.

The multiple sightings are raising concerns that the cats' condition is linked to last year's wildfires, or poisoning through fire retardant or rodenticides, according to a press release from Wildlife Emergency Services.

"Our concern is, the lion is malnourished. Desperate. A desperate cat is a dangerous cat," said spokesperson Rebecca Dmytryk in the statement.

The black and white video taken from a stationary camera posted on Facebook Monday shows a skinny cat prowling near Newell Creek, Santa Cruz County.

These aren't the only sightings of mountain lions near well-populated Bay Area spots lately. In June a mountain lion seen around San Francisco was safely captured in Mission Bay and moved

to the Oakland Zoo. Later in the year, another cougar was seen watching kids play in Pacifica before the children rode safely away on their bikes.

Mountain lions, also known as cougars or pumas, are native to California. **California Fish and Wildlife estimate that four to six thousand mountain lions live in the state, though there have been only 16 verified mountain lion attacks on people in California since 1890, six of them fatal.**

Zara McDonald, a biologist with the Bay Area Puma Project, told SFGATE that mountain lions are solitary, shy animals that avoid people.

Dmytryk said in the press release that the rescue group is sharing information with the California Department of Fish and Wildlife on the recent sighting, in hopes of finding the animal.

Andrew Chamings Editor-at-Large SFGATE's Editor-at-Large Andrew Chamings is a British writer in San Francisco. Andrew has written for The Atlantic, Vice, SF Weekly, the San Francisco Chronicle, McSweeney's, The Bold Italic, Drowned in Sound and many other places. Andrew was formerly a Creative Executive at Westbrook Studios. You can reach him at andrew.chamings@sfgate.com.

2020

34] September 22, 2020

[redacted]

https://www.sfgate.com/local/editorspicks/article/Video-shows-mountain-lion-stalking-child-on-bike-15585015.php

Local | **Local: Editors' Picks**

Video shows mountain lion watching child play on bike in Bay Area

SF Gate By **Andrew Chamings**, *Editor-at-Large* Updated Sep 22, 2020 8:46 a.m.

A mountain lion was seen sitting and watching a child play on a bike on a quiet Pacifica street this weekend, reports SFist.

The video was captured and uploaded by resident Timothy Kerrisk with the comment "Mountain Lion in Pacifica watching kids ride bikes in front of my house."

The footage shows the large cat watching from behind Kerrisk's white picket gate, before jumping over a fence in the direction of the child.

The child can be seen eyeing the cat before riding safely away.

There is no evidence that the cat was preying on the child, but the proximity to the sometimes dangerous species is a little unnerving.

Kerrisk told SFist that the audio on the video was removed as it was "just me yelling for the neighbor across the street to come down and grab the kids."

Video https://youtu.be/p1oLgXJdQu4

Earlier this summer a mountain lion alarmed San Franciscans, prowling the streets at night all the way from Russian Hill to the Salesforce Tower, before being eventually caught by the city's Animal Care and Control.

The wild cat captivated the attention of San Franciscans, before being released back into the wild on the Peninsula, only to be later found dead near Highway 1 in Pacifica.

Mountain lions, also known as cougars or pumas, are native to California. **California Fish and Wildlife estimate that four to six thousand mountain lions live in the state,** though there have been only 16 verified mountain lion attacks on people in California since 1890, six of them fatal.

Zara McDonald, a biologist with the Bay Area Puma Project, told SFGATE that mountain lions are solitary, shy animals that avoid people.

"They are very genetically programmed to avoid humans," she said.

Andrew Chamings **Editor-at-Large** SFGATE's Editor-at-Large Andrew Chamings is a British writer in San Francisco. Andrew has written for The Atlantic, Vice, SF Weekly, the San Francisco Chronicle, McSweeney's, The Bold Italic, Drowned in Sound and many other places. Andrew was formerly a Creative Executive at Westbrook Studios. You can reach him at andrew.chamings@sfgate.com.

Lucy White

35] June 22, 2020

[redacted]

https://www.sfgate.com/local/article/Video-mountain-lion-wandering-in-San-Francisco-15344437.php

Local

Mountain lion spotted again in San Francisco's Mission Bay

SF Gate By **Amanda Bartlett**,*Assistant Local Editor* Updated June 22, 2020 9:59 a.m.

In a **video** shared by San Francisco resident Luis Fernando, a mountain lion could be seen wandering around Russian Hill early Tuesday morning. Video Luis Fernando

LATEST June 18, 8:29 a.m. The young mountain lion was captured in San Francisco's Mission Bay early Thursday morning. Officers from S.F. Animal Care and Control and the California Department of Fish and Wildlife cornered the disoriented animal at Fourth and Channel streets near Oracle Park and used a large net to seize it. Read more here.

LATEST June 17, 8:23 p.m.: There was a second sighting of a mountain lion Wednesday evening in the East Cut neighborhood of the city, according to the San Francisco police.

"It is likely the mountain lion is confused and lost, and will soon find its way south and out of the city," police said in a tweet. "If approached by the mountain lion make yourself appear big and shout. Remain vigilant and use caution outdoors."

On X

San Francisco Police

@SFPD

!Mountain Lion Spotted! Mountain Lion last spotted in the East Cut Neighborhood of #SF. If seen stay away, back up slowly facing the lion, and do not run. Call at 415-554-9400. For after hours assistance please call 911.

Luis Fernando wasn't expecting to encounter a mountain lion in San Francisco, but there it was standing just a few feet away from his vehicle, its yellow eyes glinting in the reflection of his headlights.

Fernando, 34, said he saw the animal around 12:30 a.m. on Tuesday morning. He frequently takes walks late at night after finishing his online classes and said he was heading toward the intersection of Lombard and Leavenworth, where his car was parked. He got in and began to drive down Leavenworth when he saw something moving on the sidewalk. He knew it was some kind of animal, but couldn't quite identify it at first.

"Then it turned around and looked at me," said Fernando. "I immediately recognized it was a mountain lion and began filming it on my phone."

He followed the animal to the intersection of Greenwich and Jones streets, where he eventually lost sight of it. In the video, the mountain lion can be seen pausing on the sidewalk next to a couple of trash cans before it darts off into the night.

At around 12:30 am I spotted a mountain lion roaming the streets of Russian Hill. I followed from inside my car and lost visual contact near intersection of Greenwich and Jones. Be safe when walking alone at night or when walking your pets. I reported the sighting to @SFPD pic.twitter.com/xIreghRSaJ

— Fernando Robles (@Ing_Fehr) June 16, 2020

Fernando couldn't determine the age of the mountain lion but said it appeared to be a juvenile and was about the size of his 25-pound Great Pyrenees mix, Rosa. After spotting the animal he called the San Francisco Police Department, who later put him in touch with S.F. Animal Care & Control around 6 a.m. After reviewing the video, Fernando said they confirmed the animal to be a mountain lion — a very small and young one.

"It's highly unusual for a mountain lion to be in these areas because it's quite young and very inexperienced," said Deb Campbell, a spokesperson for SF Animal Care & Control. "Usually when families have litters, they disperse to find their own territory. This one probably went a little early and ended up here and doesn't know how to get out."

It's not the first sighting of the animal, either. Surveillance footage from ABC7 captured a mountain lion wandering through a parking lot outside of the KGO-TV studios along the Embarcadero around 3:30 a.m. Campbell added that the animal was also captured on a security camera at the intersection of Fremont and Market Street at approximately 3:57 a.m.

"The last thing I expected was to see a mountain lion in Russian Hill," said Fernando. "But I wanted to alert the neighborhood and keep everyone safe."

The mountain lion has not yet been identified, though Zara McDonald, head of the **Bay Area Puma Project**, suspects the animal is between 14 and 16 months old. The organization has conducted research on mountain lion sightings throughout the region since 2004. **Over the years,**

trail cameras used by the Bay Area Puma Project have indicated a gradual decline of the mountain lion population, so the organization has been compiling data to determine their likelihood of survivability in future decades.

Mountain lions are typically solitary animals and tend to avoid people by nature. Sightings are becoming more frequent, however, as the human population expands into their natural habitats, **according to the California Department of Fish & Wildlife.**

"Ultimately, it comes down to habitat loss and fragmentation, which is unfortunate," said McDonald. "It's a really tough situation for these animals south of San Francisco that are living in that open space. There's nowhere for them to go but south, and when they do go north, they inadvertently end up in a big, noisy city."

In recent months, McDonald said there were several sightings of a mother with her cubs wandering some of the trails in Pacifica. She thinks the mountain lion might be one of those cubs.

"In the video, the cub looks very nervous and anxious to get out," said McDonald. "It's possibly hunkered down, waiting to move out at night."

Justin Dellinger, a wildlife biologist with the CDFW, said the department is waiting for the animal to do just that.

"If you allow them to help themselves, they'll figure it out," he said. "We're aware of it and will intervene if we have to in order to keep everyone safe, including the animal."

MORE: Parent reportedly punched a mountain lion in the ribs to save injured 6-year-old girl

The department advises people to hike or jog in groups and avoid doing so at dawn, dusk, and at night, when mountain lions are the most active. If you encounter a mountain lion, remain calm and do not run away from it. Instead, keep a distance between yourself and the animal, make noise and try to make yourself look bigger in order to drive it away.

Sightings should be reported to your local CDFW regional office, or the S.F. Animal Care & Control emergency dispatch by calling 415-554-9400. To help with the Bay Area Puma Project's research, McDonald has also requested that people report encounters to their puma sighting map.

Amanda Bartlett Assistant Local Editor Amanda Bartlett is an award-winning writer and the assistant local editor for SFGATE covering culture, history, science and breaking news. Prior to joining the newsroom in 2019, she worked for the Roxie Theater, Noise Pop and Frameline Film Festival. Outside of the newsroom, she hosts movie nights with Cinema SF as part of a series called "SFGATE Screens" and has also appeared as a guest on the Midnight Mass and Western

Neighborhoods Project podcasts. She lives in Oakland with her fiancé and their rescue rabbit, Alberta Einstein. Send her an email at amanda.bartlett@sfgate.com.

36] June 19, 2020

[redacted]

https://www.sfgate.com/bayarea/article/San-Francisco-mountain-lion-dead-kangaroo-zoo-15352957.php

News | Bay Area & State

3 marsupials found dead at SF Zoo, a mountain lion cub is a suspect

SF Gate By **Amy Graff**, *Senior News Editor* Updated 2:39 p.m.

[Photo – FILE: Entrance to the San Francisco Zoo in the Ocean Beach neighborhood of San Francisco, California, with sign reading 'Welcome to the San Francisco Zoo,' January 31, 2018. Photo Smith Collection/Gado/Getty Images]

Two wallaroos and a red kangaroo were found dead at the San Francisco Zoo last week, and findings suggest a local wild carnivore is responsible, the zoo confirmed in a statement Friday.

In a rare event, a lost mountain lion cub was spotted wandering the streets of S.F. multiple times at night last week and was captured by Animal Care & Control on Thursday (read more on SFGATE). The zoo is investigating whether the young cat may have been the perpetrator and entered the Australian Walkabout exhibit.

Zara McDonald, a biologist with the Bay Area Puma Project, said if the zoo finds that the mountain lion killed the marsupials, it will help explain how the animal entered the city.

Experts hypothesized the city's recent puma visitor came from San Mateo County, as the wildlands around Crystal Springs Reservoir and Sweeney Ridge are home to several mountain lions. A visit to the zoo would help confirm the animal's route. "In a way it's part of the story," McDonald said.

The mountain lion cub is currently under examination at the Oakland Zoo and will be released in the wild.

Experts identified the 50-pound animal as a male of about 14 to 15 months old, an age when cubs are usually still under the care of a mother. McDonald said it's possible that even a mountain lion of this size and age could have killed the marsupials.

She explained that under unusual circumstances mountain lions kill multiple animals without the intention of eating them and is behavior known as "surplus killing."

"It's not common, but there have been numerous instances over the years where we've had pumas go into enclosures with animals and kill tons of them, and maybe eat one," McDonald said.

McDonald recalled an incident in the East Bay several years ago, when a cougar jumped into an enclosure holding goats and sheep.

"The puma figured out a way into the top and then got stuck inside. He killed a bunch of them and only ate one," she said. "Eventually the puma got out."

In rare instances, pumas in search of new habitat accidentally wander into San Francisco. Over the years, there have been occasional sightings, usually around Lake Merced, but typically the animals quickly realize they don't want to be in the city and head back south.

McDonald said video footage of the mountain lion captured on surveillance cameras reveals this animal was confused and scared, and this behavior is what you would expect in a cub separated from his mother.

"I think once it came into the dense area of the city, the first video footage captured clearly shows this lion was confused," said McDonald. "You can tell from it's energy, it seemed uncomfortable. It would dart everywhere and stay low to the ground, which is a behavior that you see in these cats when they're scared and feel threatened."

Officers from S.F. Animal Care and Control and the California Department of Fish and Wildlife cornered the disoriented animal at Fourth and Channel streets near Oracle Park early Thursday and used a large net to seize it. The goal was to capture the animal without tranquilizing it.

"We have been monitoring the lion's movements since Tuesday, and felt that because he or she was young and inexperienced that there was no easy, safe exit route from the city," Deb Campbell, a spokesperson for SF Animal Care & Control, said. "We were afraid that the lion would be hit by a car, or starve."

Amy Graff **Senior News Editor** Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

37] May 12, 2020

[redacted]

https://www.sfgate.com/outdoors/article/Hiker-encounters-2-mountain-lions-on-trail-15265749.php

Sports | Outdoors

Hiker encounters 2 mountain lions on popular trail | Sightings of wild animals increase as humans shelter in place

SF Gate By Mike Moffitt, *SFGATE* Updated May 12, 2020 1:46 p.m.



[Photo - A mountain lion stares warily at a hiker who encountered it Thursday on the Sweeney Ridge Trail between Pacifica and San Bruno. The big cat was accompanied by a second cougar as it prowled along the trail. Photo San Bruno Police Department]

We can forgive the photographer for the slightly blurry images. When the subject of the picture is a mountain lion staring at you from a dozen yards away, anyone is bound to get a little twitchy.

The camera-packing hiker encountered the mountain lion and its companion on the popular Sweeney Ridge Trail between Pacifica and San Bruno about 7 p.m. Thursday.

Mountain lion attacks against humans are rare, and according to the Mountain Lion Foundation, the big cats have no urge to hunt people. **They prefer deer, rabbits, raccoons and coyotes.**

San Bruno police posted the photos on their Facebook page, and advised people on the 7.7-mile out-and-back trail off Sneath Lane to exercise caution. Dogs accompanying hikers could

especially be at risk. While mountain lions are wary of humans, a small pooch might be viewed as a tempting morsel.

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On X

Fremont Police Department

@FremontPD

Large bobcat sighting in the area of Mission Blvd and Paseo Padre Pkwy. Bobcat sightings east of Mission Blvd are common. - Be aware and cautious - Do not approach - Secure small animals and chickens - Bring in small pets & pet food - Call Animal Services at 510-790-6635

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If you do encounter a mountain lion, wildlife experts say you should stop immediately and not run away. Instead, maintain eye contact. Stand tall and try to look bigger by raising and waving your arms. Give the cat room and time to move away. In the unlikely event that you are attacked, fight back. Most people can successfully thwart a mountain lion attack.

The cougar sighting is the latest example of wild critters venturing into areas where they are rarely seen. With humans hunkering down in COVID-19 lockdown, animals have become emboldened.

On Sunday, a bobcat was seen near Mission Boulevard and Paseo Padre Parkway in Fremont.

Coyotes have been wandering San Francisco's empty streets, serenading North Beach, taking in the views at Kirby Cove and even prancing on rooftops,

And in Napa County, a wildlife cam in the Dry Creek area captured three young mountain lions on the prowl. Audubon Canyon Ranch posted the video on its Facebook page last week..

Mike Moffitt **Reporter** Reporter Mike Moffitt has been writing and editing stories for newspapers and news websites for more than 25 years. Before joining the SFGate team, he worked at the San Francisco Examiner, Arizona Republic and Phoenix Gazette. He covers news, politics, science, sports, outdoors and Bay Area history.

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38] Feb 20, 2020

[redacted]

https://www.sfgate.com/news/article/Mountain-lion-euthanized-attack-Cupertino-park-15072022.php

News

Mountain lion that attacked six-year-old girl in Cupertino is euthanized

Rancho San Antonio Park will re-open Friday morning.

SF Gate By **Amanda Bartlett**, *Assistant Local Editor* Updated Feb 20, 2020 3:35 p.m.

The mountain lion that was confirmed to have attacked a six-year-old girl at Rancho San Antonio Park in Cupertino has been euthanized, officials say.

According to a press release from the California Department of Fish and Wildlife, officers and park rangers spent three days searching for the animal, which was eventually found in a tree on Wednesday afternoon.

"Because the animal has been confirmed to be the same one involved in the attack, it has been humanely euthanized by CDFW staff for public safety purposes," wrote CDFW spokesperson Jordan Traverso. "We made the decision to euthanize the lion because it was confirmed to have attacked a human."

Officers initially sedated the mountain lion for DNA testing to determine the sample matched that of results taken from the victim on the day of the incident. Now deceased, the female lion was estimated to be 2-to-4 years old, weighing 60-70 pounds.

"That's small for a full-grown lion, which can mean she wasn't thriving," **Midpeninsula Regional Open Space District Area Superintendent Brad Pennington** said in a statement on the park's website. "Mountain lions face a lot of challenges. They need large, connected areas of habitat. Our region is divided by roads and development, which puts wildlife closer to people and us closer to the wildlife."

The girl who was attacked is recovering from minor injuries, the CDFW reported. The park will re-open on Friday morning.

The incident occurred on a trail called Wildcat Loop, where park rangers have recently placed warning signs reminding park visitors of the recent attack. They'll continue to monitor for "unusual wildlife behavior," according to the statement.

The best way to handle a close-up confrontation with a mountain lion is to make loud noises and slowly back away — not running or turning your back to the animal. Midpen rangers will hold an all-ages presentation and Q&A session on "Coexisting with Cougars" on Mar. 12 at Hidden Villa in Los Altos Hills.

Amanda Bartlett **Assistant Local Editor** Amanda Bartlett is an award-winning writer and the assistant local editor for SFGATE covering culture, history, science and breaking news. Prior to joining the newsroom in 2019, she worked for the Roxie Theater, Noise Pop and Frameline Film Festival. Outside of the newsroom, she hosts movie nights with Cinema SF as part of a series called "SFGATE Screens" and has also appeared as a guest on the Midnight Mass and Western Neighborhoods Project podcasts. She lives in Oakland with her fiancé and their rescue rabbit, Alberta Einstein. Send her an email at amanda.bartlett@sfgate.com.

39] Feb 19, 2020

[redacted]

https://www.sfgate.com/news/article/Cupertino-park-closes-child-mountain-lion-injury-15061367.php

News

Parent reportedly punched a mountain lion in the ribs to save injured 6-year-old girl

SF Gate By Amanda Bartlett, *Assistant Local Editor* Updated Feb 19, 2020 7:46 a.m.

[A file photo of a mountain lion. A mountain lion injured a six-year-old girl at Rancho San Antonio Park at Cupertino, leading to its closure Sunday morning. Photo Kevin Zaouali / EyeEm/Getty Images/EyeEm]

A nature preserve in Cupertino closed Sunday morning after a mountain lion injured a 6-year-old girl walking on a hiking trail approximately two miles from the main parking area.

A Midpeninsula Regional Open Space District ranger responded to the incident at Rancho San Antonio Park about 10 a.m., according to a statement from park officials.

Brad Pennington, a Midpen park ranger, told KPIX that the mountain lion "came out of the bushes and reached for the girl," clawing one of her legs before a parent accompanying her intervened by reportedly punching the animal in the ribs to scare it away. Sustaining minor puncture wounds, the girl was treated at the scene and released to parental care.

Calling the incident "very unusual," park officials said California Department of Fish and Wildlife officers are investigating the encounter and "will attempt to locate and positively identify the animal." It's the third time the well-trekked South Bay preserve has closed in the past year due to an apparent surge in typically rare mountain lion sightings.

On X

Midpen Open Space

@MidpenOpenSpace

Recent sightings have confirmed there is a mountain lion family in Rancho San Antonio. Mother lions will be protective of their young. Following recent encounters, we closed several trails according to internal protocols.

Trails closed last August after there were **numerous sightings** of a mother mountain lion with her three cubs. By Labor Day weekend, officials monitoring the area told the Mercury News the lions had "retreated" to less-populated areas of the preserve and deemed it safe to reopen.

But just two months later, Quarry Trail and portions of Stephen E. Abbors and Upper Meadow trails were closed again as a result of more mountain lion activity.

MORE: Mercury in the fog is poisoning Santa Cruz mountain lions, study finds

"Mountain lions in California face many challenges. They need large habitats, and because their native territories in the Santa Cruz Mountains have become hemmed in by roads and development, some mountain lions inhabit areas of open space near the wildland-urban interface," the district said in an alert on its website. "As a top-level predator, mountain lions play an important role in our local ecosystem and projects like the Midpen Highway 17 Wildlife and Trail Crossings are critical to keeping wildlife populations safe and healthy."

Park officials advised the public to "remain vigilant" while outdoors, to hike in groups and to "remain calm, make yourself large and loud and slowly back away" if coming in contact with a mountain lion. Sightings should be reported to park rangers at 650-691-2165.

Rancho San Antonio Park will welcome visitors again once the current investigation has concluded and officials determine it is safe to do so. As of 3 p.m. on Tuesday, the mountain lion had not yet been identified.

Amanda Bartlett **Assistant Local Editor** Amanda Bartlett is an award-winning writer and the assistant local editor for SFGATE covering culture, history, science and breaking news. Prior to joining the newsroom in 2019, she worked for the Roxie Theater, Noise Pop and Frameline Film Festival. Outside of the newsroom, she hosts movie nights with Cinema SF as part of a series called "SFGATE Screens" and has also appeared as a guest on the Midnight Mass and Western Neighborhoods Project podcasts. She lives in Oakland with her fiancé and their rescue rabbit, Alberta Einstein. Send her an email at amanda.bartlett@sfgate.com.

2019

40] April 29, 2019

https://www.sfgate.com/bayarea/article/Santa-Rosa-mountain-lion-sedated-Macys-mall-13804006.php

News | Bay Area & State

Mountain lion discovered near Santa Rosa Macy's store is sedated

SF Gate By **Amy Graff**, *Senior News Editor* Updated 10:19 a.m.



[Photo - California wildlife officers sedated a mountain lion discovered near a Macy's store at a mall in downtown Santa Rosa on April 29, 2019. Photo Santa Rosa Police]

A mountain lion was discovered in a brick planter box near the Macy's store at the Santa Rosa Plaza in downtown Santa Rosa Monday morning.

At 9:44 a.m., Santa Rosa Police announced wildlife officers were sedating the animal.

"Avoid the area of B Street between 4th and 7th Streets," police warned.

By 10 a.m., the procedure was done and police announced it was safe to go downtown.

Battalion Chief Jason Jenkins told the Press Democrat the animal will be relocated.

Amy Graff

Senior News Editor Amy Graff was the senior news editor for SFGATE. She currently works at the New York Times.

41] January 12, 2019

[redacted]

https://www.sfgate.com/bayarea/article/Mountain-lion-reported-in-backyard-near-Pacifica-13529154.php

News | Bay Area & State

Mountain lion reported in backyard near Pacifica park

SF Gate By **John King**, *Urban Design Critic* Updated 1:35 p.m.

A mountain lion sighting was reported Friday evening in Pacifica — not in one of San Mateo County's protected natural spaces, but in a suburban tract above Highway 1.

The report was sent to the city's police department at around 6:30 p.m., according to a statement released by the police Saturday morning. The mountain lion supposedly was seen in the backyard of a home on the 1300 block of Crespi Drive near Oddstat Park. The accuracy of the report — which the police passed along to the state Department of Fish and Wildlife — could not be confirmed.

This wouldn't be the first time that a mountain lion — also known as a cougar and technically a Puma concolor — has explored developed areas of this stretch of San Mateo's rugged coast. In 2016 a large mountain lion was reported on the 700 block of Big Bend Drive, more on the outskirts of town.

In addition to reporting the sighting, the police passed along a few tips about what to do if you do see a mountain lion. Among them: "Never approach a mountain lion. Give them an escape route."

John King Urban Design Critic John King is the Chronicle's former urban design critic. His book "Portal: San Francisco's Ferry Building and the reinvention of American cities," is now available in paperback by W.W. Norton.

42] May 1, 2016

[redacted]

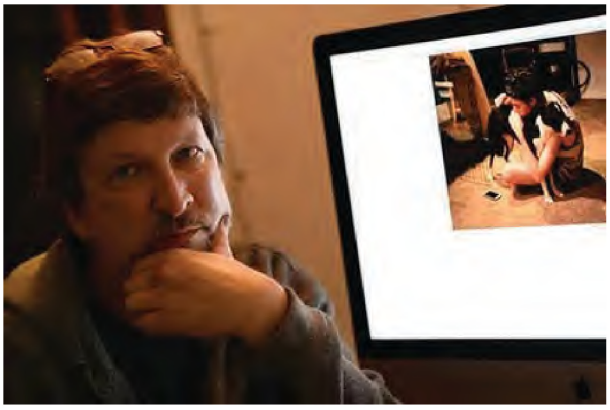
https://www.eastbaytimes.com/2016/05/01/santa-cruz-mountains-residents-watch-cougar-attacks-with-concern/

East By Times Santa Cruz Mountains residents watch cougar attacks with concern

By **Lindzi Wessel**

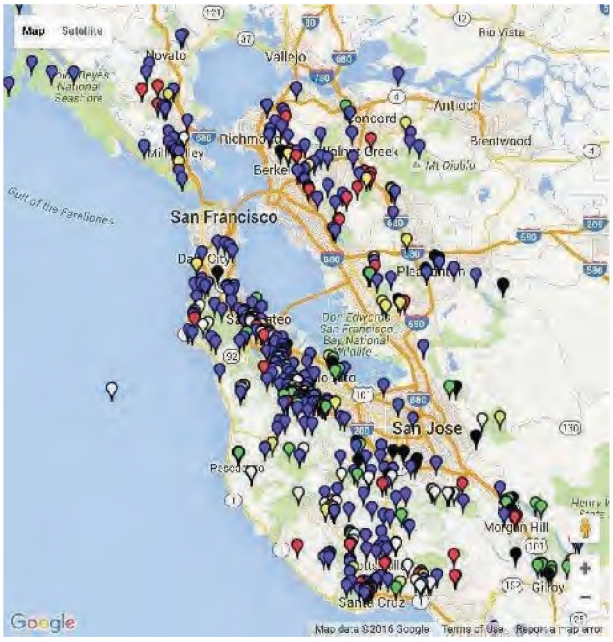
PUBLISHED: May 1, 2016 at 1:20 PM PDT | UPDATED: August 15, 2016 at 9:26 AM PDT

[Photo Slideshow]









1 of 4 *Larry McVoy photographed with an image of his son and dog Holly at his Los Gatos, Calif., home on Friday, April 8, 2016. It is believed that Holly was killed by a puma. There have been several incidents of predation of farm and domestic animals by pumas in the Santa Cruz mountains. (Dan Honda/Bay Area News Group)*

2 of 4 *Ruth McCormick, 82,, recounts the killing of some of her goats at her Los Gatos, Calif., home on Friday, April 1, 2016. It is believed that her goats were killed by a puma. There have been several incidents of predation of farm and domestic animals by pumas in the Santa Cruz mountains. (Dan Honda/Bay Area News Group)*

3 of 4 *Anthea Josling recounts the killing of one of her goats at her Los Gatos, Calif., home on Friday, April 1, 2016. It is believed that her goat was taken by a puma. There have been several incidents of predation of*

4 of 4 *Bay Area Puma Project's puma sighting map*

LOS GATOS — One late afternoon in early December, Ruth McCormick, a hobby farmer who lives in the hills above Los Gatos, rode her tractor down to her pasture and was stunned to find five of her dairy goats slaughtered.

The attack had all the telltale signs of a mountain lion, a predator that McCormick and her neighbors fear is now disturbing their once-bucolic way of life.

Less than two weeks before McCormick's grisly discovery, she had found another four of her goats dead. The blaring speakers she had placed near the pen did nothing to keep the attacker at bay. So as darkness fell, the 82-year-old McCormick worked to board up the barn to keep the remaining goats safe. She now has a huge dog, a Kangal named Hanigan, for protection and treks down to the pasture every evening to lock up her goats.

In the past year and a half, McCormick's neighbors have documented 16 other suspected cougar attacks on goats and alpacas. And as frustrated residents search for answers, their homes in the mountains are beginning to seem a little less like home.

"It's definitely changed how we feel about living here," said Larry McVoy, a neighbor of McCormick who suspects a mountain lion killed his son's border collie, Holly, in February. "We used to be pretty fearless."

Wildlife researchers say new data suggests that as the Bay Area's population grows, habitats for mountain lions are becoming more fragmented, so they can't be as choosy about where they live.

"It's their choice, naturally, to stay in the wild, natural lands where humans are not moving around. However, in the Bay Area it's become more difficult for them to avoid these areas," said Zara McDonald, president of the Felidae Conservation Fund, one of the groups in a research consortium dubbed the Bay Area Puma Project.

McVoy can't be sure Holly was taken by a mountain lion, but he believes no other animals could make off with a 40-pound dog. A line showing where the pet was dragged through the grass and a tuft of dog fur were the only hints to the collie's fate.

Having mountain lions as neighbors has always been a reality for people living in the Santa Cruz Mountains. But experts don't have concrete historical population counts.

The current estimate for the Santa Cruz Mountains ranges from 50 to 100 cats. Numbers for the greater Bay Area simply don't exist.

McCormick and McVoy find themselves at a loss when it comes to answering some basic questions: Are their problems being caused by one troublesome cat? A few? Or is something causing mountain lions to become bolder?

Researchers say they can't say for sure whether puma attacks are increasing. But they do know that cougar populations throughout the state have increased since 1963, when California stopped paying bounties for killing the cats. And their numbers grew even more after 1990, when California voters passed a ballot measure banning hunting them for sport.

Still, residents can apply for depredation permits from the state Department of Fish and Wildlife to hunt and kill cats that make meals out of their pets and livestock. In 2015, 107 mountain lions were killed with such permits.

Environmentalists, worried that suppressing mountain lion populations can destabilize ecosystems, also want to help keep lions away from forbidden snacks.

"Two cats we collared in Los Gatos were not alive six months later due to the fact that they took a goat or sheep," McDonald said.

Researchers with the Santa Cruz Puma Project, a partnership between UC Santa Cruz and the Department of Fish and Wildlife, have fitted more than 50 mountain lions in the Santa Cruz Mountains with tracking collars — and published tracking data to the project's website: **santacruzpumas.org**.

Other pumas remain untracked, largely because collaring them is quite a feat. To place a collar, researchers must stalk pumas through the woods, using dogs to scare them into trees. If the cats don't climb so high that a fall would be dangerous, the researchers dart them with tranquilizers, fit the collars and then wait with the cats until they recover.

The endeavor, which sometimes keeps researchers out overnight, has to be repeated every two years when a cat's transmitter runs out of juice. Only a few Bay Area cats outside the Santa Cruz Mountains wear collars, but plans are underway to increase those numbers in the North Bay and East Bay over the next few years.

While lion forays into highly urban areas remain rare, one was spotted roaming the streets of San Francisco in the summer of 2015. Five years earlier, police shot a lion after chasing it through Berkeley streets.

As more mountain lions venture onto Bay Area land dotted with homes, it "kind of puts the onus on humans to say, 'OK, well I'm going to predator-proof my property so I don't tempt the lions,'" McDonald said.

The most effective safeguard is putting livestock and pets in fully enclosed, covered structures at night, she said. Livestock-guarding dogs can also help. These techniques, McDonald said, will protect livestock not just from mountain lions — which can scale most fences — but also from coyotes and bobcats that live in the region.

And these kinds of fixes will last, said Veronica Yovovich, a graduate student in environmental studies at UC Santa Cruz who works on the puma project.

Counterintuitively, she said, killing one lion can make the problem worse. It can create a void that younger lions will fight to fill, temporarily increasing the number of lions in the area.

"What you really want to do is figure out a long-term solution," she said.

But Yovovich acknowledges there are no guarantees — something that another Santa Cruz Mountains resident, Anthea Josling, can attest to.

Locking her goats up at night didn't stop a mountain lion — which her son-in-law spotted — from killing her Nigerian Dwarf goat in broad daylight on Christmas Day last year.

And for McVoy, he's particularly worried because cougars don't typically attack dogs. So he wonders what else the lion that killed Holly would go after.

"I think people in this area are in a state of denial," he said. "I don't want the mountain lion killed, but I don't want my kids killed either."

Attacks on humans are extremely rare: There have been 14 documented cougar attacks in California, resulting in three deaths, in the past three decades.

"Your risk is way higher just driving on Highway 17," Yovovich said.

But wildlife experts were reminded of the dangers when a cat in Cupertino in September 2014 dragged a 6-year-old boy into the bushes, releasing him only when chased down by two men hiking with the boy.

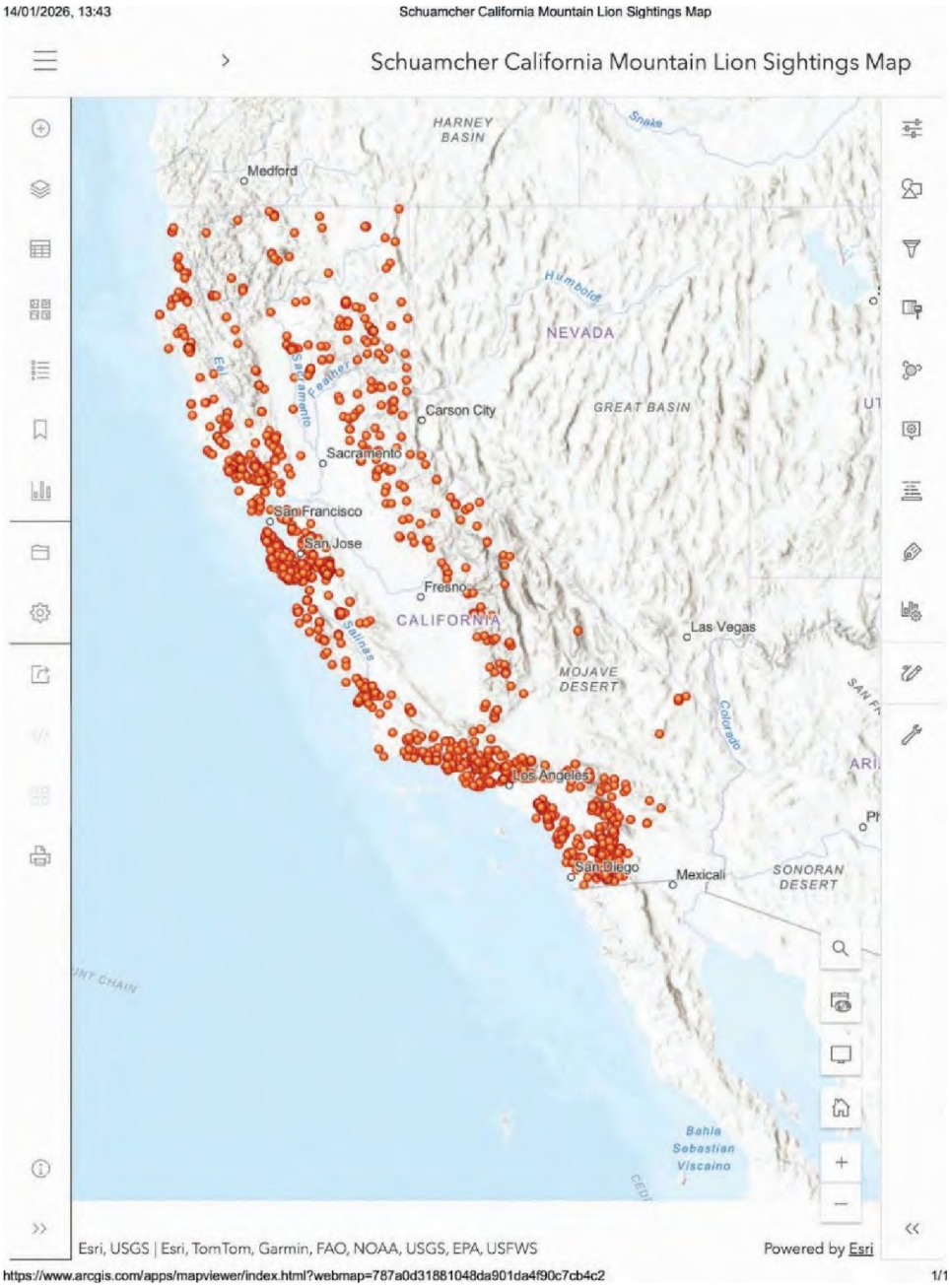
"When things do go wrong," Yovovich said, "they can go very wrong."

Contact Lindzi Wessel at 408-920-5012. Follow her at Twitter.com/LindziWessel.

▶ ATTACHMENT B

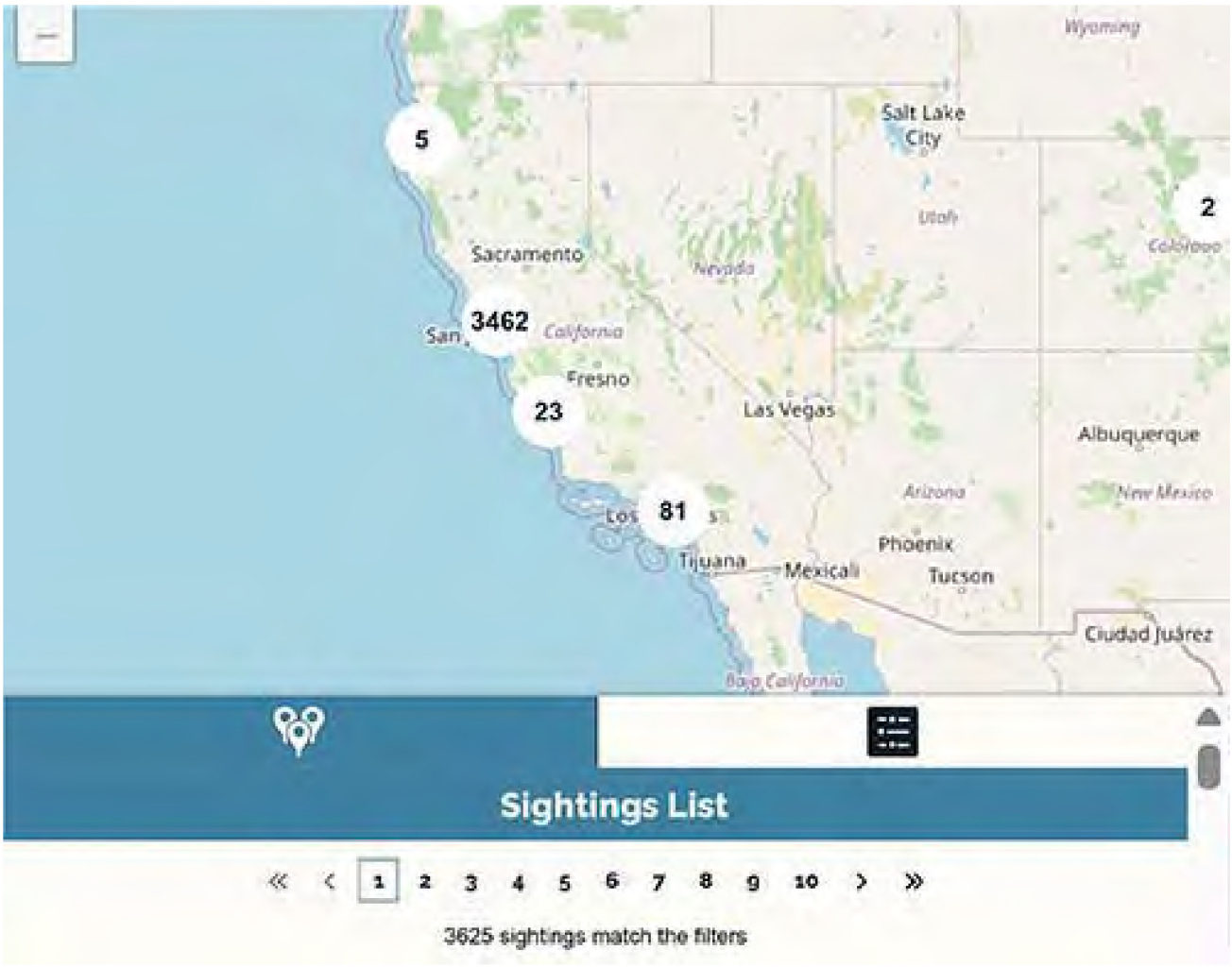
Mountain Lion Sighting Maps

1] Schuamcher California Mountain Lion Sightings Map | 1/14/2026

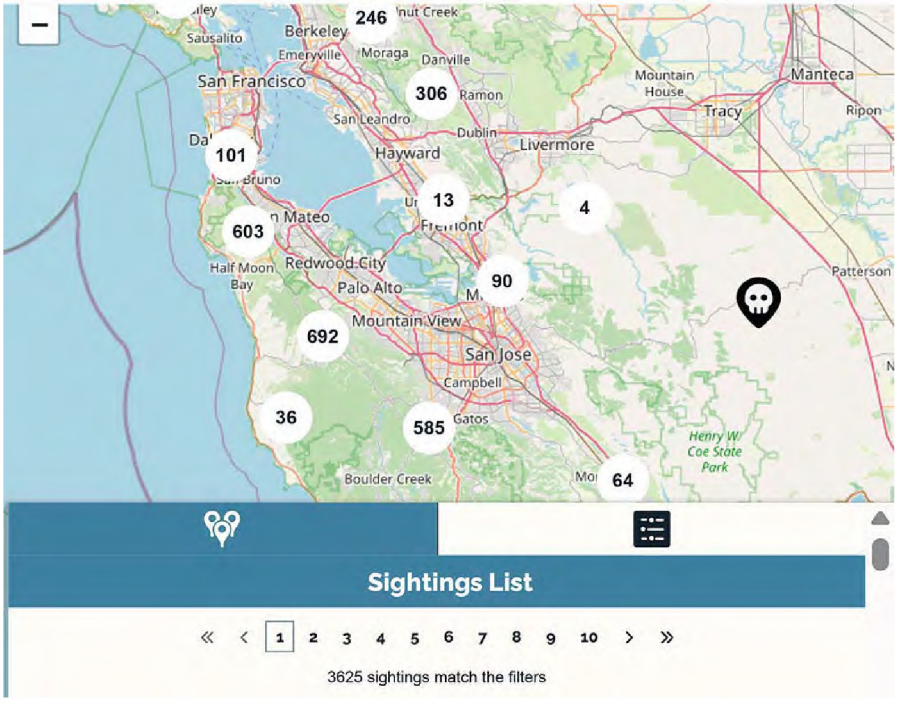


2] Bay Area Puma Project | Puma & Bobcat Sightings Maps

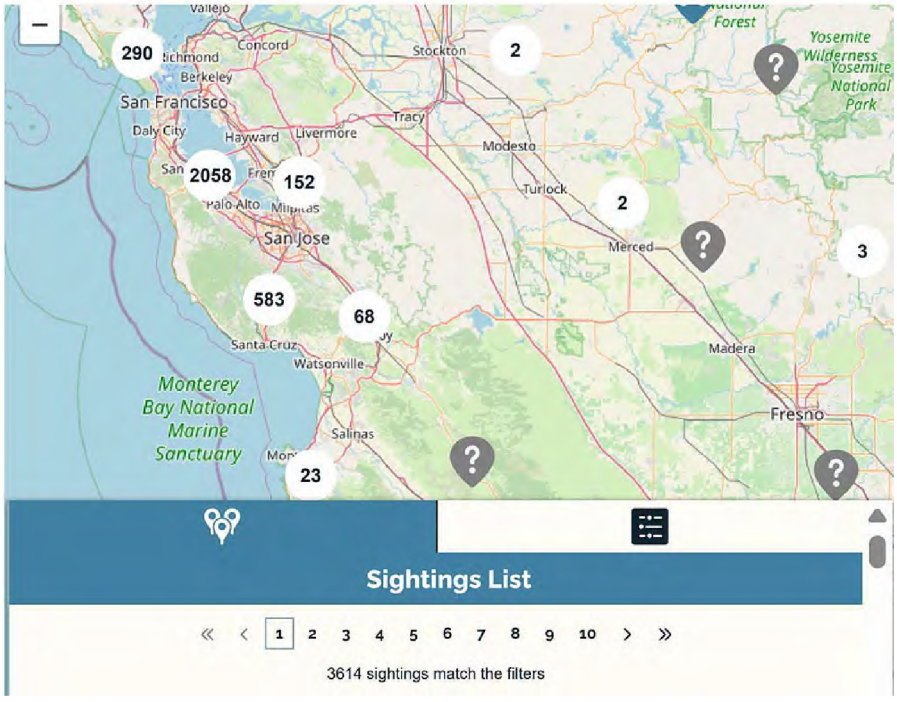
https://bapp.org/meet-puma/sightings



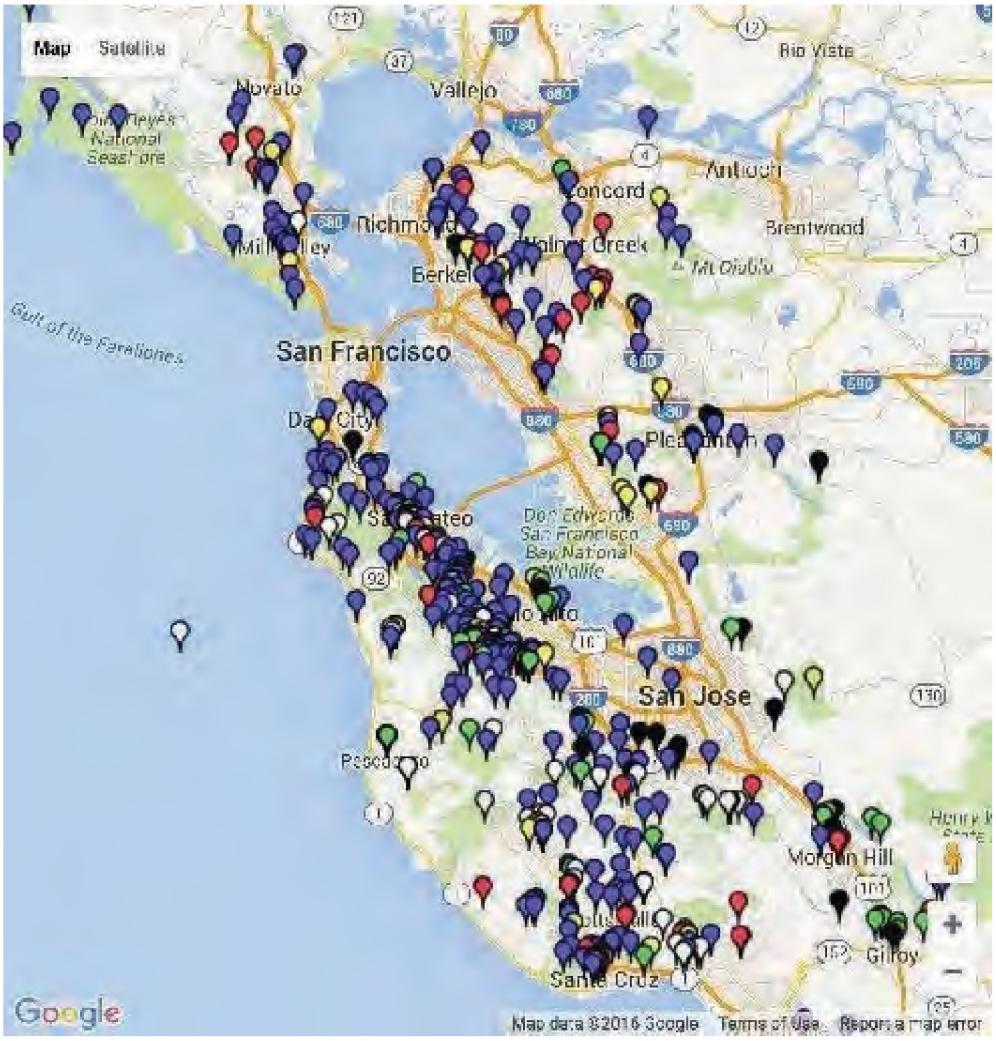
January 9, 2026 | Bay Area Puma Project Sightings



January 9, 2026 | Bay Area Puma Project Sightings



December 28, 2025 | Bay Area Puma Project Sightings



May 1, 2016 | Bay Area Puma Project's puma sighting map

▶ ATTACHMENT C

California Department of Fish and Wildlife Petition Maps

1] California Department of Fish and Wildlife Petitioned ESU Map

Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California
California Department of Fish and Wildlife



Figure 20. Public and tribal lands within the petitioned Southern California/Central Coast mountain lion ESU.

2] California Department of Fish and Wildlife Petitioned DPS Map

DPS in blue inside ESU in black

Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California
California Department of Fish and Wildlife

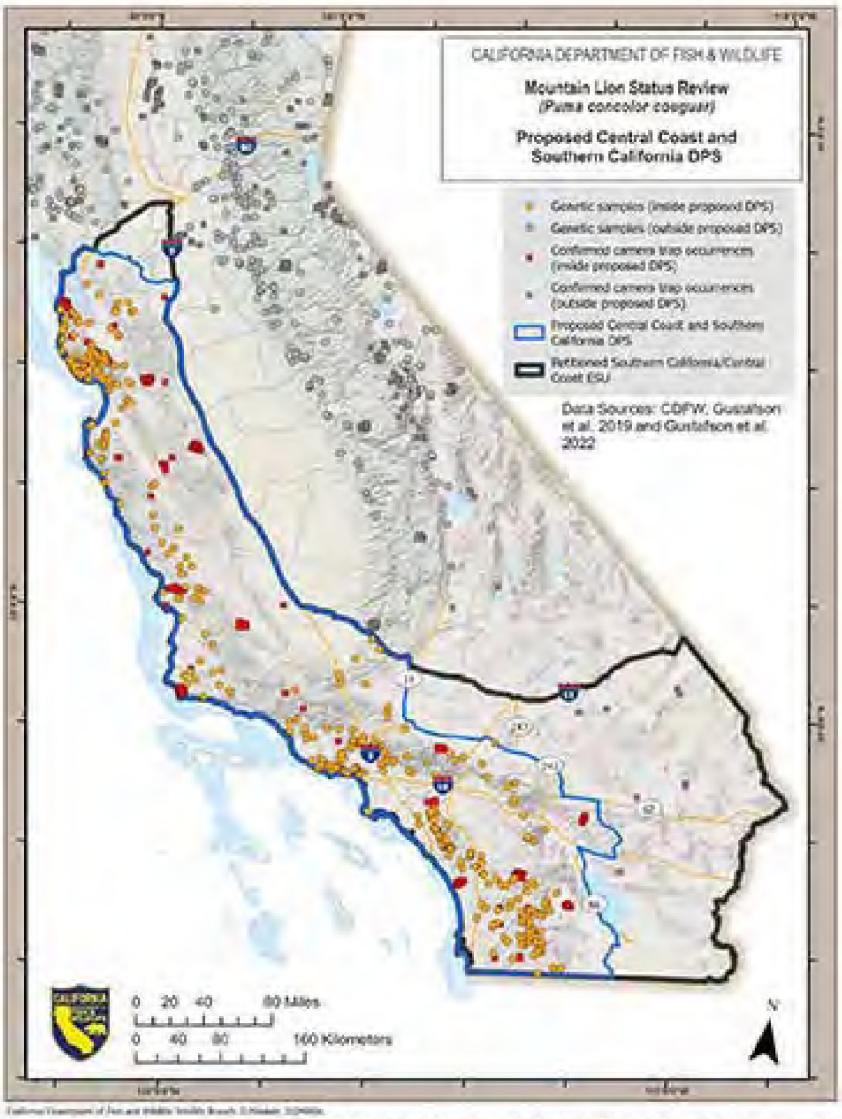


Figure 22. Proposed boundary of Central Coast and Southern California Distinct Population Segment.

▶ ATTACHMENT D

Mountain Lion Camera Captures

Mountain Lion Captures near Lobitos Grazing Ranch

Time relationships of photos related to kills noted

1] 9/3/2021 – 22:20

2] 1/20/2022 – 1:45

3] 8/26/2022 – 12:39 am Calf Kill | VF Lobitos

4] 9/9/2022 – 12:39 am

5] 9/13/2022 – 3:05 am

6] 12/10/2022- 5:37 am

7] 9/18/23 – 5:49 am Calf Kill | VF Lobitos

8] 2/21/24 – 8:57 pm – Goats Kill | Bob Marsh

9] 2/25/2024 – 11:22 pm – Goats Kill | Bob Marsh + Calf Kill | VF Lobitos

10] 7/1/2024 – 4:43 –Mini Donkeys Kill | Bellonie + Calf Kill | VF Lobitos

11] 12/10/2024- 5:46 – Cow Kill | VF Lobitos

12] 2/26/2025 – 7:39 pm

13] 2/27/2025 7:38 pm – Calf Kill | Bob Marsh

14] 4/7/2025 – 11:04 pm

15] 9/7/2025 – 11:14 pm


48F 09C 2021/09/03 22:20:15


41F 05C 2022/01/20 01:45:43


55 °F
08:52:07
2022/08/26


M 8 °C / 46 °F
09/09/2022 12:39:30 AM
SULY


M 8 °C / 46 °F
09/09/2022 12:39:30 AM
SULY


M 9 °C / 48 °F
12/10/2022 05:37:40 AM
SULY


50 °F
05:49:00AM
2023/09/18


M 8 °C / 46 °F
02/21/2024 08:57:07 PM
SULY


M 11 °C / 51 °F 02/25/2024 11:22:35 PM SULY


53 °F 04:43:55 2024/07/01


M 9 °C / 48 °F 12/10/2024 05:46:55 AM SULY


M 11 °C / 51 °F 02/26/2025 07:39:27 PM SULY


M 12 °C / 53 °F 02/27/2025 07:38:01 PM SULY


M 10 °C / 50 °F 04/07/2025 11:04:13 PM SULY


M 10 °C / 50 °F 04/07/2025 11:14:40 PM SULY

▶ ATTACHMENT E

Mountain Lion Predations

VINCE FONTANA CHRONOLOGY | PREDATIONS 2020 - 2025

PREDATIONS

Vince Fontana Losses Predations by Mountain Lions.

Lobitos Grazing Ranch [Unit] is Mid Peninsula Open Space District property.

Not one Predation has been identified as a mountain lion kill.

1] October 24, 2020 | Lobitos Grazing Ranch – Depredation Permit – may be reported as ML calf

2] August 24, 2022 | Lobitos Grazing Ranch

3] January 2023 | Lobitos Grazing Ranch

4] August 20, 2023 | Lobitos Grazing Ranch

5] October 29, 2023 | Lobitos Grazing Ranch

6] November 6, 2023 | Lobitos Grazing Ranch

7] March 14, 2024 | Lobitos Grazing Ranch

8] May 24, 2024 | Lobitos Grazing Ranch

9] August 2024 | Lobitos Grazing Ranch

10] September 24, 2024 | Lobitos Grazing Ranch

11] December 13, 2024 | Lobitos Grazing Ranch

12] June 30, 2025 | Lobitos Grazing Ranch

13] July 29, 2025 | Lobitos Grazing Ranch

14] August 24, 2025 | Lobitos Grazing Ranch

15] November 22, 2025 | Private Lease | San Gregorio





Predation November 22, 2025 | Stocker Calf | Vince Fontana Private Lease



Predation August 25, 2025 | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation July 29, 2025 | Vince Fontana Lobitos Grazing Ranch | Midpen Property





Predation June 30, 2025 | Vince Fontana Lobitos Grazing Ranch | Midpen Property



September 24, 2024 | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation September 2024 | Red Cow | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation May 24, 2024 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation March 14, 2024 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property





Predation November 6, 2023 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property





Predation October 29,2023 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation August 20, 2023 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation August 24, 2022 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property



Predation October 24, 2020 | Calf | Vince Fontana Lobitos Grazing Ranch | Midpen Property

January 14, 2026

RE: PETER MARCHI RESPONSE TO: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE PETITION OF THE MOUNTAIN LION IN CALIFORNA AS EVOLUTIONARILY SIGNIFICANT UNIT [ESU], OR DISTINCT POPULATION SEGMENT [DPS]

California Fish and Game Commission:

I Peter Marchi, 3rd generation Coastside farmer in San Mateo County, am strongly opposed to the mountain lion listed as Evolutionarily Significant Unit (ESU), or Distinct Population Segment (DPS). The mountain lion is already overpopulated, they are wreaking havoc on ranches and killing livestock, the rural population now runs in fear on their own property, and coastside residents are intimidated by mountain lion sightings and actions. The mountain lion has multiplied so greatly and gotten out of control, that the whole community has been affected.

I am 66 years old, the whole time I grew up, I never saw a mountain lion. Now people see them a lot, daytime and nighttime. The mountain lion is too close to schools, like La Honda Elementary School, which my wife attended. My wife and I, both attended Pescadero High School, where in 2022, a mountain lion cub was found hiding. Now there are sightings everywhere, I never dreamed that anything like this could happen here on the coast. Due to the mountain lion population's huge growth, people are being held hostage on their own property by a carnivore.

The mountain lion is not threatened or endangered. I am strongly against putting the mountain lion on the ESU or DPS List.

Sincerely,

Peter Marchi

Peter Marchi

Harold V. Feeney Jr

San Gregorio, CA 94074
Los Altos Hills, CA 94024
hal@feeney.us.com

January 28, 2026

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

RE: California Fish and Game Commission Petition of the MOUNTAIN LION in California as an Evolutionary Significant Unit [ESU] or Distinct Population Segment [DPS]

Dear Members of the Fish and Game Commission:

Based on information available and also personal experience, the mountain lion is neither threatened nor endangered. I am against putting the mountain lion on the ESU or DPS lists.

My wife and I have owned ranch property in San Gregorio for over 30 years. During that time, we have not personally seen mountain lions, but we know that they are there. We have witnessed deer carcass remnants every year— we have also witnessed shrinkage of the deer herds and have collected many deer parts. The accompanying photo shows one of the deer kills that we were able to capture. Neighboring ranchers have lost cattle to mountain lion predators.

In addition, newspaper accounts have become more numbeous during the same 30-year period. Incidents include a young person being injured by a lion while walking in Rancho San Antonio County Park, a mountain lion in a parking garage near downtown Mountain View, and this week, a young mountain lion was captured within the city limits of San Francisco. The news reports indicated that the mountain lion was tagged and had been captured several times. One of those capture points was in Rancho San Antonio, the same area where the child was injured.

I am very familiar with Rancho San Antonio preserve because my home in Los Altos Hills is less than 0.5 miles away from the preserve. Many of our neighbors have video cameras or video door bells—there have been many reports of mountain sightings through our Neighborhood Watch Program, sometimes as often as monthly. References to the incidents are attached.

It should be evident that there is not enough habitat for the mountain lions to safely roam. The young San Francisco mountain lion travelled over 50 miles. There are too many mountain lions for such a small urban area. The animals must be managed, not protected. My wife and I are afraid to venture outside after dark even though we have a fully fenced yard. Do not take an action that endangers people.

Sincerely,

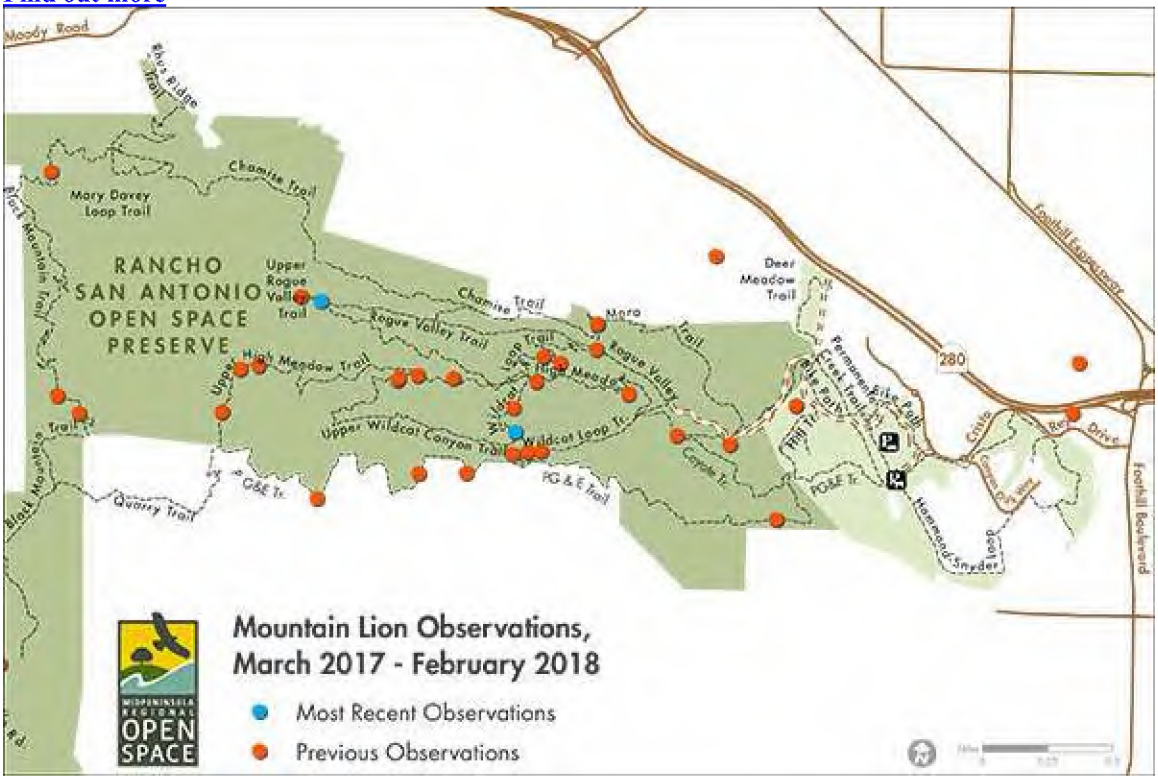
Harold V. Feeney Jr


Stealth Cam 02-07-2008 18:14:35

Mountain Lion Activity

https://www.openspace.org/newsletter/mountain-lion-activity

Midpen Biologists believe that one or more mountain lions may live within and around Rancho San Antonio Open Space Preserve. While these lions are usually most active between dusk and dawn, sightings at Rancho San Antonio have been reported year round at all hours of the day. Please visit the Mountain Lion page on our web site to learn more about Mountain Lions, what to do if you see one, and how to stay safe while out on the trails.
Find out more



Mountain Lion Activity at Rancho San Antonio

https://www.openspace.org/where-to-go/nature/mountain-lions

Mountain lions have been observed in Rancho San Antonio Open Space Preserve. Though seldom seen, they also roam most Midpen preserves.

Image



Mountain Lion Attack Prompts Closure at Rancho San Antonio Preserve

By **Marianne Favro** • Published February 17, 2020 • Updated on February 18, 2020 at 4:50 am

https://www.nbcbayarea.com/news/local/south-bay/mountain-lion-attack-prompts-closure-at-rancho-san-antonio-preserve/2235791/

Thousands of people hoping to hike at Rancho San Antonio during the President's Day holiday were turned away Monday after a mountain lion attacked a 6-year-old girl over the weekend. Marianne Favro reports.

Thousands of people hoping to hike at Rancho San Antonio in Cupertino during the President's Day holiday were turned away Monday after a mountain lion attacked a 6-year-old girl over the weekend.

The mountain lion pounced on the little girl, injuring her calf. Fortunately she is going to be OK. The attack happened Sunday morning about a mile from the entrance.

Rangers suspect a mountain lion caught on camera by trail surveillance just before 5 a.m. Monday is the same one that pounced on the girl.

"The mountain lion came out of bushes and grabbed her calf," California Dept. of Fish and Wildlife Capt. Todd Tognazzini said.

The girl was walking a trail with six adults and three other kids. Fortunately, a family friend acted quickly, punching the mountain lion in the ribs until it ran off.

Rangers treated the girl at the preserve and said her family drover her to a nearby hospital, where she received tetanus and rabies shots as a precaution. She did not need stitches.

On Monday, Rancho San Antonio remain closed while wardens using specially trained dogs used by the Puma Project to search for the mountain lion.

Sunday's incident is the first mountain lion attack on a person ever reported at the preserve.

"If you see a mountain lion, make yourself big. Make a lot of noise, back away slowly, don't turn and run, fight back if attacked," said Brad Pennington, a ranger with the Mid-Peninsula Regional Open Space District.

If wardens find a mountain lion, they plan to shoot it with a tranquilizer gun and confirm if it's the one that attacked the girl by matching DNA from the big cat with DNA from the victim's clothing.

Officials said if the DNA is a match, Dept. of Fish and Wildlife will likely euthanize the mountain lion as they have done in the past.

Ranch San Antonio will be closed again Tuesday if wardens are unable to find the mountain lion.

Back in August, Rancho San Antonio was was closed for a short time because some mountain lions were exhibiting unusual behavior.

The California Department of Fish and Wildlife has only confirmed 17 mountain lion attacks on humans in the last 100 years.

Mountain lion spotted in San Francisco's Pacific Heights neighborhood captured by animal control

By Jose Fabian, Tim Fang

Updated on: January 27, 2026 / 9:33 PM PST / CBS San Francisco
https://www.cbsnews.com/sanfrancisco/news/mountain-lion-spotted-near-lafayette-park-in-san-francisco/?intcid=CNM-00-10abd1h

A mountain lion recently spotted in San Francisco's Pacific Heights has been captured Tuesday, after it was seen around the neighborhood and at a nearby park.

Officials with the city's Animal Care and Control found the animal near California and Octavia streets Tuesday morning. The animal was contained and the agency was working with the San Francisco Zoo on next steps.

"I'm glad they're they know where it is. I mean, mostly for ourselves, but also for the animal," Abram Cortez, a neighborhood resident, told CBS News Bay Area.

Around 11 a.m., crews were on scene as they were attempting to capture the mountain lion.

The Santa Cruz Puma Project was also called to help. It was founded in 2008 in partnership with UC Santa Cruz to research how mountain lions and their habitats are impacted by people and housing construction.

One of the biologists who responded was Richie King, who had interacted with this lion before.

"On the way out, someone texted me and said, 'Oh, he's got an ear tag on.' And I was like, 'Is it orange? And is it in his left ear?' And they were like, 'Yep.' And I was like, it's that same guy," King told CBS News Bay Area.

King was part of the team that originally tagged this mountain lion when he was 5 weeks old in the Rancho San Antonio area. Last September, the same mountain lion was spotted in a backyard in Saratoga.


Animal control officers and San Francisco police as they were attempting to capture a mountain lion found in the Pacific Heights neighborhood of San Francisco, Jan. 27. 2026.CBS

He was tranquilized then and relocated to the area around the Lexington Reservoir. Then, within the last few months, King said he must have made his way north to get into the city.

"I don't think he's seeking out these areas. For the most part, he's being pushed around by other males who have these home ranges that aren't letting him go in there. Really, he doesn't have much of a choice about where he's going and he just happens to end up in these bad situations," King said.

King said the lion is in good health and looks like he's been eating well.

Shortly after noon, the captured mountain lion, which was in an enclosure, had been loaded onto a pickup. They did put a GPS tracking collar on him this time, and he will be released back out into the wild in an open space far away from people.

Animal Care and Control San Francisco had warned residents on Monday about the mountain lion, which was spotted near Lafayette Park Sunday night.

"It's likely that the mountain lion got lost while dispersing, is confused, and will soon find its way south and out of San Francisco," Animal Care and Control said at the time.

Madrey Hilton told CBS News Bay Area in an interview Monday that she saw the mountain lion between Sacramento and Gough streets as she was driving to work and recorded the encounter.



A mountain lion was seen in San Francisco on Sunday, Jan. 25, 2026.Madrey Hilton

"It was super big too, so I knew it wasn't like just a stray cat or anything, and it kind of walked up the road, like towards like where my car is," Hilton said. "And so immediately I got out my phone to record because I wanted to send a video to my friends."

When encountering a mountain lion, residents are advised not to go near the mountain lion, and if they see it, slowly back away — Do not run. And people with children should pick them up and keep their pets on leashes.

If a mountain lion approaches, people should make themselves "big" by waving their arms, yelling and throwing something, and again, do not run.

Katie Nielsen contributed to this report.

Mountain View Police Capture, Tranquilize Mountain Lion

By Terry McSweeney, Bob Redell and Lisa Fernandez • Published May 6, 2014 • Updated on May 7, 2014 at 5:27 pm https://www.nbcbayarea.com/news/local/report-of-mountain-lion-sighting-in-mountain-view/2074429/

After a nearly five-hour standoff with a mountain lion in Mountain View on Tuesday night, wardens ended up trapping and tranquilizing the big cat inside the parking garage of a typically quiet Silicon Valley apartment complex.

After all the commotion, the 2-year-old male was set free on the Peninsula just before midnight, Fish and Game Lt. Andrew Hughan said.

The drama began after residents, including some children, reported seeing a mountain lion wearing a radio-type collar around its neck in the community about 6 p.m., according to Mountain View police Sgt. Saul Jaeger.

"I was skating and then I just saw the mountain lion in a garage," said Victor Lopes, a young boy. "Me and my friends started running."

People took photos and showed them to police, who realized this was the real thing.

Then, for hours, police, wardens and residents surrounded the garage of a building in the 2000 block of California Street. The scene was tense, like a "standoff," said Mountain View Police Capt. Chris Hsiung, referring to the cat cowering underneath a car in the apartment garage as everyone looked on.

- **PHOTOS: Mountain Lion Captured in Mountain View**

Fish and Game wardens, along with police from Palo Alto, Sunnyvale and Los Altos, raced to help. All held weapons poised, ready to pull the trigger if the cat decided to attack, which it didn't.

Mountain View police asked residents to stay at home, and took to social media, creating the hashtag #MVPuma, to keep residents a blow-by-blow of what was going on.

Just about 11 p.m., Hughan said wardens tranquilized the mountain lion. Within an hour, the cat was set free somewhere in San Mateo County.

It turns out, the cat, which broke away from its mother, was being formally studied as "mountain lion 46M" and tracked by the Santa Cruz Puma Project, a study group at UC Santa Cruz and the California Dept. of Fish and Game.

Many were thankful the capture and release ended so peacefully.

"Thank you, thank you, thank you for not hurting him!" Laurel Jack wrote on Facebook. "It's not the animals fault we have invaded their territories."

NBC Bay Area's Shelby Hansen and Kristcfer Noceda contributed to this report.

(1/3) MOUNTAIN LION UPDATE: Animal Control is on-scene. We are working on getting in touch with Fish & Game. Animal Control is on-scene. — Mountain View Police (@MountainViewPD) May 7, 2014

(2/3)Thx to one cf our followers, we reached out to Santa Cruz Pumas to determine if they might know cf mountain lion who looks to be tagged — Mountain View Police (@MountainViewPD) May 7, 2014

(3/3)Please shelter in place until we give you the all-clear. Call 911 if you see the mountain lion. Thank you! #MVpuma — Mountain View Police (@MountainViewPD) May 7, 2014

#MVpuma: Officers on-scene remaining calm to ensure mountain lion also remains calm. Please help us out! pic.twitter.com/H00HiT8YCx — Mountain View Police (@MountainViewPD) May 7, 2014

#MVpuma safe! pic.twitter.com/vtHSGVhKC9 — Mountain View Police (@MountainViewPD) May 7, 2014

Electronically Submitted
fgc@fgc.ca.gov

January 26, 2026

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244

Re: Final Consideration of Petition to List the Southern California / Central Coast Mountain Lion Distinct Population Segment Under the California Endangered Species Act

Dear Commissioners:

California Farm Bureau Federation ("Farm Bureau") appreciates the opportunity to comment on the Commission's final consideration of whether to list the proposed Southern California / Central Coast mountain lion Distinct Population Segment ("DPS") under the California Endangered Species Act ("CESA").

California Farm Bureau is California's largest farm organization, comprised of 54 county Farm Bureaus currently representing approximately 28,000 agricultural, associate, and collegiate members in 57 counties. Farm Bureau strives to protect and improve the ability of farmers, ranchers, and foresters engaged in production agriculture to provide a reliable, safe, and affordable supply of food and fiber through responsible stewardship of our natural resources.

Farm Bureau members live and work in the areas most directly affected by mountain lion presence, depredation incidents, and the increasing human–lion interactions documented in recent years. Based on the Department's Status Review, public-safety data, and the lived experience of agricultural producers, Farm Bureau, and the undersigned County Farm Bureaus, opposes the proposed listing. In the alternative, if the Commission chooses to proceed, any listing must be strictly limited to the originally petitioned geographic area.

The Population Estimate in the Status Review Is Too Uncertain to Support a Threatened Listing

The Department's population estimate is not sufficiently reliable to justify a threatened listing under CESA. The Status Review estimates there are approximately 4,172 mountain lions statewide, but the Department also acknowledges that the true number could be as low as 3,645 or as high as 4,750. (Status Review, Exec. Summary, p. viii.) This swing of more than 1,000 mountain lions shows how uncertain the estimate really is. The same level of uncertainty appears within the petitioned region, where the Department estimates 1,449 individuals but concedes that the true number could fall anywhere between 1,272 and 1,638. (*Id.*)

The Status Review confirms that these estimates rely on a relatively new scat-based spatial capture–recapture ("SCR") model (Status Review, pp. 22–24, 25-27), which is sensitive to uneven sampling effort, detection probability, and terrain. The Review specifically cautions against interpreting these model outputs as evidence of population decline. (Status Review, p. 39.) Earlier statewide estimates, including those from 1989, fall within or above the Department's current numbers (Status Review, pp. 22–24), undermining any suggestion that the DPS is trending toward endangerment.

The Commission Must Not Expand the Listing Area Beyond the Petitioned Boundary

CESA is a petition-driven statute, and the Commission's authority is limited to evaluating the geographic area defined in the petition itself. To the extent the Department's Status Review removes certain areas such as the southeastern desert regions and intensively farmed Central Valley lands those removals are appropriate and consistent with the Review's findings on habitat suitability and genetic data. (Status Review, pp. 84–85.)

However, the Department also proposes expanded boundaries that extend beyond the petitioned ESU. The Review admits the proposed DPS boundary is "modified from the ESU boundary proposed in the petition" (Status Review, p. 73) and merely "largely coincides" with the petitioned area. (Status Review, Exec. Summary, p. ix) These descriptions mask material expansions into regions never identified in the petition or evaluated during the candidacy period.

The Department's alternative boundary route following Highway 14, Highway 138, Highway 18, Highway 62, Joshua Tree National Park, I-10, and Highway 86 pulls in new communities and agricultural landscapes without statutory notice or procedural safeguards. (Status Review, pp. 84–85.) These expansions violate CESA's requirement that the Commission evaluate the petitioned action, not create a new listing proposal at the eleventh hour.

Moreover, the Status Review concedes that several newly included regions lack adequate genetic sampling and that lion population membership "cannot be determined" based on the available data. (Status Review, p. 102.) Expanding a DPS of this magnitude based on unverified assumptions is scientifically and procedurally inappropriate.

For these reasons, while Farm Bureau does not oppose the removal of areas lacking habitat or biological support, the Commission must ensure that no new areas are added and that any listing is confined strictly to the originally petitioned geography.

Prey Declines, Not Extinction Risk, Are Driving Dangerous Increases in Human–Lion Conflict

The Status Review confirms that deer make up roughly 70 percent of a mountain lion's diet within the DPS. (Status Review, p. 7.) At the same time, multiple deer populations in Southern California and the Central Coast have undergone documented declines due to drought, wildfire, and habitat fragmentation. (Status Review, pp. 44, 47–50.) As lions lose access to their primary

food source, they increasingly turn to livestock, pets, and even people. These conflicts arise not because the mountain lion is nearing extinction, but because prey shortages are pushing lions into human-inhabited areas. Without stabilizing prey populations, conflict pressure will continue to rise regardless of listing status.

In August 2025, a Central Coast farm lost 15 alpacas in a single night when multiple mountain lions breached the property and killed the animals. (SF Gate, *15 alpacas dead, 3 cougars on the loose: NorCal ranch under siege*, August 22, 2025.) The scale of the attack demonstrates both the growing boldness of lions searching for food and the inability of traditional deterrents to prevent mass depredation events when natural prey is depleted.

In another incident, an 11-year-old girl was attacked in her own yard in Malibu after a lion approached the child in the backyard. (ABC7 News, *Mountain lion attacks 11-year-old girl in backyard of Malibu home*, August 11, 2025.) This is precisely the type of preventable encounter that becomes more likely when hungry lions shift into residential areas.

Similarly, in March 2024, a California hiker was killed by a mountain lion in El Dorado County while walking with his family. (NBC News, *Mountain lion that killed man and injured his brother is euthanized in California*, March 23, 2024.) This tragic fatality is a stark reminder that mountain lion conflicts pose genuine risks to human life especially in regions where prey shortages push lions into closer proximity with people.

Beyond these severe incidents, numerous documented encounters have involved lions entering neighborhoods, approaching schools, stalking pets, and roaming near barns, equestrian facilities, and rural homes. These conflicts arise because the State has failed to manage prey populations, forcing lions to seek food wherever they can find it.

These cases illustrate a clear and troubling pattern: prey scarcity is driving dangerous lion behavior, increasing the likelihood of attacks on livestock, pets, and people. A CESA listing will not improve this situation. Instead, it will restrict the very tools that landowners and public-safety officials rely upon to protect the public during high-risk encounters. Until the State meaningfully addresses declining deer herds, habitat fragmentation, and the resulting ecological imbalance, listing the mountain lion will worsen, not alleviate, these threats to both rural communities and the lions themselves.

The Five-Year Delay in Completing the Status Review Undermines Any Assertion of Immediate Threat

The petition to list this DPS was submitted in 2019 and accepted for candidacy in April 2020. The Department did not complete its Status Review until December 2025, after a five-year delay. (Status Review, Petition History, pp. 1–3.) During that entire period, the species remained in candidate status, and no emergency regulations, emergency closures, or interim conservation measures were undertaken by the Department.

If the mountain lion DPS were truly at risk of imminent extinction, the Department would not wait five years without acting. The Legislature designed CESA as a protective, rapid-response

framework for species at genuine risk. A delay of this length is inconsistent with any claim that conditions are deteriorating rapidly or that the DPS faces an urgent threat requiring immediate listing.

Moreover, the record shows no significant new information or new decline during the five-year period that would justify a sudden shift from prolonged inaction to urgent listing. The Department's own Status Review acknowledges that the new population estimates "should not be interpreted to mean the population has declined since 1989." (Status Review, p. viii.) Habitat conditions, prey availability, and connectivity concerns cited in the petition have existed for decades and were not triggered or materially worsened during the time the Department took to complete its analysis.

The unexplained delay also creates practical and procedural concerns. Communities, landowners, and counties within the petitioned geography have been required to operate for half a decade under the uncertainty of candidate status. The Department's decision to wait until 2025 to finalize its review despite no statutory requirement to do so suggests a lack of immediacy inconsistent with the heightened protections sought at this stage.

A CESA Listing Will Increase Depredation Conflicts and Create Public-Safety Risks

Depredation and human–lion conflicts are already a leading source of mountain lion mortality and a major concern for rural communities. The Status Review notes that human–wildlife conflict has "profound impacts on the conservation and management of the species" (Status Review, p. 32) and documents 3,637 reported mountain lion incidents between 2010 and 2020. (*Id.* at p. 33.) These include depredations, public-safety concerns, nuisance interactions, and repeated sightings near homes, barns, and schools.

Depredation reports have trended upward for nearly 50 years (Status Review, p. 33) with sheep and goats accounting for 59.4 percent of confirmed depredations, large livestock for 13.1 percent, and pets for 10.4 percent. (*Id.*) These data demonstrate that agricultural operations and the rural families who live on them bear the brunt of conflict pressure.

Meanwhile, the State has significantly narrowed available response tools. In 2020, CDFW expanded its non-lethal-first policy to the entire state, restricting lethal authority even in repeated predation scenarios. (*Id.*) Additionally, depredation permits are limited to one mountain lion per incident regardless of how many lions participate in attacks. (*Id.*)

The Status Review itself recognizes that it is "unlikely that the number of conflicts will decline" going forward. (*Id.* at p. 39.) Yet a CESA listing will impose the strict take prohibitions of Fish and Game Code section 2080, further constraining the State's ability to act swiftly when lions kill livestock, return repeatedly to the same property, or enter residential areas.

The result is a dangerous and foreseeable outcome: more lions entering agricultural and residential areas, more livestock losses, more high-risk encounters near homes and schools, and fewer tools available to address escalating threats.

Conclusion

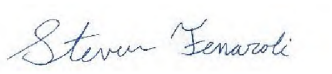
CFBF respectfully urges the Commission to decline to list the Southern California / Central Coast mountain lion DPS under CESA. The Status Review presents highly uncertain population estimates, scientifically unsupported boundary expansions, clear evidence of prey-driven conflict, and a five-year administrative delay fundamentally at odds with any claim of immediate or worsening extinction risk.

Moreover, a CESA listing would increase conflict by removing essential management tools, even as the Department's own data show rising depredations, thousands of reported incidents, and no expectation that conflicts will decline. Without addressing prey availability, habitat fragmentation, and the Department's limited ability to respond to dangerous situations, listing the mountain lion will exacerbate not alleviate risks to rural communities, livestock, and the lions themselves.

If the Commission nevertheless proceeds, any listing must be strictly confined to the originally petitioned boundary.

CFBF appreciates your consideration and remains committed to working collaboratively on wildlife-management strategies that protect public safety, support agricultural communities, and ensure long-term ecological balance.

Respectfully submitted,



Steven Fenaroli
California Farm Bureau

Additionally signed,

Amador County Farm Bureau
Contra Costa County Farm Bureau
El Dorado County Farm Bureau
Kern County Farm Bureau
Lake County Farm Bureau
Merced County Farm Bureau
Monterey County Farm Bureau
Plumas-Sierra County Farm Bureau
Riverside County Farm Bureau
Sacramento County Farm Bureau
San Joaquin Farm Bureau
San Luis Obispo County Farm Bureau
San Mateo County Farm Bureau
Santa Clara County Farm Bureau
Santa Cruz County Farm Bureau
Solano County Farm Bureau
Sonoma County Farm Bureau
Stanislaus County Farm Bureau
Tuolumne County Farm Bureau

CALIFORNIA CATTLEMEN'S ASSOCIATION

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Submitted via email to fgc@fgc.ca.gov

January 29, 2026

Erika Zavaleta, President
California Fish and Game Commission
715 P Street, 16th Floor
Sacramento, CA 95814

Re: Consideration whether listing of a southern California/central coast evolutionarily significant unit of mountain lion (*Puma concolor*) as endangered under the California Endangered Species Act is warranted

President Zavaleta:

The California Cattlemen's Association appreciates the opportunity to provide feedback as the California Fish and Game Commission considers "whether listing the southern California/central coast evolutionarily significant unit of mountain lion (*Puma concolor*) as endangered under the California Endangered Species Act is warranted." CCA is a statewide trade association representing more than 1,700 cattle producers who pride themselves on the stewardship of California's land, water, and wildlife resources. In recent years, ranchers throughout the state – including within the proposed ESU territory of the Central Coast and Southern California – have complained of increasing attacks upon livestock by mountain lions. Ranchers have also raised concerns that the Department of Fish and Wildlife's bureaucratic and onerous policies regarding the issuance of take permits for mountain lions which kill or injure livestock have denied ranchers their legal right to such permits under Proposition 117 (1990).

For the reasons detailed below, CCA urges the Commission to find that CESA listing of mountain lions within the Central Coast and Southern California is not warranted. Should the Commission nevertheless elect to grant mountain lions threatened or endangered status, however, CCA requests that the Commission adopt regulations or findings clarifying that under no circumstances shall the species' CESA status interfere with property owners' legal right to obtain a mountain lion take permit under Proposition 117.

As we wrote in detail in April of 2020, CCA firmly believes that listing of the species as threatened is not warranted.[1] As we asserted then, the petition (and Department's status review) erred in examining threats to the species in too narrow a range, there is little indication that the species' population or viability are threatened, and CESA listing is contrary to Proposition 117. We now renew those objections as laid out in our April 2, 2020 letter to the Commission, attached as Appendix A.

[1] Letter from Michael Miiller, Director of Government Relations, California Association of Winegrape Growers *et al.*, to Eric Sklar, President, California Fish and Game Commission (Apr. 2, 2020).

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PRESIDENT
LOYALTON

BEV BIGGER
TREASURER
VENTURA

BILLY GATLIN
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FEEDER COUNCIL VICECHAIR
CALIPATRIA

The Commission Should Issue Regulations or Findings Harmonizing any CESA Listing with Proposition 117, or Direct the Department to Do So

As outlined in our April 2, 2020 letter, the rigid take prohibitions in CESA are seemingly incompatible with the explicit take authorizations of Proposition 117. In response to these concerns, then-CDFW-Director Chuck Bonham remarked that the Department's legal "obligation would be to reconcile and harmonize" the statutes.[2] In a follow-up letter to the Department (attached as Appendix B), CCA took umbrage with the Director's suggestion that the conflicting statutes could be harmonized but nevertheless asked that the "Department clarify that depredation permits will continue to issue in accordance with Fish & Game Code § 4803 (and related provisions of Proposition 117) despite the species candidacy."[3]

Unfortunately, CCA received no written response to this request. While it appears that the Department has continued to issue limited take permits under its restrictive permitting process for the Central Coast and Southern California throughout candidacy, the Department does not appear to have issued clear guidance outlining its perception of how CESA and Proposition 117 ought to properly be harmonized.

Troublingly, the status review does not detail how the Department harmonizes these statutes or whether – and under what circumstances – the Department will continue to satisfy its obligations under Proposition 117 to issue take permits within the Central Coast and Southern California in the future. The only guidance the status review does provide, that CDFW will authorize take as authorized by "both" CESA and Proposition 117,[4] is troubling because it suggests that Department will continue to allow its interpretation of "take" under CESA to control over the proper interpretation of "take" dictated by Proposition 117, which is problematic for the reasons discussed below.

To address the seeming inconsistency between CESA listing and Proposition 117, in the event the Commission finds that listing is warranted, it ought to adopt additional regulations or explicit findings clarifying that take will continue to be authorized in full accordance with Proposition 117 despite the species' listing status.

Both the Status Review and Department Practice Misinterpret "Take" Within the Meaning of Proposition 117

The Department's status review accurately notes that Proposition 117 "prohibits the take, possession, transport, import, or sale of a mountain lion or mountain lion products with limited

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[2] Charlton Bonham, Director, California Department of Fish and Wildlife, in Video recording: Meeting of April 15-16, 2020, held by the California Fish & Game Commission, at 8:16:02 (Apr. 16, 2020) (*available at* https://videobookcase.org/california/fish-game-commission/2020-04-15-16/).

[3] Letter from Kirk Wilbur, Vice President of Government Affairs, California Cattlemen's Association, to Charlton Bonham, Director, California Fish and Game Commission (Apr. 17, 2020) (*emphasis omitted*).

[4] CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, A STATUS REVIEW OF THE PETITIONED SOUTHERN CALIFORNIA/CENTRAL COAST EVOLUTIONARILY SIGNIFICANT UNIT (ESU) OF MOUNTAIN LION (*PUMA CONCOLOR COUGUAR*) IN CALIFORNIA (Dec. 2025) at 83.

exceptions."[5] However, the status review inaccurately interprets "take" under Proposition 117 to have the same meaning as under Fish & Game Code Section 86: "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."[6] This definition does not, however, reflect an accurate meaning of "take" as that term is used under Proposition 117.

While Section 86 provides a *general* definition for "take" under the Fish & Game Code, section 2 provides that such general definitions shall "govern the construction of this code" only "Unless the provisions or the context otherwise requires."[7] The provisions and context of Proposition 117 do, indeed, require otherwise. For instance, 'pursuit' – an identified form of "take" under Section 86 – is not a "take" under Proposition 117, as that measure makes reference to "the pursuit and taking of [a] depredating mountain lion."[8] The rule against surplusage, a canon of statutory interpretation adopted by the California Supreme Court, requires that "Interpretive constructions which render some words surplusage ... are to be avoided."[9] Were "take" under Proposition 117 to be defined as it is under Section 86, the word "pursuit" under Section 4805 would be rendered mere surplusage (as "taking" would include such "pursuit"), violating the rule against surplusage.

At a minimum, then, "pursuit" of a mountain lion cannot legally be understood to be a "take" within the meaning of Proposition 117. (Indeed, both Sections 4806 and 4807 provide powerful persuasive authority that "take" within the meaning of Proposition 117 ought to properly be understood as "capturing, injuring, or killing" a mountain lion.)

This observation that "take" does not include "pursuit" under proposition 117 is not mere nitpicking, but rather ought to have serious, practical management implications. Within the Central Coast and Southern California, Department policy states that a take permit responsive to an initial depredation by a mountain lion should be "nonlethal" and authorize the requesting party to merely "pursue/haze the mountain lion."[10] 'Hazing' is not a "take" under either Section 86 or Proposition 117, and, as demonstrated above, neither is 'pursuit.' As such, these initial permits authorized by the Department violate the agency's legal obligation to issue take permits under Proposition 117, which states that "the department ***shall*** promptly issue a permit to take [a] depredating mountain lion" if the agency is "satisfied that there has been a depredation by [that] mountain lion."[11]

In addition to explicitly harmonizing CESA and Proposition 117, as requested above, CCA requests that the Commission direct CDFW to revise its policies to require authorization of "take" within the meaning of Proposition 117, rather than under the definition in Section 86 – at a minimum authorizing management beyond pursuit and hazing.

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[5] *Id.* at 3.
[6] Cal. Fish & Game Code § 86.
[7] *Id.* at § 2.
[8] *Id.* at § 4805.
[9] *See, e.g.,* Dyna-Med v. Fair Emp. & Hous. Comm'n, 43 Cal.3d 1379, 1397 (1987)
[10] CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, DEPARTMENTAL BULLETIN 2017-07 (Dec. 15, 2017) at 5.
[11] Cal. Fish & Game Code § 4803 (*emphasis added*).

Conclusion

CCA appreciates the opportunity to address the Commission as it considers the Department's recommendation to list Central Coast and Southern California populations of mountain lions as threatened. CCA respectfully requests that the Commission reject the Department's recommendation, retaining mountain lions' status as a specially protected mammal species rather than elevating the species to threatened (or endangered) status. Should the Commission nevertheless opt to list mountain lions under CESA, we urge the Commission to provide regulations, findings, or guidance requiring that mountain lion take permits continue to issue as required Proposition 117. Regardless of the Commission's CESA determination, we finally request that the Commission clarify that permits authorizing mere pursuit and hazing do not comply with the Department's legal obligation under Proposition 117 to issue take permits and direct the Department to remedy this defect.

Sincerely,



Kirk Wilbur
Vice President of Government Affairs

Appendix A

Submitted via email to fgc@fgc.ca.gov

April 2, 2020

Eric Sklar, President
California Fish and Game Commission
1416 9th Street, Room 1320
Sacramento, CA 95814

Re: Mountain lion CESA petition

President Sklar:

The above-listed organizations appreciate the opportunity to address the Commission as it considers "A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA)" submitted by the Center for Biological Diversity and the Mountain Lion Foundation (Petitioners).

Our organizations represent the farmers and ranchers, labor, businesses, homebuilders, and land developers who would be most significantly impacted by the proposed listing. We are concerned that the petition lacks sufficient scientific basis to meet the burden of proof that the petitioned action may be warranted, and we are troubled that the petition fails to more fully account for mountain lions' full range and population throughout the state. Our organizations also believe the petitioned action would unjustifiably burden construction, development, livestock production, and the workforce dependent on those industries. Finally, our organizations believe that listing mountain lions in the Central Coast and Southern California as threatened under CESA would be illegal, and that **a finding that the petitioned action "may be warranted" would itself be an immediate, significant violation of California law under Proposition 117.** For these reasons, we urge the Commission to find that the petition does not provide sufficient information to indicate that the petitioned action may be warranted.

GENERAL OBJECTIONS

Our organizations are concerned that the petition focuses too narrowly on mountain lions' range limited to the Central Coast and Southern California. While we are aware that caselaw such as *California Forestry Association v. California Fish and Game Commission* permits the Commission to define "range" as a species' California range (and thus a "significant portion…of its range" under Fish and Game Code § 2062 as a subset of the species' California range), it does not require that the Commission focus on extraordinarily-narrow ranges within the State. In *California Cattlemen's Association v. California Fish and Game Commission*, we objected to the Commission disregarding the robust, recovering population of gray wolves nationwide and instead focusing on the limited, emerging population of gray wolves in California. Here, the

focus is even narrower: not only have Petitioners overlooked the robust population of mountain lions nationwide, they have ignored the robust population of mountain lions *statewide*, refining their focus more and more narrowly until they have honed in on a region small enough that its mountain lion population might justify listing. We urge the Commission to look holistically at mountain lions' status statewide, and to reject the petition on the grounds that mountain lions are not threatened based on a statewide analysis.

Even if the Commission adopts Petitioners' narrow range focus, Petitioners have failed to meet their burden of proof that mountain lions are threatened. The Commission has authority to list a species or subspecies as threatened, but determines whether to designate a species as a candidate for listing by evaluating whether the petition provides "*sufficient information* to indicate that the petitioned action may be warranted."[1] However, the Department's evaluation of the petition makes numerous references to the insufficiency of available data regarding mountain lion population and abundance[2] (for instance, the Department's analysis notes that "Studies are needed to more accurately determine regional and statewide mountain lion population size and trend"[3]). Anecdotally, it appears that existing models underestimate the population abundance of mountain lions in the Central Coast and Southern California—virtually any rancher in the region can pull up numerous mountain lion photos captured by trail cameras, for instance, many of those of uncollared lions.

Fortunately, efforts are being undertaken to improve data on mountain lion abundance and population: as the Department's evaluation notes, "Studies by the Department and other cooperators are in process to update the estimate" of statewide and regional populations.[4] We urge the Commission to reject the petition unless and until the updated data and statistical analyses justify such listing. Listing the proposed ESU prior to such updated analyses—or even finding that listing "may be warranted" and thereby imposing regulatory burdens that attend a species' candidacy—would be premature at best and reckless at worst.

CONCERNS SPECIFIC TO THE PUBLIC WORKS, INFRASTRUCTURE, AND HOMEBUILDING SECTORS

The petitioned action would significantly burden—and in some instances, outright prohibit—new construction development. For *all* new development proposals in the Central Coast and Southern California, for instance, the petition proposes "Requir[ing] analysis of region-wide wildlife connectivity" as a prerequisite to the issuance of permits for such development.[5]

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[1] CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, EVALUATION OF A PETITION FROM THE CENTER FOR BIOLOGICAL DIVERSITY AND THE MOUNTAIN LION FOUNDATION TO LIST THE SOUTHERN CALIFORNIA/CENTRAL COAST EVOLUTIONARILY SIGNIFICANT UNIT (ESU) OF MOUNTAIN LIONS AS THREATENED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT (Jan. 31, 2020) at 5 (*emphasis added*) [*hereinafter* CDFW PETITION EVALUATION].
[2] *Id.* at 9-13, 18-19.
[3] *Id.* at 13.
[4] *Id.* at 19.
[5] CENTER FOR BIOLOGICAL DIVERSITY, A PETITION TO LIST THE SOUTHERN CALIFORNIA/CENTRAL COAST EVOLUTIONARILY SIGNIFICANT UNIT (ESU) OF MOUNTAIN LIONS AS THREATENED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT (CESA) 71 (June 25, 2019) [*hereinafter* PETITION].

Additionally, the petition suggests outright "Prohibit[ing] large-scale development in primary travel corridors and habitat linkages."[6]

CESA listing is not warranted because projects–large and small–are already subjected to numerous environmental reviews including the California Environmental Quality Act. And, in various regions of California, large-scale planning efforts already adequately ensure protection of Central Coast and Southern California populations of mountain lions. For instance, CEQA requires analysis of whether a project may "substantially reduce the habitat of a…wildlife species [or] cause a fish or wildlife population to drop below self-sustaining levels"[7] *regardless* of whether that species is designated as threatened or endangered under CESA. Additionally, as the petition itself notes, there are a number of Natural Community Conservation Plans (NCCPs) and Habitat Conservation Plans (HCPS) in place throughout the Central Coast and Southern California which explicitly provide for the protection of mountain lions and the conservation of mountain lions habitat.

CESA listing of mountain lions would result in additional regulatory burdens for public agencies, builders, and developers without meaningfully increasing protections for mountain lions. The result, unfortunately, would be to disincentivize future voluntary efforts akin to existing NCCPs and HCPs that rely on local government and landowner participation and perhaps to disincentive construction and development outright in jurisdictions already struggling to meet the housing needs of their communities.

Californians currently identify homelessness, housing availability, and housing affordability as top policy priorities. Even in the midst of the COVID-19 crisis, those issues remain top-of-mind for California residents, Governor Gavin Newsom, and California legislators. Given the housing crisis in California, the Commission should not be considering regulatory proposals which will merely serve to *increase* obstacles to necessary construction and development and directly impact the jobs associated with those projects. Consequently, the Commission should reject the petition.

CONCERNS SPECIFIC TO THE LIVESTOCK SECTOR

A. CESA LISTING JEOPARDIZES RANCHERS' ABILITY TO PROTECT THEIR LIVESTOCK AND THREATENS THE VIABILITY OF RANCHES

Mountain lions throughout the Central Coast and Southern California routinely prey upon livestock. The impacts of depredation can be severe for an individual rancher, particularly when mountain lions chronically prey upon an individual herd. While ranchers diligently tend to their herds and often implement deterrents to haze mountain lions away from their ranches, depredations nevertheless occur. Fortunately, Fish and Game Code §§ 4801-4809 (codified by 1990's Proposition 117) recognize the importance of ranchers' ability to protect their livestock and include provisions which allow ranchers to take mountain lions that injure or kill livestock. However, under CESA, these important livestock protection provisions would be eliminated.

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[6] *Id.*

[7] 14 CCR § 15065(a)(1).

Mountain lions are the second most prolific killers of cattle in California, killing 34.3 percent of all cattle killed by predators and 18.7 percent of calves killed by predators.[8] By comparison, coyotes—which are far more abundant and receive no special protections under California law—account for only slightly more depredations of cattle at 34.9 percent.[9] Additionally, in 2015 at least 387 sheep and 132 lambs were killed by mountain lions statewide,[10] resulting in losses of approximately $107,201.[11] These totals do not include livestock injured but not killed by mountain lions, nor do they include the costly and burdensome tools used by producers to protect their livestock from depredating mountain lions.

Mountain lion depredations can be devastating for impacted producers. One beef producer in Southern California, for instance, reported losing 22 calves to two mountain lions between 2014 and 2016. Given the small profit margins of most cattle ranches, such losses can jeopardize the continued viability of cattle ranching, which can have cascading impacts on rural economies.

In circumstances in which mountain lions are not caught-in-the-act of depredation, take of mountain lions is typically a last resort for livestock producers. Most producers will not seek a take permit after a single depredation event, but rather seek to dispatch a problem lion only after depredation has become chronic. For instance, the rancher referenced above lost *22* calves before finally making the determination that lethal control was necessary. Even in circumstances in which depredation permits are sought and obtained, only a minority of those permits result in take of a mountain lion.[12]

Finally, the take of a mountain lion often comes down to an animal welfare question for ranchers. In instances of lethal depredation, surviving members of the herd may exhibit signs of severe trauma, and animals injured-but-not-killed by mountain lions suffer extensively from their injuries. Particularly where depredations are chronic, take of mountain lions is necessary to ensure the health and well-being of livestock throughout California.

B. RECENT DEPARTMENT ACTIONS SEVERELY DIMINISH PETITIONERS' ARGUMENT THAT EXISTING REGULATORY MECHANISMS ARE INADEQUATE

In arguing the "Inadequacy of Existing Regulatory Mechanisms," the Petition details Departmental Bulletin 2017-07, which established a 'three-strikes' policy for mountain lions in the Santa Ana and Santa Monica mountain ranges. Under the policy, reporting parties may only seek non-lethal take permits after the first two instances in which a mountain lion preys upon livestock, only obtaining a lethal take permit upon a third depredation.

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[8] UNITED STATES DEPARTMENT OF AGRICULTURE NATIONAL AGRICULTURAL STATISTICAL SERVICE, DEATH LOSS IN U.S. CATTLE AND CALVES DUE TO PREDATOR AND NONPREDATOR CAUSES, 2015 at 57 tbl.D.1.c. and 65 tbl.D.2.d. (2017).

[9] *Id.* at 55 tbl.D.1.c.

[10] Unfortunately, NASS's statistics do not break out data to the county level, only to the state level.

[11] UNITED STATES DEPARTMENT OF AGRICULTURE NATIONAL AGRICULTURAL STATISTICAL SERVICE, SHEEP AND LAMB PREDATOR AND NONPREDATOR DEATH LOSS IN THE UNITED STATES, 2015, at 12tbl.A.2.a.; 14 tbl.A.2.b; and 40 tbl.C.9. (2015).

[12] CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, ANNUAL MOUNTAIN LION DEPREDATION SUMMARY TABLE (2011-2019) (*available at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=177513&inline).

According to Petitioners, this regulatory mechanism is inadequate because it "does not apply to other vulnerable populations, like the [San Gabriel/San Bernardino Mountains], [Eastern Peninsular Range], [Central Coast-North], and [Central Coast-Central] mountain lions."[13]

As of February 13, 2020, however, the 'three-strikes' policy is applicable throughout the Central Coast and Southern California boundaries identified within the Petition, including all "vulnerable populations" identified above.[14] Application of the 'three-strikes' policy throughout the Central Coast and Southern California is a regulatory mechanism which *significantly* curtails the availability of lethal depredation permits for mountain lions, greatly diminishing the merit of Petitioners' argument that existing regulatory mechanisms are insufficient to protect the species.[15]

C. CESA LISTING OF MOUNTAIN LIONS IS ILLEGAL UNDER PROPOSITION 117

1. Petitioners fail to establish that CESA protection is consistent with Proposition 117

Commission action listing mountain lions as threatened under CESA would be inconsistent with Proposition 117. While the Petition summarily concludes that "CESA protections for Southern California and Central Coast mountain lions are consistent with and supplemental to those established by Proposition 117,"[16] it provides little analysis in support of this conclusion. The scant two paragraphs of examination merely overview the fact that both CESA and Proposition 117 have "take prohibitions" (first paragraph) and that "Both CESA and Proposition 117's take prohibitions are subject to certain exceptions" (paragraph 2).[17]

Petitioners' analysis in support of their conclusion that CESA protection is consistent with Proposition 117 is misleading at best. Petitioners allege that exceptions to take prohibitions in CESA and Proposition 117 "are sufficiently similar that *in most cases* take of mountain lions properly authorized by Proposition 117 *could be* consistent with CESA's exceptions for wildlife management activities or law enforcement purposes."[18] While this analysis accurately reflects § 4801 of the Fish and Game Code enacted by Proposition 117, it ignores §§ 4802-4807, which pertain to take authorization for mountain lions depredating livestock and which comprise the bulk of the Proposition's operative provisions regarding mountain lion management.

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[13] PETITION, *supra* note 5, at 55.

[14] "Amendment to DB2017-07 Boundaries and Regional Guidance Team Requirements," Memorandum from Charlton H. Bonham, Director, California Department of Fish and Wildlife, to Deputy Directors, Regional Managers, Branch Chiefs, and Law Enforcement Division Assistant Chiefs, California Department of Fish and Wildlife (Feb. 13, 2020) (*available online at* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=177324&inline).

[15] It should be noted that we firmly believe the 'three strikes' policy is illegal under Proposition 117. In the event that the Commission is not persuaded by our analysis of Proposition 117, however, the 'three strikes' policy provides an independent basis for rejecting the Petition.

[16] PETITION at 69.

[17] *Id.*

[18] *Id.* (*emphasis added*).

Disappointingly, the Department's evaluation of the Petition, which concludes that "there is sufficient scientific information available at this time to indicate the petitioned action may be warranted,"[19] fails to meaningfully examine Petitioners' claims relative to Proposition 117, instead merely parroting the warrantless assertions advanced by Petitioners.[20]

2. *CESA protection for mountain lions would violate numerous provisions of Proposition 117*

Proposition 117 enacted Chapter 10 (then comprising §§ 4800-4809)[21] to Part 3 of Division 4 of the California Fish and Game Code. Section 4800(d) of the Fish and Game Code specifies that "Section 219 does not apply to this chapter"[22] and that "Neither the commission nor the department shall adopt any regulation that conflicts with or supersedes a provision of this chapter."[23] CESA listing for Southern California and Central Coast mountain lions would constitute the adoption of a regulation which "conflicts with or supersedes" various provisions of Chapter 10; as such, listing Southern California and Central Coast mountain lions as threatened under CESA would be in clear violation of Proposition 117.

Proposition 117 dictates that "If satisfied that there has been depredation by a mountain lion as reported, the department shall promptly issue a permit to take the depredating mountain lion."[24] The only precondition to issuance of a take permit for mountain lions, then, is confirmation by the department that "livestock or other property is being or has been injured, damaged, or destroyed by a mountain lion."[25] CESA, by contrast, imposes numerous preconditions on the issuance of a take permit, specifically that "The take is incidental to an otherwise lawful activity,"[26] that the impacts of the take be minimized and fully mitigated,[27] and that the applicant

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[19]Memorandum from Charlton Bonham, Director, California Department of Fish and Wildlife, to Melissa Miller-Henson, Executive Director, California Fish and Game Commission (Jan. 31, 2020).

[20] CDFW PETITION EVALUATION, *supra* note 1, at 33 (stating that "*The Petition asserts* that CESA listing would build upon protections established by Proposition 117" (*emphasis added*) and "*the Petition states* that Proposition 117 is to be 'liberally construed to further its purposes'" (*emphasis added*)).

[21] An additional code section within Chapter 10, Section 4810, was added with the passage of AB 1784 in 2012.

[22] While statutes typically control over conflicting regulations, Fish and Game Code § 219 provides for exceptions to this general rule in circumstances where either (a) the superseding regulation is "necessary for the protection of fish, wildlife, and other natural resources under the jurisdiction of the commission," or (b) "The commission determines that an emergency exists…[which] is an immediate threat to the population or habitat of any species." By dictating that § 219 does not apply to Chapter 10, Proposition 117 ensured that its provisions would not be altered as a result of a commission decision that protection of wildlife resources was "necessary" or a commission determination that an "emergency exists" relative to a species' population or habitat. The petitioned action seeks just such a commission determination, in clear contravention of the express intent of § 4800(d).

[23] CAL. FISH & GAME CODE § 4800(d).

[24] *Id.* at § 4803.

[25] *Id.* at § 4802.

[26] *Id.* at § 2081(b)(1). While the term "incidental" is not defined in California statute or regulations, analogous federal regulations define "incidental taking" as taking that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." 50 C.F.R. § 17.3. The California Department of Fish and Wildlife's interpretation of that term appears to be consistent with the federal definition. *See, e.g.*, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, CHOOSING THE RIGHT PERMIT (2018), https://www.wildlife.ca.gov/Conservation/CESA/Permits ("Take will be incidental to, and not the purpose of, carrying out an otherwise lawful activity."); CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, INCIDENTAL TAKE PERMITS (2018), https://www.wildlife.ca.gov/Conservation/CESA/Incidental-Take-Permits ("Incidental Take Permits allow a

ensure all funding for such mitigation efforts.[28] Under Proposition 117, the take of a depredating mountain lion is not merely incidental to a lawful activity, but rather is precisely the lawful activity which is the express purpose of obtaining the permit. By limiting the purposes for which an individual may seek a take permit, CESA listing of mountain lions would constitute a "commission...regulation that conflicts with or supersedes a provision of" Chapter 10, and would violate Proposition 117. Additionally, CESA protection for mountain lions would conflict with Proposition 117 by imposing numerous additional conditions upon permitted take beyond those contemplated by Proposition 117.

By limiting take of mountain lions to circumstances in which such take is "*incidental* to an otherwise lawful activity," extending CESA protections to mountain lions would also conflict with § 4804 of Proposition 117. Implicit in the concept of *incidental* take is that no *particular* member of a species is *targeted* for take, but rather that unidentified members of the species may be taken by the "otherwise lawful activity." Proposition 117, however, envisions the *targeted take* of *individual* mountain lions. For instance, § 4804 seeks to "ensure that only the depredating mountain lion will be taken," and implementing regulations refer to "the particular mountain lion believed to be responsible for damage to livestock or domestic animals."[29] By limiting take to circumstances where it is merely "incidental to an otherwise lawful activity," then, extending CESA protections to mountain lions would not only conflict with the take authorization provisions of § 4803, but also the targeted pursuit provisions of § 4804. Again, such conflicts between CESA and Proposition 117 render Commission action to list mountain lions as threatened a violation of § 4800(d) enacted by Proposition 117.

Proposition 117 authorizes "the department or the animal damage control officer [to] orally authorize the pursuit and taking of [a] depredating mountain lion" in order to effectuate "immediate authorization."[30] Neither CESA nor its implementing regulations have an analogous provision allowing for oral authorization to take a threatened species.[31] Rather, CESA and its implementing regulations dictate strict requirements for a permit application not found in Proposition 117 or its implementing regulations.[32] Commission action listing mountain lions as endangered under CESA would impose permit-application processes and conditions which would negate the oral authorization provisions of Proposition 117, conflicting with the provisions of Chapter 10 and thereby violating Proposition 117.

Proposition 117 authorizes *immediate* take of "Any mountain lion that is encountered while in the act of pursuing, inflicting injury to, or killing livestock, or domestic animals."[33] CESA, by

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permittee to take a CESA-listed species if such taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity.").

[27] CAL. FISH & GAME CODE § 2081(b)(2).

[28] *Id.* at § 2081(b)(3).

[29] 14 CCR § 402(a) (*emphasis added*).

[30] CAL. FISH & GAME CODE § 4805.

[31] *See generally id.* at §§ 2080-2085; 14 CCR §§ 783.0-783.8.

[32] *Compare* 14 CCR § 783.2(a)(1)-(11) (detailing information required in an application for an incidental take permit under CESA), *with* 14 CCR § 402 (authorizing the department to "orally authorize…take of a mountain lion" "Whenever immediate action will assist in the pursuit of the particular mountain lion believed to be responsible for damage to livestock or domestic animals").

[33] CAL. FISH & GAME CODE § 4807(a).

contrast, prohibits any take of a listed species unless done subsequent to issuance of a take permit or pursuant to a memorandum of understanding.[34] Because CESA has no provision for immediate take of a listed species "encountered while in the act of" depredation, listing mountain lions as threatened under CESA would *entirely negate* the effect of § 4807(a). Negating a provision of the law is a clear "conflict" with Proposition 117 in violation of Fish and Game Code § 4800(d).

3. Merely accepting the petition would violate Proposition 117

The Commission must find that the petition does not provide sufficient information to indicate that the petitioned action may be warranted lest the Commission violate § 4800(d) by establishing the mountain lion as a "candidate species."

Accepting the petition and finding "that the petition provides sufficient information to indicate that the petitioned action may be warranted" would immediately establish mountain lions as a "candidate species" for listing.[35] Candidate species are given the full range of protections afforded to threatened or endangered species under CESA.[36] Thus, merely accepting the petition will result in the numerous violations of § 4800(d) (enacted by Proposition 117) detailed above. Not only may the Commission not ultimately list Southern California and Central Coast mountain lions as threatened, then, but the Commission is legally bound to *reject* the petition.

4. Proposition 117's proponents and California voters did not contemplate CESA protection for mountain lions

The California Endangered Species Act was adopted in 1984. Proposition 117 was put before the voters of California in 1990. The proponents of Proposition 117 were certainly aware of CESA when they drafted Proposition 117, and had they intended to extend to mountain lions the protections of CESA, they could have included a provision within Proposition 117 doing so. But the proponents elected *not* to list mountain lions as threatened under CESA when they drafted Proposition 117, and voters did not contemplate CESA protections for mountain lions when they approved Proposition 117 as written in 1990.

Proposition 117's proponents and California's voters elected *not* to list mountain lions as threatened when they approved Proposition 117 in 1990, and neither Petitioners nor the Commission may seek to overturn the will of the voters by approving the petitioned action.

5. Liberal construction of Proposition 117 does not justify CESA protection

Petitioners allege that "To the extent there is any tension between the provisions in Proposition 117 and CESA, Proposition 117 is to be 'liberally construed to further its purposes.' (Prop. 117 § 9.) Because Proposition 117 and CESA both have similar purposes, Proposition 117 should be

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[34] *Id.* at § 2081.
[35] *Id.* at § 2074.2(e)(2).
[36] 14 CCR § 783.1(b).

construed to be consistent with CESA."[37] Petitioner's assertion that Section 9 of Proposition 117 justifies the petitioned action is simply without merit.

While liberal construction is intended to further the 'spirit' or purpose of a law, no statute can be so liberally-construed as to negate its explicit, unambiguous provisions.[38] As detailed above, granting CESA protection to mountain lions would negate numerous express provisions of Proposition 117. While liberal construction may be justified to further the purposes of Proposition 117 where provisions of the Proposition are ambiguous, interpreting the Proposition so liberally as to negate, at a minimum, §§ 4802, 4803, 4805, and 4807(a) *in their entirety* would be absurd.

Where liberal construction of a statute is exercised, it is employed "'so as to suppress the mischief at which [the statute] is directed.'"[39] In determining the mischief at which a statute is directed, "The printed ballot arguments may be used to determine the object and intent" of a Proposition.[40] The "Argument in Favor of Proposition 117" printed in the 1990 Primary Voter Guide makes clear the 'object and intent' of the special-status designation for mountain lions:

> In order to protect this last magnificent predator, Proposition 117 OUTLAWS THE TROPHY HUNTING OF MOUNTAIN LIONS.
> Mountain lions have not been trophy hunted since GOVERNOR RONALD REGAN signed a bill protecting this elusive animal. We need Proposition 117 to continue that protection.
> Mountain lions hunting is cruel and unnecessary. A pack of hounds is set on the trail of the big cat until the exhausted lion seeks refuge in a tree. The trophy-hunter (who sometimes is brought in from hundreds of miles away after paying a huge fee to the houndsman) then walks over and blasts the lion off the limb at point-blank range. When nursing mothers are shot, the kittens starve. *THIS IS NOT SPORT; THIS IS SLAUGHTER.*[41]

The intent of Proposition 117 was to extend a prohibition on *trophy hunting* of mountain lions, *not* to outlaw *any and all take* of mountain lions. While the Commission should liberally construe Proposition 117, where ambiguous, to prohibit *trophy hunting* of mountain lions, then, it would be a misapplication of principles of statutory interpretation to liberally construe Proposition 117 to prohibit *any* take of mountain lions, as it is clear that this was not the intent of Proposition 117 upon its proposal in 1990.

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[37] PETITION at 70.

[38] In examining other remedial Fish and Game Code provisions afforded liberal construction, courts have noted that such liberal construction is only to be resorted to "'when [the statute's] meaning is doubtful, so as to suppress the mischief at which it is directed.'" In re Makings, 200 Cal. 474, 478-479 (Cal. 1927) (*quoting* 23 CAL.JUR. 801); *see also* Young v. Dep't of Fish & Game, 124 Cal.App.3d 257, 270-271 (Cal. Ct. App. 1981) (*quoting In re Makings*); Siskiyou Co. Farm Bureau v. Dep't of Fish & Wildlife, 237 Cal.App.4th 411, 427 n.6 (Cal. Ct. App. 2015) (noting that liberal construction is "relevant only in cases of demonstrated ambiguity").

[39] In re Makings, 200 Cal. 474, 478-479 (Cal. 1927) (*quoting* 23 CAL.JUR. 801).

[40] Young v. Dep't of Fish & Game, 124 Cal.App.3d 257, 273 (Cal. Ct. App. 1981).

[41] John Van de Kamp, Attorney General; Ed Davis, State Senator; and Richard Katz, State Assemblymember, "Argument in Favor of Proposition 117" *in* CALIFORNIA SECRETARY OF STATE, CALIFORNIA BALLOT PAMPHLET: PRIMARY ELECTION 42 (June 5, 1990) (*emphasis in original*).

Additionally, in arguing that Proposition 117 should be "liberally construed to further its purposes," Petitioners ignore that protection of livestock and domestic animals *is* a purpose of Proposition 117. That purpose is clearly enshrined in §§ 4802 and 4807(a), both of which explicitly provide for take of a specific depredating animal in order to safeguard livestock. Moreover, that purpose is evidenced by the "Argument in Favor of Proposition 117" published in the 1990 Primary Voter Guide, which sought to sway voters to support the Proposition by, among other things, expressing an intent to "PROTECT[] THE PUBLIC SAFETY by permitting the taking of any lion which threatens livestock or people."[42]

While protection of mountain lions was indeed *a* purpose of Proposition 117, it was not the only purpose of the Proposition, and it was more specifically intended to protect mountain lions *from trophy hunting*. Petitioners may not rely on the 'liberal construction' clause in Section 9 to negate the express terms and additional purposes of Proposition 117.

6. *Petitioners' arguments that CESA listing can be harmonized with Proposition 117 are fundamentally flawed*

In response to our assertion that CESA listing is inconsistence with Proposition 117, Petitioners and other supporters of the petition have sought to harmonize the two statutory schemes in written and oral testimony presented at the Commission's July 2019, December 2019, and February 2020 hearings. Unfortunately, a careful analysis of these claims demonstrates that CESA prohibition of take cannot be harmonized with Proposition 117's explicit take provisions.

a. *Fish and Game Code § 2081(a)*

Petitioners and other supporters of the petition have contended that there is no conflict between Proposition 117 and CESA listing[43] because Fish and Game Code § 2081(a) provides that "the department may authorize individuals…to import, export, take, or possess any endangered species, threatened species, or candidate species for scientific, educational, or management purposes."[44]

We first note that there is apparent conflict in the CESA take provision and the Proposition 117 take provisions because the former provides for discretionary permit issuance ("may authorize") while the latter provides for mandatory permit issuance ("shall promptly issue a permit").

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[42] *Id.*

[43] *See, e.g.,* PETITION at 69 ("Under CESA, CDFW may authorize that a person, agency, or institution take a listed species 'for scientific, educational, or management purposes.' (Cal. Fish & Game Code § 2081(a).) … These exceptions are sufficiently similar that in most cases take of mountain lions properly authorized by Proposition 117 could be consistent with CESA's exceptions for wildlife management activities or law enforcement purposes."); Letter from Sabrina Ashjian, California State Director, The Humane Society of the United States, to Eric Sklar, President, California Fish and Game Commission and Esther Burkett, California Department of Fish and Wildlife (Jan. 16, 2020) [*hereinafter* "HSUS Letter"] ("CESA expressly authorizes the Department to issue take permits allowing non-governmental 'individuals' to take listed species 'for…management purposes.' Cal. Fish and Game Code § 2081(a). The depredation-related Proposition 117 take allowances that CCA and CFBF point to as the source of irresolvable conflict would, in fact, likely qualify as the issuance of permits 'for…management purposes' and thus would also fall into an exception under CESA's take prohibition.").

[44] CAL. FISH & GAME CODE § 2081(a).

More importantly, however, this argument fails to acknowledge that § 2081(a) does not operate independently, but rather has been interpreted by California courts as being further constrained by § 2081(b),[45] which requires that "The take is incidental to an otherwise lawful activity"[46] and that "The impacts of the authorized take shall be minimized and fully mitigated."[47] Despite the provisions of § 2081(a), then, listing the proposed ESU as threatened would, at a minimum, violate § 4804's provision for *targeted* take of depredating mountain lions, rendering the listing decision illegal under § 4800(d).

b. "Nonlethal forms of take" and Fish and Game Code § 4801.5

Petitioners have stated that "nonlethal forms of take such as hazing, if done properly and judiciously, could very well be consistent with the conservation mandate of CESA. Consequently, we see no conflict whatsoever between the two statutes."[48] Firstly, we note that while hazing *is* recognized as a "nonlethal procedure" for *removing* or taking a mountain lion, **hazing is not a 'take.'**[49] It is noteworthy that Petitioners have not identified a *take* provided for by Proposition 117 that would be consistent with CESA protections.

While Petitioners have failed to identify any take which would be permitted under CESA, they appear to acknowledge that *lethal* take, at a minimum, *would* be prohibited under a CESA listing.[50] Petitioners argue, however, that CESA's prohibition of lethal take is not in conflict with Proposition 117 because "Prop. 117 does not require lethal permits."[51] In support of this contention, Petitioners allege that "Section 4801.5, an amendment to the provisions of Prop. 117 that passed with over 80% support in the legislature in 2014,[52] expressly states that 'nonlethal procedures shall be used when removing or taking any mountain lion that has not been designated an imminent threat to public health or safety.'"[53]

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[45] *See* Watershed Enforcers v. Department of Water Resources, 185 Cal.App.4th 969, 975 (Cal. Ct. App. 2010) ("But a section 2081, subdivision (a) taking is subject to stringent conditions, as set forth in subdivision (b)(1) and (2)."). The Humane Society of the United State's contention that "CCA and CFBF's focus on the more burdensome CESA 'incidental take' permit process under Section 2081(b) is a red herring" because "the take permit provision that would actually operate to harmonize CESA with Proposition 117 is the 'management purposes' take permit under Section 2081(a)" (HSUS Letter, *supra* note 43) is explicitly contradicted by such judicial interpretations of § 2081.

[46] CAL. FISH & GAME CODE § 2081(b)(1).

[47] *Id.* at (b)(2).

[48] Brendan Cummings, Center for Biological Diversity, in Video recording: Meeting of February 21, 2020, held by the California Fish & Game Commission, at 1:10:48 (Feb. 21, 2020) (*available at* http://videobookcase.org/california/fish-game-commission/february-21-2020/) [*hereinafter* CUMMINGS].

[49] California Fish & Game Code § 4801.5(a) provides that "nonlethal procedures shall be used when *removing or taking* any mountain lion that has not been designated as an imminent threat to public health or safety" (*emphasis added*). "Hazing" is identified as a form of "nonlethal procedure[]" under § 4801.5(c). Hazing is *not* identified as a "take," however, either under Fish and Game Code § 86 ("'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.") or under Proposition 117. Presumably, then, hazing is a form of nonlethal procedure directed at "removing" a mountain lion, but hazing *does not* constitute take.

[50] *See, e.g.,* CUMMINGS, *supra* note 48 (acknowledging that "it's difficult to see how lethal depredations permits would be consistent with CESA's conservation mandate").

[51] *Id.*

[52] SB 132 (Hill) was chaptered in 2013 and took effect in 2014.

[53] CUMMINGS, *supra* note 48.

In quoting § 4801.5, however, Petitioners have omitted the introductory clause of the section: "*Unless authorized in this chapter*."[54] Under certain circumstances, lethal take is authorized within Proposition 117, providing an exception to § 4801.5's directive that nonlethal procedures shall be used. Firstly, § 4805 authorizes "killing" as among the range of options available in circumstances when livestock have been "injured, damaged, or destroyed." Secondly, § 4809 states that "Mountain lions authorized to be taken pursuant to this chapter shall be taken by the most effective means available to take the mountain lion," and the only limitation placed on those 'most effective means' is that "no mountain lion shall be taken by means of poison, leg-hold or metal jawed traps, and snares." Section 4809 implicitly permits the killing of mountain lions, then, where killing is the "most effective means available to take the mountain lion."

Had the Legislature intended to prohibit lethal take in all instances in which a mountain lion is not "designated an imminent threat to public health or safety," it could have omitted the phrase "Unless authorized in this chapter," and/or explicitly clarified the prohibition via amendments to §§ 4804 and 4809. It did not do so. Additionally, that the Department has continued to issue lethal depredation permits in the six years since § 4801.5 took effect is evidence that the Department understands Proposition 117—inclusive of § 4801.5—to permit lethal take in certain circumstances outside those in which mountain lions are deemed an imminent threat to public health or safety.

Even if lethal take is not *required* under Proposition 117, as Petitioners contend, lethal take is *allowed* under the Proposition. CESA protection would *disallow* lethal take, however, thereby creating a conflict with Proposition 117 in direct violation of § 4800(d).

7. Petitioners' remedy is in the Legislature, not the Commission

Proposition 117 dictated in explicit terms the circumstances under which it could be amended: "this act shall be amended only by a statute approved by a vote of four fifths of the members of both houses of the Legislature." In explicitly providing that Fish and Game Code § 219 did not apply to Chapter 10 of Part 3 of Division 4 of the Fish and Game Code, Proposition 117 made it clear that the Commission is not authorized to alter the legal status or the legal protections afforded to mountain lions. Petitioners cannot make an end-run around Proposition 117 by seeking threatened status under CESA via the Commission; Petitioners must go through the legislature to obtain the ends sought by the petition.

CONCLUSION

Our associations appreciate the opportunity to address the Commission on this important matter. We believe that the wide array of policy considerations detailed above warrant the Commission's denial of the petition. Most importantly, perhaps, we believe that designating mountain lions in the Central Coast and Southern California as a 'candidate species' would violate Proposition 117. Consequently, **the Commission *must* find "that the petition does not provide sufficient information to indicate that the petitioned action may be warranted"** pursuant to Fish and Game Code § 2074.2(e)(1) lest it run afoul of the law.

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[54] CAL. FISH & GAME CODE § 4801.5(a) (*emphasis added*).

Sincerely,



Michael Miiller
Director of Government Relations
California Association of Winegrape Growers



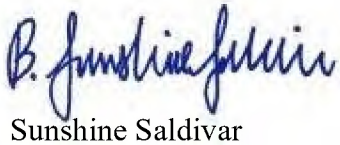
Nick Cammarota
Senior Vice President and General Counsel
California Building Industry Association



Kirk Wilbur
Vice President of Government Affairs
California Cattlemen's Association



Valerie Nera
Policy Advocate
California Chamber of Commerce



Sunshine Saldivar
Associate Counsel
California Farm Bureau Federation

Appendix B

CALIFORNIA CATTLEMEN'S ASSOCIATION

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SERVING THE CATTLE
COMMUNITY SINCE 1917

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Submitted via email to director@wildlife.ca.gov

April 17, 2020

Charlton Bonham, Director
California Department of Fish and Wildlife
1416 9th Street, 12th Floor
Sacramento, CA 95814

Re: Harmonizing Mountain Lion Management Under CESA and Proposition 117

Director Bonham:

I appreciate your comments at yesterday's Fish and Game Commission meeting that you do not see an inherent conflict between CESA and Proposition 117, and that your door is open to stakeholders to "make it work" now that mountain lions in the Central Coast and Southern California are a candidate species for CESA listing. I would welcome the opportunity to 'meet' with you (via phone, given our new social-distancing reality) in the coming days or weeks to discuss our concerns about mountain lion candidacy and how the Department can address those concerns. My phone number is [**redacted**], and I will gladly take your call whenever you are available.

In the coming weeks, expect a letter from me laying out our concerns about the separate—but certainly related—"three-strikes policy." For now, however, I would like to address some of your statements at yesterday's Commission hearing.

First, you mentioned at the beginning of the agenda item that the Department has a "legal obligation to harmonize conflicting laws." You further argued that there is no "automatic conflict" between CESA and Proposition 117, and that the Department's "obligation would be to reconcile and harmonize" those statutory schemes.

I write you today to request clarification regarding that harmonization. **We ask that the Department clarify that depredation permits will continue to issue in accordance with Fish and Game Code § 4803 (and related provisions of Proposition 117) despite the species' candidacy**. Section 4803 states that "If satisfied that there has been depredation by a mountain lion as reported, the department shall promptly issue a permit to take the depredating mountain lion." At least two factors justify issuance of take permits despite CESA listing. First, § 4800(d) states that "Neither the commission nor the department shall adopt any regulation that conflicts with or supersedes a provision of" Proposition 117, so the Commission's decision to extend candidacy to mountain lions may not preclude take permits issued in accordance with Proposition 117. Secondly, as you are well-aware, a latter-in-time statute typically controls over an earlier conflicting statute; to the extent that CESA (codified in 1984) and Proposition 117 (codified in 1990) conflict, then, the provisions of Proposition 117 should control.

MARK LACEY
PRESIDENT
INDEPENDENCE

ROB VON DER LIETH
TREASURER
COPPEROPOLIS

BILLY GATLIN
EXECUTIVE VICE PRESIDENT
SACRAMENTO

JOHN HAMMON
SECOND VICE PRESIDENT
EXETER

STEVE ARNOLD
SECOND VICE PRESIDENT
SANTA MARGARITA

TONY TOSO
FIRST VICE PRESIDENT
HORNITOS

TREVOR FREITAS
FEEDER COUNCIL CHAIR
TIPTON

GREG KUCK
SECOND VICE PRESIDENT
MONTAGUE

JESSIE LARIOS
FEEDER COUNCIL VICECHAIR
BRAWLEY

It is worth noting that the above-requested clarification would also necessitate a revision of the Department's "three-strikes policy" (which, again, I will address in more detail in a later letter). While you and I may disagree over whether Proposition 117 requires the *availability* of lethal take permits, it is clear that § 4803 requires the issuance of a permit for *some form* of "take." It is also clear that "hazing" is not a "take" under either § 86 or Proposition 117, and that—at a minimum—permits issued pursuant to the "first strike" of the "three-strikes" policy thus violate § 4803's mandate that "If satisfied that there has been depredation by a mountain lion as reported, the department shall promptly issue a permit to take the depredating mountain lion." **In addition to clarifying that depredation permits will continue to issue, then, we ask that the Department revise its policy to omit non-take permits issued in response to livestock depredations.**

Second, just prior to the Commissioners' vote on the agenda item, you argued that you see a "logical fallacy" in our concerns about the conflict between CESA and Proposition 117. After quoting § 4801.5, you argued that our concerns "assume[] a conflict that doesn't exist" because "nowhere else [in Proposition 117] does it say whether a permit will be for lethal or nonlethal actions."

With due respect, that argument misses the point, and I am concerned that it may have misled the Commissioners just before they took their vote. The question is not over *lethal vs. nonlethal take*, but rather Proposition 117's *required issuance of take permits* vs. CESA *prohibition upon* [non-incidental] *take*.

Fish and Game Code § 2080 states that "No person…shall…take…a threatened species." Note that it *does not* say that "No person shall *lethally* take a threatened species." The distinction over lethal and nonlethal take is irrelevant to the question of whether there is a conflict between Proposition 117 and CESA.

There *is* a real conflict between the two statutory schemes, and it is not merely "assumed," but rather explained in painstaking detail in our letters to the Commission. Sections 2080 (of CESA) and 4803 (of Proposition 117) are particularly illustrative of this clear conflict: Section 4803 states that "If satisfied that there has been depredation by a mountain lion as reported, the department shall promptly issue ***a permit to take*** the depredating mountain lion" (*emphasis added*) while § 2080 states that "No person…shall…***take***…a threatened species" (*emphasis added*). Note that neither statute makes any distinction between *lethal* and *nonlethal* take—that distinction is irrelevant to whether a statutory conflict exists. Rather, Proposition 117 *explicitly* ***requires*** issuance of a take permit, while CESA *explicitly* ***prohibits*** take. That is not an "assumed" conflict, it is an explicit conflict. And where an explicit conflict exists, § 4800(d) controls.

Finally, during yesterday's hearing you referenced Tricolored blackbird as a circumstance in which the Department was able to harmonize CESA with the concerns of the ranching community. While the Tricolored blackbird Voluntary Local Program (VLP) is indeed a laudable example of the Commission and Department working to address ranchers' concerns with regard to a CESA-listed species, it is not relevant to the current discussion. The VLP only covers

incidental take, which is permissible under CESA. Proposition 117 is not concerned with incidental take, but rather with targeted take of problem lions. As we noted in our April 2 letter to the Commission,

> By limiting take of mountain lions to circumstances in which such take is "incidental to an otherwise lawful activity," extending CESA protections to mountain lions would also conflict with § 4804 of Proposition 117. Implicit in the concept of incidental take is that no particular member of a species is targeted for take, but rather that unidentified members of the species may be taken by the "otherwise lawful activity." Proposition 117, however, envisions the targeted take of individual mountain lions. For instance, § 4804 seeks to "ensure that only the depredating mountain lion will be taken," and implementing regulations refer to "the particular mountain lion believed to be responsible for damage to livestock or domestic animals." By limiting take to circumstances where it is merely "incidental to an otherwise lawful activity," then, extending CESA protections to mountain lions would not only conflict with the take authorization provisions of § 4803, but also the targeted pursuit provisions of § 4804. Again, such conflicts between CESA and Proposition 117 render Commission action to list mountain lions as threatened a violation of § 4800(d) enacted by Proposition 117.

Unfortunately, the Tricolored blackbird example is not instructive here, as take of mountain lions under Proposition 117 will never be "incidental" as allowed under CESA and the Tricolored blackbird VLP.

Again, I appreciate your commitment to harmonizing CESA with Proposition 117. I look forward to discussing this matter with you as soon as possible, as yesterday's decision by the Commission (to say nothing of the three-strikes policy, including its application *outside* of the ESU boundary) has created a great deal of uncertainty for ranchers seeking to protect their livestock from mountain lions, particularly lions which are chronic depredators of livestock.

Sincerely,



Kirk Wilbur
Vice President of Government Affairs

CC: Melissa Miller-Henson, Executive Director, FGC, fgc@fgc.ca.gov
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Wendy Bogdan, General Counsel, CDFW Office of the General Counsel, wendy.bogdan@wildlife.ca.gov
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Kari Lewis, Chief, CDFW Wildlife Branch, kari.lewis@wildlife.ca.gov
Ari Cornman, Wildlife Advisor, FGC, ari.cornman@fgc.ca.gov

TEJON RANCH
COMPANY

January 29, 2026

Erika Zavaleta
California Fish and Game Commission
715 P Street
Sacramento, CA 95814

RE: PROPOSED LISTING OF MOUNTAIN LION (ITEM 17)

Dear President Zavaleta and Commissioners:

Executive Summary

Tejon Ranch Company offers written comment for the Commission's February 11–12, 2026 meeting regarding the petition to list mountain lion (*Puma concolor*) as a threatened or endangered species under the California Endangered Species Act ("CESA"). These comments supplement Tejon Ranch's August 27, 2020, submission made to the Department of Fish of Wildlife ("CDFW") during the preparation of the Status Review.

Tejon Ranch supports science-based wildlife conservation and recognizes that certain mountain lion populations in California face localized pressures associated with habitat fragmentation, transportation infrastructure, and human-wildlife conflict. In contrast to the petition for listing, CDFW's Status Review and listing recommendation place disproportionate emphasis on "development" as a primary driver of risk. Tejon Ranch requests that the Commission ensure that these inaccuracies in the Status Review are corrected as part of any action on the petition:

- CDFW's Status Review and listing decision includes lands that are not habitat based upon CDFW's own habitat mapping included in the Status Review, and fails to consider genetic and distribution information provided in our August 27, 2020, submission directly linking the mountain lions using Tejon Ranch lands to the healthy and genetically diverse Western Sierra Nevada population, although that information is more updated than the information relied upon in the Status Review.
- CDFW's Status Review and recommendation fail to adequately account for the scale and effectiveness of existing conservation measures already in place to protect mountain lion and other species, particularly those implemented at a landscape level by large private landowners, such as Tejon Ranch.
- Tejon Ranch has a long history of working collaboratively with state and federal agencies and leading conservation organizations to protect sensitive habitat types and species, and

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Tejon Ranch Co. (NYSE:TRC) – a diversified real estate development and agribusiness company.

to promote wildlife connectivity. On our own accord, Tejon Ranch permanently conserved approximately 240,000 acres (about 90 percent of Tejon Ranch, which is roughly the size of the city of Los Angeles and approximately 98 percent of this open space includes high quality mountain lion habitat) through binding agreements, state-funded conservation easements, and state and federally approved habitat management and conservation planning. These measures directly address the mountain lion stressors identified in CDFW's analyses, including habitat loss, fragmentation, and connectivity barriers, which should be acknowledged in the Status Review and recognized in the listing determination.

Tejon Ranch is disappointed that CDFW's analysis does not acknowledge the roles attributed to landscape level conservation plans, particularly given the long-term population stability acknowledged in the status review when defining the proposed DPS/ESU boundary. Tejon Ranch functions primarily as a managed connectivity corridor facilitating movement between larger, more robust mountain lion populations, rather than as an isolated breeding ground. CDFW's Status Review insufficiently acknowledges the historical role that habitat and species protections instituted as a part of ranchland management have played in stabilizing California's mountain lion population within the region encompassing Tejon Ranch. Accordingly, any listing determination should be narrowly tailored to localized population-level vulnerabilities, while valuing existing and successful conservation programs, wildlife corridors, and management practices – both historically implemented and more recently established by the Ranch.

Historic Conservation at Tejon Ranch

For more than 175 years, Tejon Ranch has stewarded one of California's most significant landscapes, spanning the Tehachapi Mountains and linking the southern Sierra Nevada, Central Valley, and South Coast regions. More than 15 years before "Room to Roam" (AB 1889, Friedman) became California law, Tejon Ranch acted voluntarily to incorporate wildlife connectivity into its land use planning by ensuring that development protects against habitat fragmentation, promotes biodiversity and support climate resilience. Through an historic conservation framework struck in 2008, Tejon Ranch committed 240,000 acres to permanent open-space conservation, representing the largest private land conservation commitment in California. Today, Tejon Ranch's commitments are legally enforceable and implemented through multiple, complementary mechanisms, including:

- The 2008 Tejon Ranch Conservation and Land Use Agreement with nationally recognized conservation organizations;
- Conservation easements acquired with substantial investment by California, including Wildlife Conservation Board funding, specifically to preserve habitat and regional wildlife linkages;
- A state approved multi-species habitat management plan and companion federally approved multi-species habitat conservation plan that preserve large, contiguous habitat blocks and ensure long-term wildlife movement; and

- Project-level conditions of approval and mitigation measures adopted following extensive CEQA review by CDFW, which preserve open space and habitat connectivity, preserve safe and effective wildlife movement corridors (including movement through existing and planned transportation infrastructure), prohibit harmful practices such as anticoagulant rodenticides, and reduce human-wildlife conflict.

CESA requires that listing determinations be based on the best available science and that the Department consider the effects of existing management and conservation efforts when evaluating whether a species should be considered as threatened or endangered. For Tejon Ranch, these existing measures are not speculative; they are implemented or set forth in binding CDFW permits, conservation easements, and CEQA mitigation and monitoring programs, are consistently monitored, and are already functioning successfully at a landscape scale today.

Habitat Fragmentation and Connectivity in CDFW Regions 4 and 5

CDFW has prioritized barriers to wildlife connectivity and the role of major transportation corridors such as Interstate 5, and State Routes 58 and 138 in constraining mountain lion movement and gene flow in CDFW Regions 4 and 5. Importantly, Tejon Ranch's conservation and development framework responds to the barriers identified in the Status Review. All existing and future development, which is planned for just 10 percent of Tejon Ranch is designed to preserve all wildlife under crossings and culverts along I-5 to maintain east-west movement opportunities through Tejon Ranch where they currently exist. Currently, the California Aqueduct, significant water infrastructure owned and operated by the state of California, redirects wildlife movement away from SR-138 in the high desert Antelope Valley. There is no planned development adjacent to SR-58. Further, large, contiguous open-space habitat blocks and linkages on Tejon Ranch align with the greater Tehachapi linkage areas identified in connectivity studies, including those relied upon by CDFW, and provide functional habitat and movement pathways adjacent to these infrastructure constraints.

CDFW's own 2022 study, the "Restoring California's Wildlife Connectivity" report, identifies transportation infrastructure – and not highly planned development that implements conservation together with connectivity best practices and measures within conserved landscapes – as the dominant constraint to connectivity for mountain lion. CDFW's Status Review and mountain lion listing recommendation should be corrected to specifically recognize that Tejon Ranch's massive and enforceable conservation measures maintain and enhance large blocks of occupied habitat, as well as connectivity for the species throughout the portion of the Ranch that supports suitable mountain lion habitat adjacent to the transportation barriers CDFW identified.

Boundary of DPS is Broader than CDFW's Analysis and Scientific Data Support

The DPS boundary is modified from the petitioned ESU boundary, with certain modifications explained while others are not. While the lack of detail in the study makes it difficult to evaluate,

it appears that the proposed DPS boundary wraps in a large portion of the south San Joaquin Valley in the vicinity of Tejon Ranch, including farmland and flatlands that are not suitable mountain lion habitat due to the absence of denning features, cover/shelter, and ongoing availability of prey, primarily elk and deer. The boundary should be aligned to encompass known suitable mountain lion habitat based on best available science, including recent habitat assessments and surveys conducted for the area in compliance with CEQA, the California and federal Endangered Species Acts, and other environmental regulatory requirements. The result should be a revised boundary in the South San Joaquin Valley to align with the Mountain Lion Range identified on Figure 2 of the Status Review document and encompassing known suitable mountain lion vegetational habitat and terrain within the vicinity of Tejon Ranch.

Additionally, genetic data from lions in this area as depicted on Figure 9 demonstrate that the lions in the southern San Joaquin Valley area are Western Sierra Nevada dominant, which is determined to be non-endangered. The overly broad listing designation reduces the value and veracity of the DPS and unnecessarily results in a cloud of regulatory uncertainty on lands that are not relevant to the goals of the proposed DPS or the protection of the species.

Development within a Conservation-First Landscape

Tejon Ranch's development is intentionally limited, carefully sited, and comprehensively avoids, minimizes, and mitigates the potentially adverse habitat and species effects of development occurring on a small fraction of Tejon Ranch adjacent to existing transportation corridors and job centers. More than 90 percent of the Ranch remains permanently conserved, and within, and adjacent to, approved development communities. This development must incorporate measures requiring the conservation of substantial open space, the protection and enhancement of wildlife movement corridors, creation or maintenance of habitat linkages and road underpasses, and implementation of light restrictions, waste controls, and anti-coagulant prohibitions coupled with education programs for residents to ensure the protection of mountain lions and other species. While the Status Review states that "Development within key connectivity areas such as the Tehachapi Mountains near Interstate 5, if not carefully planned, could further constrain lion movement within a relatively narrow corridor of highly suitable habitat connecting the western Sierra Nevada with the central coast and Southern California (Penrod and Smith 2022)", development at Tejon Ranch has been carefully planned and corridors through project areas are incorporated in such planning and will preserve connectivity to existing undercrossings along the I-5 corridor identified as a barrier.

Regretfully, the CDFW recommendation's broad treatment of "development" fails to distinguish between legacy development and new modern projects implemented within an enforceable conservation framework that was specifically designed to address habitat loss, fragmentation, and human-wildlife conflict. The CDFW Status Review and listing recommendation should be revised to recognize public comments and historical CDFW approvals regarding habitat conservation,

connectivity and avoidance measures committed to by large landowners, particularly those made by Tejon Ranch in coordination with or under the supervision of CDFW. The actions of Tejon Ranch and other large private landowners already conserve large blocks of habitat and enhanced connectivity that measurably decrease habitat fragmentation and improve potential wildlife movement and genetic exchange.

Further, more updated distribution information provided to CDFW but that was not relied upon in its determinations in the Status Review, include the conservation, connectivity, and wildlife movement contributions of existing CDFW approved planning; CEQA and permitting documents for the Tejon Ranch Grapevine and Mountain Village Specific Plans; and relevant information in the CDFW approved Habitat Management Plan and U.S. Fish and Wildlife Service-approved Tehachapi Upland Multi-Species Habitat Plan (TUMSHP), which are adopted habitat management and conservation plans. The avoidance, minimization, and mitigation measures for these conservation-first landscape level plans, which include the establishment of large block open space conservation areas and preserved movement and connectivity corridors that have been approved at the local, state, and federal level in planning and permitting documents, should be considered in all CDFW post-listing CEQA comments and permitting actions. This is critical to ensure recognition that Covered Activities under existing and approved MSAAs, HMPs, NCCPs, MSHCPs and HCPs should continue to be permitted, so long as mountain lion was identified as a conservation planning species, as was the case for Tejon Ranch approved development projects mentioned.

Conclusion

Tejon Ranch respectfully urges the Commission to ensure that its actions fully reflect the statutory requirements of CESA, and the real-world conservation outcomes planned and already achieved through existing conservation, stewardship, and management measures like those implemented at Tejon Ranch. Any science-based decisions should recognize that Tejon Ranch's large-scale, permanent private land conservation efforts already play a critical role in addressing the very threats to the mountain lion identified in the CDFW Status Review and that Tejon Ranch's carefully planned development results in preservation of wildlife movement corridors that support the mountain lion.

We respectfully ask that that the Fish and Game Commission direct CDFW staff to address these points by correcting the Status Review and listing recommendation to ensure that they are part of the record prior to acting. Any listing determination made by the Commission should be calibrated to avoid undermining existing and successful conservation commitments and to encourage, rather than discourage, the type of long-term stewardship that is essential to the protection of mountain lions and California's working landscapes.

Thank you for the opportunity to provide public comment.

Sincerely,



Hugh F. McMahon IV
Executive Vice President, Real Estate
Tejon Ranch Company

Cc: Melissa Miller-Henson, Executive Director, FGC
Valerie Termini, Acting Director, CDFW
Chad Dibble, Deputy Director, CDFW

January 29, 2026

California Fish and Game Commission
715 P Street, 16th Floor
Sacramento CA 95814

Submitted via e-mail: fgc@fgc.ca.gov

SUBJECT: California Fish and Game Commission February 12, 2026 Meeting
Agenda Item #17 – Petition to list the Mountain Lion pursuant to CESA

Dear President Zavelet, Vice President Murray, and Commissioners Hostler-Carmesin, Sklar & Anderson:

The California Building Industry Association (CBIA) and the Building Industry Association of Southern California (BIASC) appreciate the opportunity to provide comments on the upcoming California Fish and Game Commission (Commission) February 12, 2026, Meeting Agenda Item #17 dealing with the petition to list the Mountain Lion as threatened under the California Endangered Species Act (CESA). CBIA is a statewide trade organization representing thousands of member companies, including homebuilders, trade contractors, architects, engineers, designers, suppliers, and other professionals involved in homebuilding, multi-family, and mixed-use development. CBIA members are responsible for nearly 90% of new housing units in California, encompassing a range of projects from charity homes and affordable housing to middle-class market-rate and luxury residences. Our priority issue is to ensure the availability of affordable housing for all Californians.

The BIASC is the voice of the region's building industry, with five chapters offering localized services to building professionals from Ventura to the southern tip of Orange County. Throughout its 100-year history, the association has served its builder and associate members by anticipating, protecting, and promoting their common interests through its many programs, services, councils and committees.

The need for available and affordable housing throughout California is well documented as are the issues that create impediments to achieving this goal. Impediments include new regulations that inhibit our member's ability to provide affordable homes and communities. It is in this context that we provide the following comments:

Mapping Concerns

The Commission should not list the Mountain Lion without emphasizing the fact that the State's habitat mapping is inaccurate and out of date. For example, the California Department of Fish and Wildlife (CDFW) *California Wildlife Habitat Relationships (CWHR) Predicted Habitat Suitability maps* found on the CDFW website (https://wildlife.ca.gov/Data/Analysis/CWHR), show low, medium and high value habitat within densely populated areas of Southern California (See Attachment A, Figure 1). Figure 2 in the CDFW mountain lion listing petition assessment, entitled *A Status Review of the Petitioned Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lion (Puma concolor couguar) in California* (December 2025) (Status Review) also shows low, medium and high habitat suitability over densely populated areas (See Attachment A, Figure 2). These populated areas should not be considered mountain lion habitat. Based on internal citations and overlay exercises, it is clear that the Statue Review Figures rely on inaccurate and out of date base maps, including the CWHR Predicted Habitat Suitability Maps.

Therefore, the Status Report does not reflect the building that has occurred in the last 1-2 decades. Consequently, until rectified, these existing statewide maps should not be used post-listing for any regulatory purpose, including for purposes of CDFW comments or recommendations regarding proposed development pursuant to California Environmental Quality Act (CEQA), the Fish and Game Code Streambed Alteration Agreement provision, or the California Endangered Species Act (CESA).

While theoretically a mountain lion could roam anywhere, the focus of this listing should be on the species' suitable habitat. As noted in the Status Review, suitable habitat includes "relatively rugged terrain, riparian areas, and woodland" and - "areas with dense stalking cover and avoid open areas to facilitate hunting success." (Status Review, p. 12). Suitable mountain lion habitat provides denning features, cover/shelter, and ongoing availability of prey (primarily deer and elk), not an urbanized landscape.

Based on prior listings, our concern is that if the maps are not corrected, then in practice, applicants will be forced under the CEQA, the California Fish and Game Code Streambed Alteration Agreement provisions, and/or CESA to conduct mountain lion studies and provide mitigation on projects in areas identified as potentially suitable habitat in the inaccurate maps when the areas proposed for development are not primary or even suitable habitat areas, which would significantly increase project costs and schedules. Therefore, we request that the Commission should direct CDFW to correct the mapping inaccuracies and update all maps regarding mountain lion occurrence and suitable habitat prior to, or as a condition of, the listing of the species, and prior to their use for any regulatory purpose or the preparation of any additional management or recovery planning or documentation. These corrections should also reflect suitable habitat conserved or protected for conservation pursuant to existing Habitat Management Plans, Multi-Species Habitat Conservation Plans, and Natural Community

Conservation Plans that identify the mountain lion as a conservation planning or covered species, such as the Western Riverside MSHCP.

California Environmental Quality Act (CEQA)
The Status Review states:

> *"Additional protection of mountain lions following listing would be expected to occur through state and local agency environmental review under CEQA. CEQA requires affected public agencies to analyze and disclose project-related environmental effects, including potentially significant impacts on wildlife species. The CEQA Guidelines require a mandatory finding of significant impact, thus requiring preparation of an Environmental Impact Report, when a project has the potential to substantially reduce the number or restrict the range of a threatened or endangered species (Cal. Code Regs. 14, 3038 §15065(a)(1)). In common practice, potential impacts to listed species are examined more closely in CEQA documents than potential impacts to unlisted species. Where significant impacts are identified under CEQA, the lead agencies must typically adopt project-specific avoidance, minimization, and mitigation measures to limit impacts to the species. State listing, in this respect, and consultation with the Department during state and local agency environmental review under CEQA would be expected to benefit mountain lions in the petitioned ESU in terms of reducing impacts from individual projects. Absent listing, such protection measures or mitigations might not occur."*

It is important for the Commission to make it clear to CDFW, as a permitting agency under the Fish and Game Code as a responsible and trustee agency under CEQA, and to other state and local lead agencies that potential impacts to mountain lions shall not be based on the current mapping in the Status Review Report. In the absence of clarification from the Commission and corrections to the maps by the Department, CDFW itself, and many lead agencies and/or applicants will require expensive and time-consuming mountain lion studies in areas that are not actually suitable mountain lion habitat, wildlife corridors or other important connectivity linkages. Additionally, the Commission should clarify that cumulative effects should focus on projects within the constrained linkage areas, which should not apply to most projects in suburban areas.

While we concur that projects in suitable habitat areas where mountain lions can viably live and/or within areas proposed for development within a priority movement barrier, CEQA studies and analysis are needed. However, this type of analysis should not be performed across Southern California in already developed areas or areas surrounded by existing development. Attachment B provides some examples of inaccurately mapped areas that should be addressed by CDFW mapping corrections.

Primary Risk

In addition to the mapping concerns, CBIA and BIASC believe it is important for the Commission to highlight key findings regarding the risk of the species which also coincides with our mapping concerns if it does decide to approve the petition as recommended by Department staff. First, the Department's analysis indicates that the primary biological risk to the petitioned Southern California/Central Coast population is genetic isolation resulting from restricted movement between otherwise suitable habitats, not a statewide decline in habitat availability or prey abundance. The report consistently emphasizes that this risk is geographically constrained and driven by specific landscape conditions.

Second, the Status Review identifies existing transportation infrastructure, particularly highways and freeways, as the dominant barrier to dispersal and gene flow where those facilities intersect mountain ridgelines, narrow passes, and known movement corridors. Road mortality and the absence of effective crossing opportunities at these locations are repeatedly cited as the most significant threats to long-term population resilience – not new construction.

Third, the report confirms that most of California's mountain lion population is not threatened and is generally stable, reinforcing that the concerns identified are localized rather than indicative of a statewide species-level decline.

These findings underscore a central conclusion of the Status Review: addressing genetic isolation requires fixing discrete, existing infrastructure barriers at known chokepoints, not constraining or impacting new development across large areas where habitat remains otherwise suitable.

Department staff have indicated that lead agencies may look to the Status Review when conducting CEQA analysis for future projects as discussed previously. However, the report clearly identifies existing state transportation infrastructure, not new development, as the primary driver of genetic isolation. Regulatory approaches that shift responsibility for correcting historic, statewide infrastructure barriers onto individual housing, utility, or industrial projects risk misaligning mitigation requirements with the actual cause of the biological threat.

Habitat Conservation Plans

Finally, CBIA and BIASC believe that the petition and the Department's status review report does not give enough credit for those entities that embarked on the development of large, landscape-based habitat conservation plans and the value those plans can and are providing species like the mountain lion even though some plans may not specifically identify the mountain lion in its plan. The benefits derived by all species based on the willingness of private landowners to participate in such large-scale planning efforts should be highlighted and praised by the Department.

We urge the Department and the Commission to acknowledge the benefits created by existing management efforts and habitat conservation plans and believe that existing and planned development within these plans that clearly take into account habitat connectivity and avoidance measures should be lauded for their forward thinking approach and considered in any Department post-listing regulatory activity as already discussed in the CEQA portion of our comments.

Finally, we are concerned that if the Department fails to acknowledge the value of these types of planning efforts in documents such as the species Status Review report, it will discourage others from entertaining the thought of entering into long-term planning efforts with the Department.

Conclusion

The Status Review notes that "Benson et al. (2019) found that sustaining mountain lion populations in isolated mountain ranges in greater Los Angeles (Santa Monica and Santa Ana Mountains) is feasible with relatively modest increases in landscape connectivity." This statement is reflective of the Department's broader approach to mountain lion protection, as reflected in its actions and activities following the emergency listing of the species 6 years ago and in the Management and Recovery Action Recommendations set forth in Section 10 of the Status Review. Conservation of occupied and related suitable habitat areas and key linkages to provide mountain lion connectivity and genetic diversity are critical to the species, but projects that are not within suitable habitat areas or key linkages should not be required to provide unnecessary habitat assessments, surveys, impacts analyses or avoidance, minimization or mitigation measures under CEQA, Fish and Game Code Streambed Alteration agreement provisions, or CESA..

We would appreciate your willingness to discuss the inaccuracy of the mapping set forth in the Status Review along with our other concerns on the record and to direct the Department to update the mapping prior to its use for any regulatory purpose. The improper use of the Status Review maps will affect all development within the central and southern areas of California identified within the listing boundary by the Status Review. These areas need substantial residential development to combat the housing policy crisis the State currently faces.

Sincerely,

Nick Cammarota
California Building Industry Association

Jeff Montejano
Building Industry Association of Southern California

Attachment A

Figure 1: Status Review: CWHR Predicted Habitat Suitability Map
Figure 2: Status Review: Mountain Lion Range and Habitat Suitability Map

Attachment B

Examples of Mapping Inaccuracies

cc: Valerie Termini, Director (Acting), Department of Fish and Wildlife
Chad Dibble, Deputy Director, Wildlife and Fisheries Division, Department of Fish and Wildlife

ATTACHMENTS

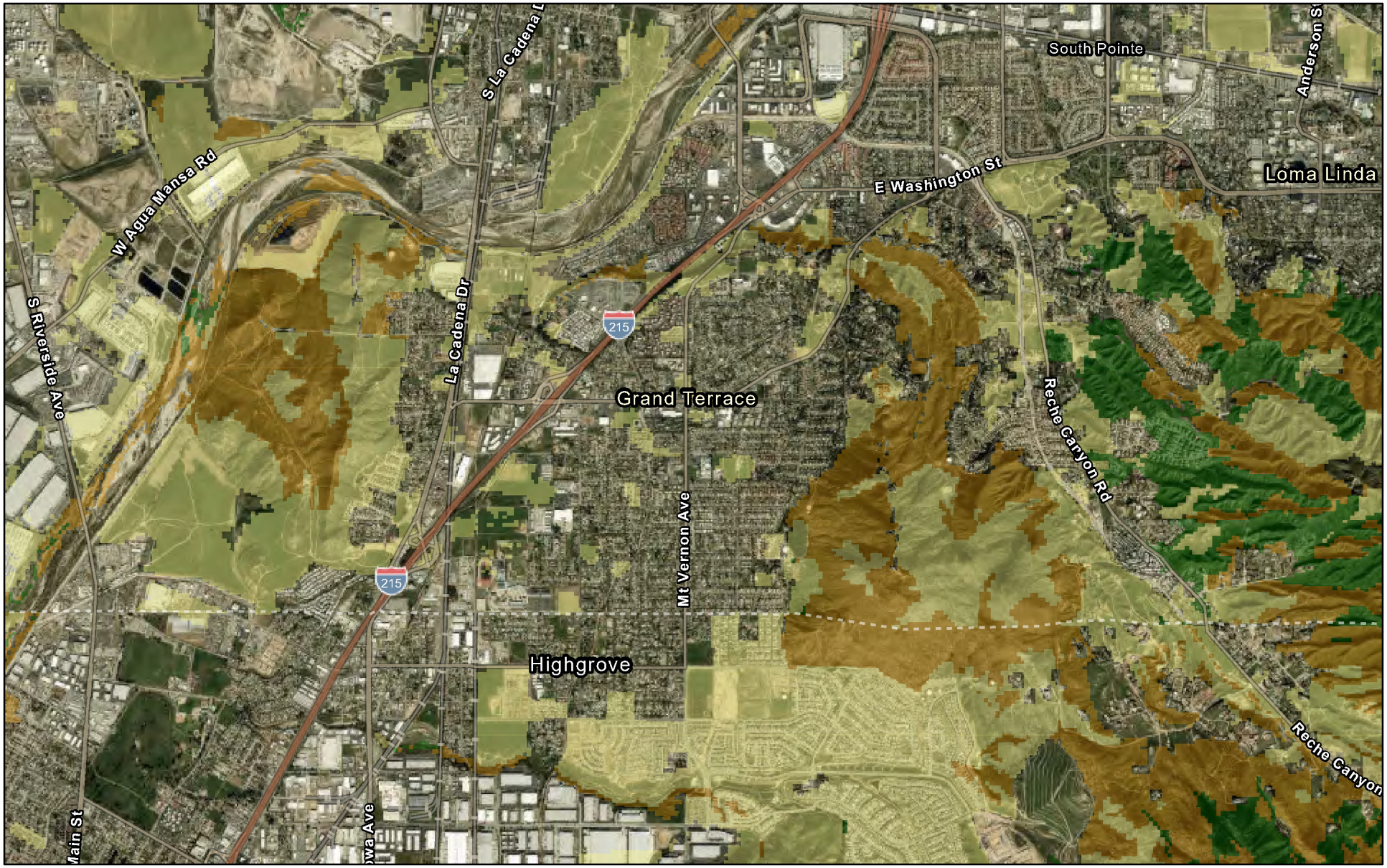
Attachment A	Figure 1: California Wildlife Habitat Relationships (CWHR) Predicted Habitat Suitability Maps Southern California Inland Empire Region
	Figure 2: Status Review of the petitioned Southern California/ Central Coast ESU of Mountain Lion in California California Department of Fish and Wildlife
Attachment B	Examples of Mapping Inaccuracies

ATTACHMENT A

Figure 1: California Wildlife Habitat Relationships (CWHR) Predicted Habitat Suitability Maps Southern California Inland Empire Region

Figure 2: Status Review of the petitioned Southern California/Central Coast ESU of Mountain Lion in California
California Department of Fish and Wildlife

California Wildlife Habitat Relationships (CWHR) Predicted Habitat Suitability Maps Southern California Inland Empire Region



1/27/2026

Mountain Lion Predicted Habitat - CWHR M165 [ds2616]

- HIGH
- MEDIUM
- LOW

World Imagery

Low Resolution 15m Imagery

High Resolution 60cm Imagery

High Resolution 30cm Imagery

Citations

9.6m Resolution Metadata

1:50,000

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

County of San Bernardino, Microsoft, Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS

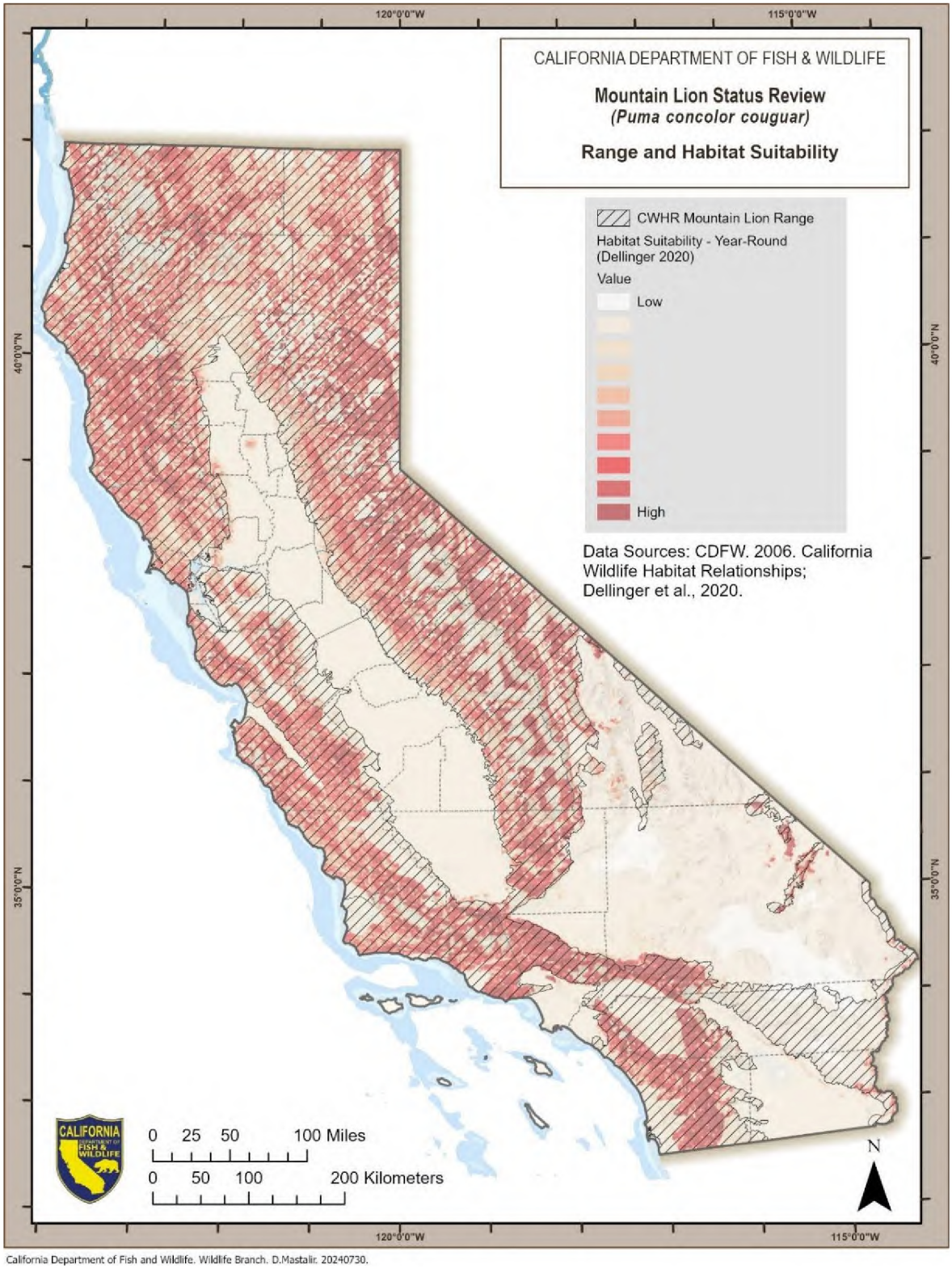
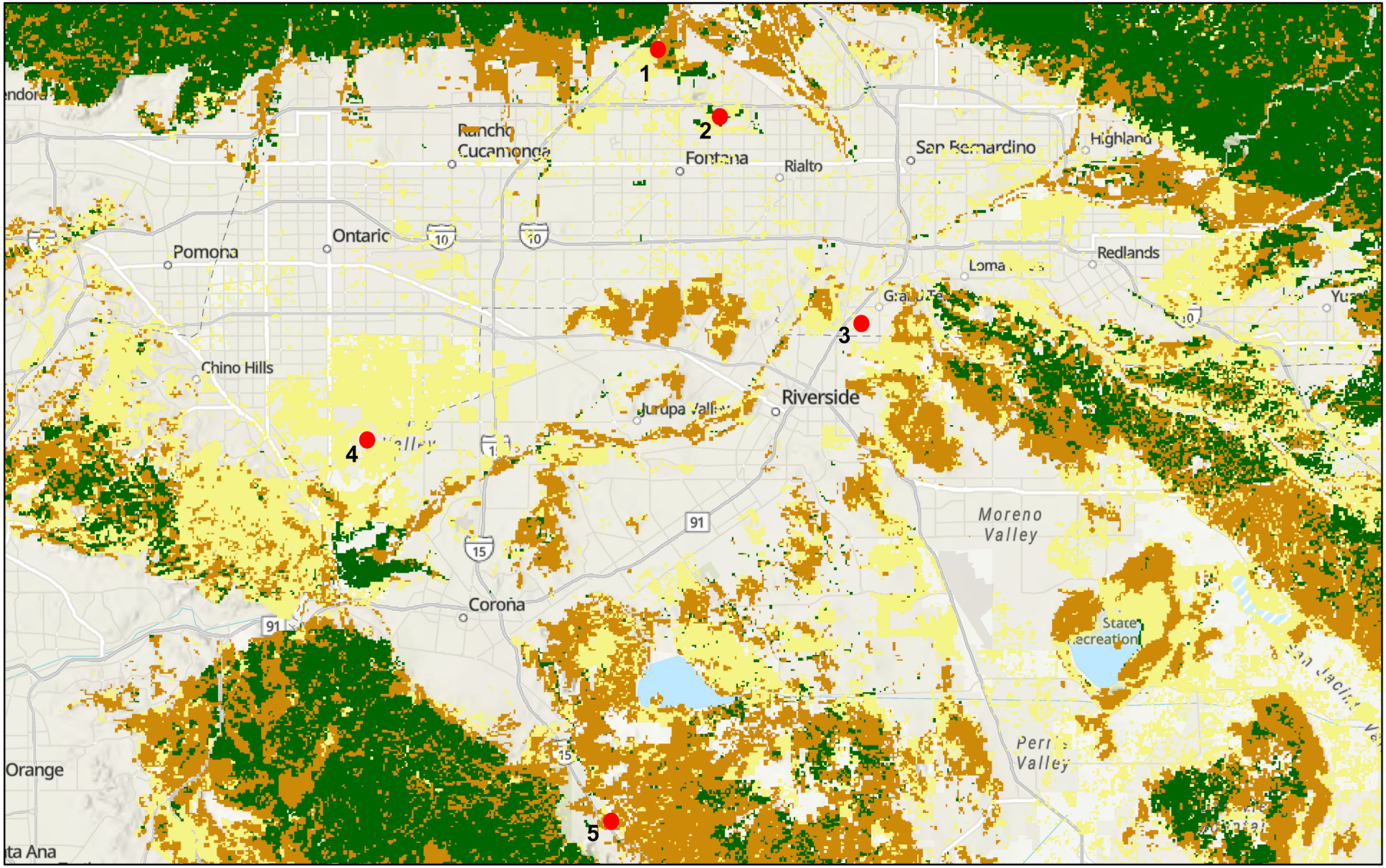


Figure 2. Range and habitat suitability for mountain lions in California. Darker red indicates a higher probability of mountain lion occupancy (Dellinger et al. 2020a). Mountain lions may occasionally occur at low densities outside of this range (most often non-breeding or dispersing individuals).

ATTACHMENT B

Examples of
Mapping
Inaccuracies

Attachment B



1/26/2026

Mountain Lion Predicted Habitat - CWHR M165 [ds2616]

HIGH

MEDIUM

LOW

[Map Pages]

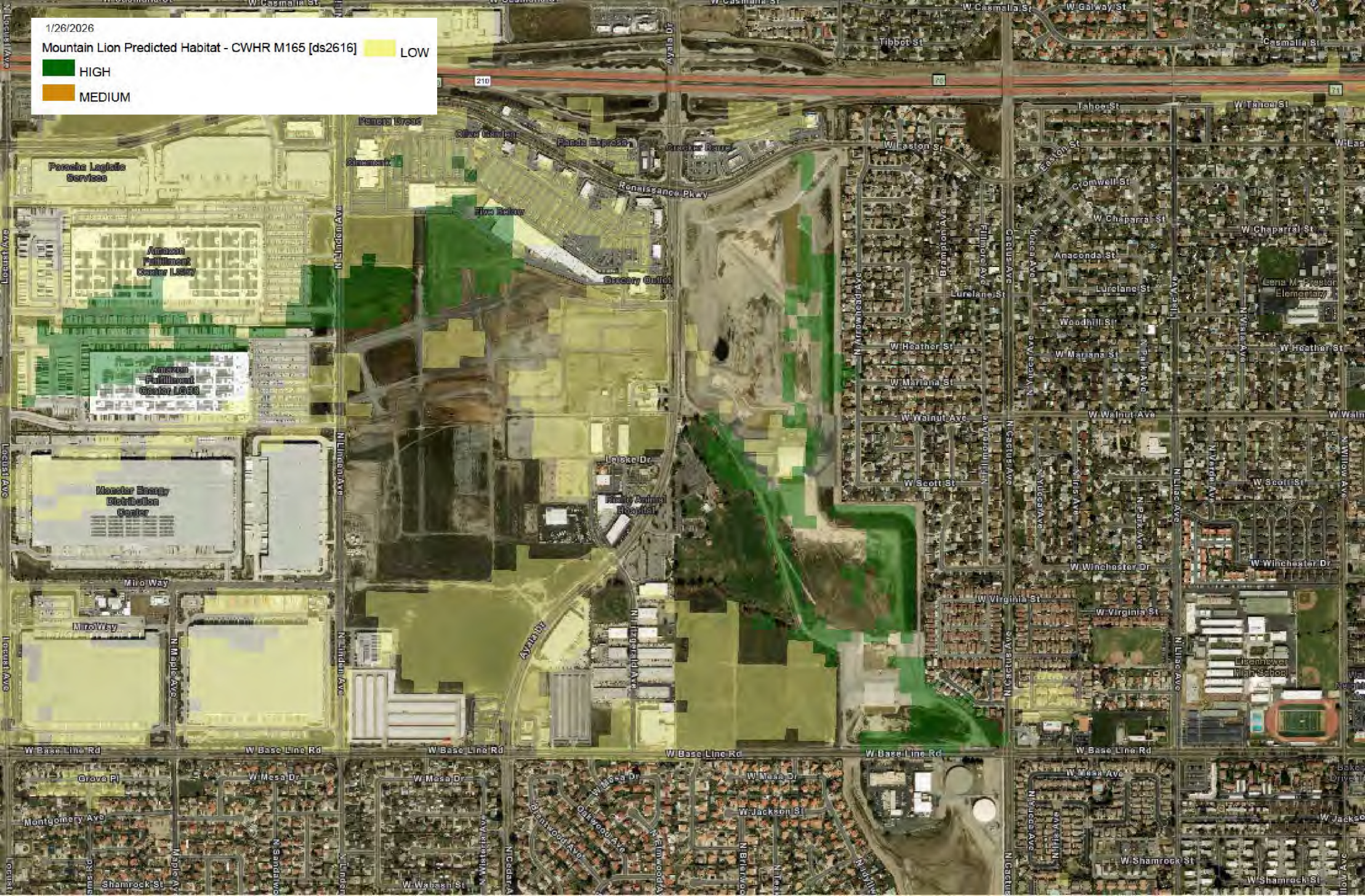
1:370,509

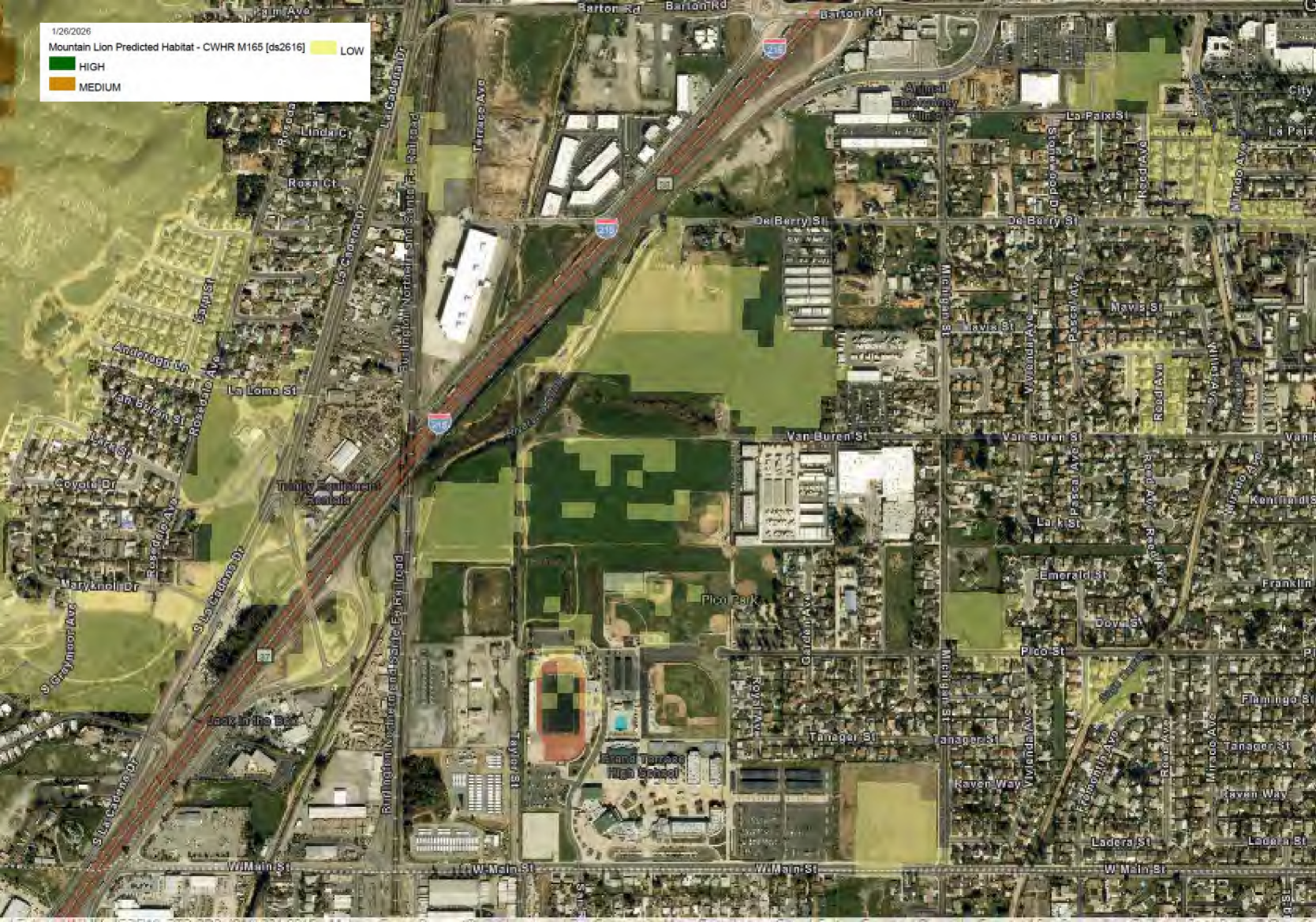
0 2.5 5 10 mi

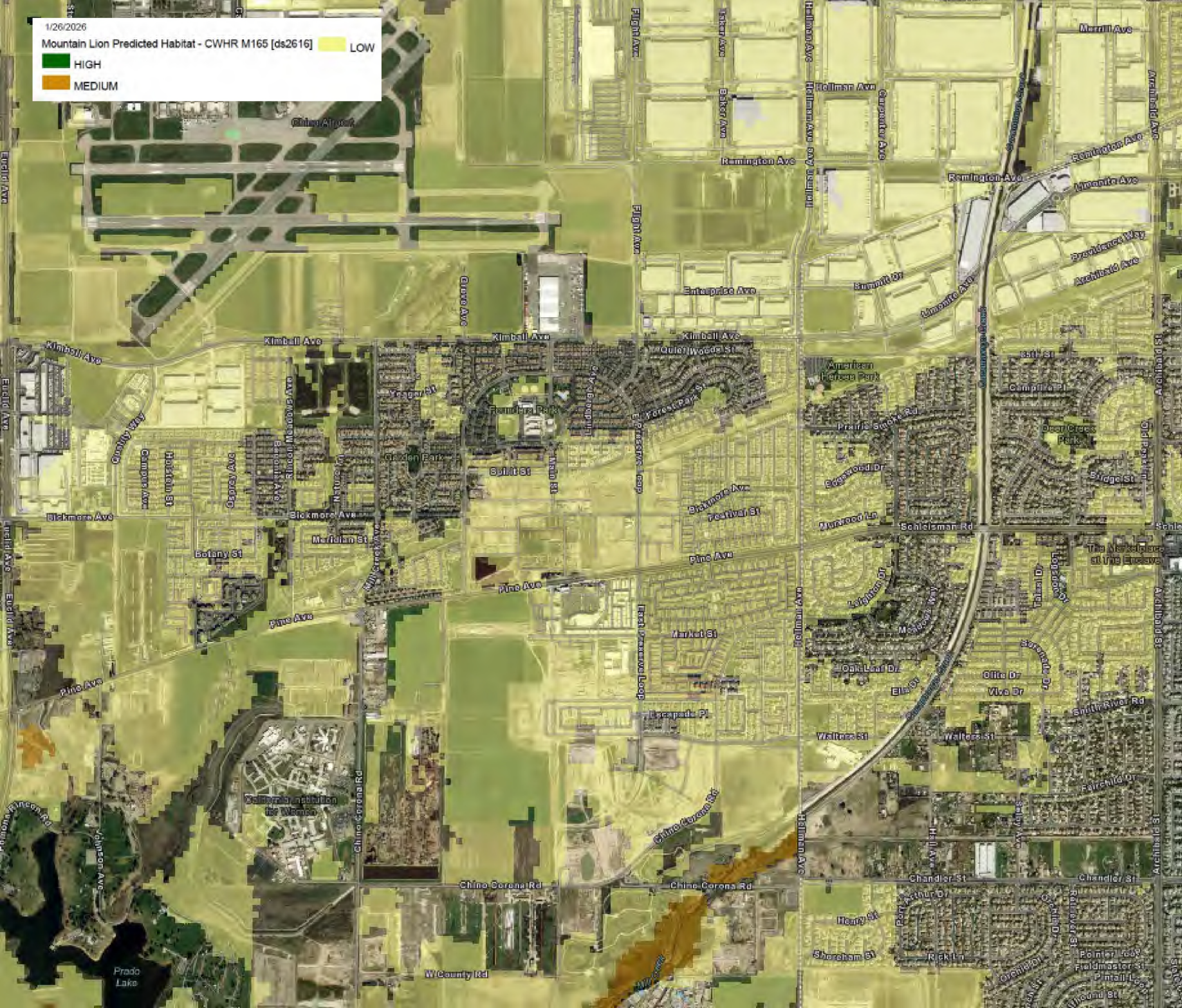
0 4.25 8.5 17 km

Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community


1/26/2026
Mountain Lion Predicted Habitat - CWHR M165 [ds2616]
LOW
HIGH
MEDIUM
Duncan Canyon Rd
Yarrow Ln
Citrus Ave
Sierra Ave
Cypress Ave
Coyote Canyon
Coyote Canyon Rd
Gardens St
Three Mile Rd
Casa Grande Ave
W Casa Grande Dr
Citrus Heights North
Summit Ave
Summit Heights
Citrus Heights South
Sierra Lakes
Sierra Lakes Golf Course
Sierra Lakes Pkwy
Beech Ave
Bohnert Ave
W Casmalia St
Lowell St
Fergusson Park
Fox Ridge Dr
Parry Peak Dr
Kings Peak Dr
Portenza Dr
Park House Dr
Oakville St
Wyndham Ln
Almaden Dr
Escalon Dr
Clubhouse Dr
Rosena Park East
Curtis Ave
Larkstone St
Brant Dr
Lozano St
Lytle Creek Rd
Edward Ave
Knox Ave
Catawba Ave
Laurel Ave
Stonehurst Dr
N Locust Ave
N Riverside Ave
W Calle Vista Dr
W Buena Vista Dr
Lindo Vista Dr
Palmetto Ave
Alder Ave
Mango Ave
Condor Ave
Sierra Lakes Pkwy


1/26/2026
Mountain Lion Predicted Habitat - CWHR M165 [ds2616]
LOW
HIGH
MEDIUM
Porsche Logistic Services
Amazon Fulfillment Center LGBS
Monster Energy Distribution Center
Panera Bread
Olive Garden
Panda Express
Cracker Barrel
Sinemark
Five Below
Grocery Outlet
Renaissance Pkwy
Ayala Dr
Leslie Dr
Finity Animal Hospital
Miro Way
W Base Line Rd
W Casmalia St
W Galway St
Tibbet St
Tahoe St
W Tahoe St
W Easton St
Cromwell St
W Chaparral St
Anaconda St
Lurelane St
Woodhill St
W Heather St
W Mariana St
W Walnut Ave
W Scott St
W Winchester Dr
W Virginia St
Lena M. Preston Elementary
Eisenhower High School
W Mesa Dr
W Mesa Ave
W Jackson St
W Shamrock St
W Wabash St
Grove Pl
Montgomery Ave
Shamrock St
N Linden Ave
N Maple Ave
N Cactus Ave
N Lilac Ave
N Willow Ave
Locust Ave
Brampton Ave
Fillmore Ave
Cactus Ave
Yucca Ave
Lilac Ave
N Arrowhead Ave
N Yucca Ave
N Park Ave
N Willow Ave
Brentwood Ave
Oakwood Ave
Elmwood Ave
N Wisteria Ave
N Cedar Ave
N Brierwood Ave
N Fitzgerald Ave
210
70
71


1/26/2026
Mountain Lion Predicted Habitat - CWHR M165 [ds2616]
LOW
HIGH
MEDIUM
Barton Rd
Barton Rd
Barton Rd
Palm Ave
Linda Ct
Rosa Ct
La Cadena Dr
Terrace Ave
Animal Emergency Clinic
La Paix St
De Berry St
De Berry St
Mavis St
Lavis St
Andoregh Ln
La Loma St
Van Buren St
Van Buren St
Coyote Dr
Trinity Equipment Rentals
Kentfield St
Emerald St
Franklin
Pico Park
Dove St
Pico St
Flamingo St
Tanager St
Tanager St
Tanager St
Raven Way
Raven Way
Ladera St
Ladera St
Jack in the Box
Grand Terrace High School
Taylor St
Garden Ave
Royal Ave
Michigan St
Vivienda Ave
Pascal Ave
Reed Ave
Mirado Ave
Rosedale Ave
Maryknoll Dr
S La Cadena Dr
S Graymoor Ave
Burlington Northern and Santa Fe Railroad
W Main St
W Main St
W Main St
W Main St
218
218
218
218
37
37


1/26/2026
Mountain Lion Predicted Habitat - CWHR M165 [ds2616]
LOW
HIGH
MEDIUM
Chino Airport
Flight Ave
Baker Ave
Hellman Ave
Carpenter Ave
Remington Ave
Merrill Ave
Archibald Ave
Lincoln Ave
Providence Way
Summit Dr
Enterprise Ave
Ximball Ave
Euclid Ave
Yeager St
Bickmore Ave
Festival St
Pine Ave
Botany St
Meridian St
Market St
Schleismar Rd
Prairie Sunset Rd
Deer Creek Park
Bridge St
Oak Leaf Dr
Olita Dr
Viva Dr
Smith River Rd
Walters St
Fairchild Dr
Chandler St
Henry St
Sherman St
Ricklet
Pomier Rd
Fieldmaster St
Pintail Ln
Round St
Chino Corona Rd
W County Rd
Prado Lake
Johnson Ave
Pipeline Ave
Community Hospital of Chino Valley
The Marketplace at The Preserve
Residence Inn
Courtyard
Fairfield Inn & Suites
Hilton Garden Inn
Chino Valley Medical Center
Chino Valley Chamber of Commerce
Chino Valley Fire District Station 61
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1/26/2026
Mountain Lion Predicted Habitat - CWHR M165 [ds2616]
LOW
HIGH
MEDIUM
Temescal Valley
Temescal Canyon Rd
Campbell Ranch Rd
Bernice Todd Elementary School
Maitri Rd
Vista Way
Wandering Way
Spanish Hills Dr
Park Canyon Dr
Dawson Canyon Rd
Clay Canyon Dr
Stagoline St
Whitecrown Cir
Mojaska Summit Rd
Juff Ct
Lucas Ct
Mayhew Canyon Rd
Red Hawk Rd
Temescal Wash
Crestley Dr
Alton Dr
Terramor Dr
Stonefield Dr
El Hermano Rd
Temescal Hills Dr
Campbell Ranch Rd
Tesoro Loop St
The Shops at Sycamore Creek
De Palma Rd
Bunting Cir
Lee Lake
Tomia Farm
Allen Ivy Rd
Lucas Ct
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16

FGC@FGC

From: Philip Salgado
Sent: Sunday, December 14, 2025 10:55 PM
To: FGC
Subject: CESA Mt.lions

My name is Phil Salgado of Morgan Hill California. Ive spent years researching mountain lions in the Santa Cruz mountains. It seems way to soon to list mountain lions as endangered or threatened. Shouldn't you at least wait and see what impacts the wildlife bridge over hw 101 has on their breeding opportunities. And most people don't believe the low numbers in southern California are due to impending extinction but rather habitat loss that can only be fixed by buying back the encroached property and bulldoze back their habitat. Otherwise any other efforts to increase their population is just going to get them hit by cars killed by angry ranchers and pushing them into human areas causing more attacks and killing eachother over territory. It was only 100 years ago the mt.lion was a mesopredator subordinate to the grizzly bear. Mt.lion is not the keystone species that the grizzly bear was. With seed dispersal and digging for roots overturning the soil to retain water to combat drought. What is being done to compensate for the lacking benefits of the mountain lion. Mt.lions are apex predators by default. So if the Mt.lion becomes extinct then what the bobcat becomes keystone species then the fox and raccoon. All of these protection laws just give them more freedom to be dangerous. Their fear of grizzly bears and everything else has dissolved and with nothing to keep them in check this problem can only get worse.

FGC@FGC

From: Kari Capulli
Sent: Monday, January 5, 2026 8:54 AM
To: FGC
Subject: Mountain lion discussion Feb 11 2026

To the fish and wildlife commissioner.
My name is Kari Capulli of Morgan hill ca. My community is in an uproar with pets and livestock depredation mostly sheep and goats according to my neighbors. This is regarding the 3 strike law.Please consider doing away with this horrible law. Our pets are our children not lion food. And if my pet that I've rescued bottle fed from birth and paid all of its vet Bill's and consider it one of my children if that pet somehow survives a mountain lion attack, there is just know way I could allow that same lion to attack my pet again. This is absolutely horrendous. It's too much to ask of pet owners. And yes we bring our animals in at night and have proper outdoor housing. But attacks happen in the daytime as well. Telling us to be aware of our surroundings is unrealistic nonsense. A mountain lion is like a sniper .How do we coexist with snipers that are undetected and leap out of nowhere. The property I live on is 90 years old and sightings are drastically increasing. I'm not talking about doorbell cams or tail cams I'm talking about face to face sightings. All around the Jackson oaks area in morgan hill. Please do not list mountain lions as endangered or threatened as it will only amplify all the existing laws protecting them. Think of us humans above protecting an already protected predator.

FGC@FGC

From: Pam Van Valkenburgh
Sent: Wednesday, January 28, 2026 6:02 PM
To: FGC
Subject: CESA

To Whom It May Concern -

I have been made aware that in February 2026 the California Fish and Game Commission will be considering the addition of mountain lions to the endangered species list. This is an incredibly dangerous and irrational decision. On Thursday 12/18 in Corral De Tierra, Monterey County, sometime after midnight a mountain killed our 275 pound mini horse, Hazel. My husband found her in her pen @7am. Her pen literally shares our backyard fence and she was next to 5 other full size horses not to mention the other 10 horses in surrounding paddocks and pastures. She was the third kill within three days in our community. The same mountain lion killed our neighbors two pets(dog and goat) two nights in a row before it killed Hazel. My husband filed a report with the local Department of Fish and Wildlife biologist and was issued a non-lethal depredation permit. Our non-lethal depredation permit stated, "Use of non-lethal hazing with non-lethal projectiles such as paint balls or standard agricultural hazing rounds to deter mountain lion intrusions until December 20, 2025. Dog can be used to haze mountain lion out of the area." Due the fact that our mini horse was the 3rd kill within 3 days he told the biologist that type of permit was unacceptable and he needed a lethal depredation permit. The biologist responded by saying lethal depredation permits for mountain lions don't exist. After our neighbor's initial kill of their two pets the biologist mentioned to our neighbor that the lion most likely wouldn't go after a mini horse/ pony or mini donkey but obviously he was WRONG. After the killing of our mini horse, Hazel, kills continued almost nightly, and even with every single one of these kills being reported, the Department of Fish and Wildlife did not taken action. In all, this lion killed 7 pets within 6 nights. I say it KILLED them because it did not eat any of them… it KILLED them. Our neighbor's dog was taken right off their lit front porch and the next night their goat was taken out of their barn with their other two full size horses, pony and mini donkey in with it. After it killed our mini horse, Hazel, it continued the next night by killing another goat, the night after that two more border collies and the night after that a goat/ sheep hybrid. All were pets, all were in enclosures and/ or close to our homes. Not one of these animals were left out alone in pastures or away from our homes. They were all in enclosures and/ or close to our homes. The mountain lion was not behaving like a typical mountain lion. It was walking up lit driveways, snatched a dog from a lit porch, it was basically in our backyard when it killed our mini horse, her pen is within 30 yards of our house. It was very brazen and not deterred by lights, sounds, people and it had been seen during the daylight hours as well. It's very unsettling especially since we and our neighbors have young kids. We are not comfortable letting them play around the property alone now even during the day. There are plenty of deer, turkey, general wildlife, etc. for this mountain lion to eat and sustain itself on in our area. Plain and simple: this mountain lion was not acting like a typical mountain lion therefore typical depredation means did not work. Our community needed help out here and for our concerns to be taken seriously and we were failed miserably by the state of California. I'm not, by any means, saying we should make it "open season" on mountain lions. They are beautiful, majestic animals and play a very important role in our ecosystem, but in the event there is a cat like this one, that is acting erratically

and very atypical of normal mountain lion behavior, we have the right to defend ourselves and our animals. Whether that means being issued a LETHAL depredation permit or having the authorities take it seriously and come get the mountain lion. Our community has coexisted with mountain lions for years and has never had any issues that even come close to what we experienced. I hear the arguments, trust me, I'm aware, we do live in their territory. But let's face it, anywhere we live used to be "their territory" before it became the city you live in. There have been lions come into Seaside, Del Rey Oaks, Marina. I saw a dead lion in the middle of Reservation Road that had been hit by a car in Marina the morning before our mini horse, Hazel was killed. The only difference is those lions realize it's not a safe place to hunt and go back because they are elusive and usually they want to stay as far away from humans as possible. Either that or, like the most recent situation in San Francisco when the cat was IMMEDIATELY caught and relocated. Why did it take less than a day for this one to be take seriously but no help to our community WHATSOEVER with the one in our area, which was ACTIVELY KILLING pets and posing a great threat to humans? The particular lion in our area was not behaving like a typical lion and our community is at a loss as to why Fish and Wildlife wouldn't want to trap it and figure out what's wrong with it. The biologist that works for Fish and Wildlife, that my husband had been in constant contact with, even said that it was not acting right and could be injured or something else could be wrong with it. I would have hoped that F&W would want to make sure it doesn't have something that could be spread to other animals or humans and/ or be bred into future lions. Or if it were injured, why wouldn't they want to trap it and help it? I, for sure, don't have all the answers but I am part of a community whose families are unfortunately grieving the senseless losses of their pets, ours included. I fear that if these lions do end up on the endangered species list, the state is just ASKING for people to start taking matters into their own hands. The people of California will know that they will have absolutely no help or support from the State of California if they are dealing with a problematic mountain lion. They aren't going to think twice before protecting their families, animals, livestock, etc. This could potentially lead to the death of even more mountain lions. Our community went through all the right/ legal channels expecting help from our state just to be left with nothing; no help, no support, no answers. Before our state can even BEGIN the process of adding mountain lions to the endangered species list, I sure hope there better be an UNBIASED, professional, accurate count of the lion population and a VERY thorough investigation done into any and all lion vs human encounters and that those be taken seriously. I personally hold the state of California responsible for the deaths of our animals and for the pain and suffering our animals and our families have endured. If our concerns had been taken seriously by Fish and Wildlife from the beginning, a lot of these precious animal's lives would have been spared.

Pam Van Valkenburgh

Sent from my iPhone

FGC@FGC

From: jordon
Sent: Thursday, January 29, 2026 4:12 PM
To: FGC
Subject: Concerns on CESA for mountain lions in the upcoming meeting topic 17

Lack of independent, methodologically diverse peer review and over-reliance on a single population analysis method do not support broad ESU listing

Dear Commissioners,

I submit this comment to raise concerns regarding both the scientific rigor of the peer review process and the population analysis relied upon to support listing of the proposed mountain lion ESU under the California Endangered Species Act (CESA). These issues are interconnected and materially affect whether the administrative record provides a reliable basis for a broad listing determination at this time.

Reference: https://fgc.ca.gov/cesa

As a local outdoorsman who has spent decades in the field along the Central Coast of California, I have personally observed an increase in the frequency of mountain lion encounters in recent years. These observations are not isolated. They are consistent with reports from other outdoorsmen, landowners, park staff, and field users who spend substantial time on the landscape and are well positioned to detect changes in wildlife presence. While such observations are not a substitute for formal population estimates, they represent a relevant line of field-based evidence that should be evaluated alongside other data when assessing population trends.

Scientific peer review is intended to identify weaknesses in reasoning, assumptions, data selection, and interpretation by subjecting an analysis to evaluation by qualified experts who are independent of the work being reviewed and who may bring different methodological perspectives. Independence and methodological diversity are widely recognized as core elements of scientific rigor, because they are how hidden biases, unsupported inferences, and structural limitations are identified and corrected.

Reference: National Academies of Sciences, On Being a Scientist:

https://nap.nationalacademies.org/read/12192/chapter/3

Reference: Committee on Publication Ethics (COPE), Ethical Guidelines for Peer Reviewers:

https://publicationethics.org/resources/guidelines/cope-ethical-guidelines-peer-reviewers

In this case, the peer review process does not appear to meet these accepted standards. Several peer reviewers are also authors of the datasets, analytical methods, or modeling frameworks relied upon in

the status review. While these individuals may be subject-matter experts, reviewing one's own work or closely related work does not constitute an independent test of reasoning. Standard peer-review guidance cautions against conflicts of interest and self-review because they undermine the critical function of peer review.

Reference: COPE, Competing Interests in Peer Review:

https://publicationethics.org/competing-interests

Reference: International Committee of Medical Journal Editors (ICMJE), Conflicts of Interest:

https://www.icmje.org/recommendations/browse/roles-and-responsibilities/author-responsibilities–conflicts-of-interest.html

Methodological diversity is also a recognized component of robust scientific review. Complex ecological questions are typically strengthened when reviewers using different analytical approaches evaluate the same conclusions. When reviewers share the same methods, assumptions, and datasets, the likelihood that core analytical choices will be challenged is substantially reduced.

Reference: U.S. EPA, Peer Review Handbook:

https://www.epa.gov/science-and-technology/peer-review-handbook

The absence of independent, methodologically diverse peer review is particularly significant here because the population assessment relies heavily on a narrow analytical framework. By emphasizing a single population analysis method, the record does not adequately integrate or test conclusions against other available lines of evidence commonly used in wildlife population assessment. Independent reviewers with expertise in alternative approaches—such as observational trend analysis, occupancy modeling, landscape ecology, or applied management datasets—could reasonably have identified limitations or alternative interpretations that were not addressed.

As a result, the analysis gives limited weight to consistent, regionally corroborated evidence indicating stable or increasing mountain lion presence in multiple areas along the Central Coast, including Ventura County, San Luis Obispo County, and Monterey County. Field-based indicators such as increased encounter frequency, broader spatial use, and sustained prey availability are treated as anecdotal rather than evaluated as meaningful population signals. The record does not explain why these independent lines of evidence were discounted, nor does it reconcile them with model-based conclusions.

I don't believe that a CESA requires reliance on a single method or analytical framework, but in fact the opposite. It requires a reasoned evaluation of all relevant scientific information. A scientifically rigorous assessment would examine whether different lines of evidence converge or diverge, and why. The absence of independent reviewers capable of challenging the dominant analytical framework makes it difficult to conclude that such an evaluation occurred.

Reference: https://wildlife.ca.gov/Conservation/CESA/Listing

In contrast, the administrative record contains well-documented and methodologically supported evidence of population risk in the Santa Monica Mountains, where fragmentation, isolation, and genetic

constraints are clearly described and supported by multiple datasets. In that region, concern appears well founded. However, the same depth of evidence and convergence among methods is not demonstrated for other regions included in the proposed ESU.

By applying conclusions derived from a narrow analytical approach across regions with differing landscape conditions and observational signals, the record risks overstating imperilment where available evidence may instead indicate stable or increasing populations. This concern is amplified by a peer review process that did not include independent experts positioned to identify flaws in reasoning, gaps in evidence, or alternative interpretations.

I respectfully request that the Commission consider the following questions before making a listing determination:

- How did the Commission evaluate whether the peer review process met accepted standards of independence and avoidance of conflicts of interest?
- Were experts using different population assessment methods asked to review and challenge the dominant analytical framework?
- How were field-based observational trends, including those reported by outdoorsmen, land managers, and park staff, evaluated and weighted?
- What evidence demonstrates that regions outside the Santa Monica Mountains face population-level risk comparable to that documented there?
- Would a revised peer review process involving independent, methodologically diverse experts materially affect the conclusions?

Until these issues are addressed, I respectfully request that the Commission defer a broad ESU listing and consider whether additional independent peer review and a more integrated, multi-method population assessment are warranted. Ensuring that scientific conclusions are tested through independent and critical review is fundamental to both scientific integrity and the intent of CESA.

References

- Fish and Game Commission CESA process: https://fgc.ca.gov/cesa
- Overview of CESA Listing Process (CDFW PDF): https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193394
- CDFW CESA Listing overview: https://wildlife.ca.gov/Conservation/CESA/Listing
- National Academies of Sciences, On Being a Scientist: https://nap.nationalacademies.org/read/12192/chapter/3
- COPE, Ethical Guidelines for Peer Reviewers: https://publicationethics.org/resources/guidelines/cope-ethical-guidelines-peer-reviewers
- COPE, Competing Interests in Peer Review: https://publicationethics.org/competing-interests
- ICMJE, Conflicts of Interest: https://www.icmje.org/recommendations/browse/roles-and-responsibilities/author-responsibilities–conflicts-of-interest.html

- U.S. EPA, Peer Review Handbook: https://www.epa.gov/science-and-technology/peer-review-handbook

Sincerely

Jordon Reyes

Sent from Proton Mail for iOS.

January 29, 2026

Submitted via email to fgc@fgc.ca.gov

Dr. Erika Zavaleta, President
California Fish and Game Commission
1416 Ninth Street, Suite1320
Sacramento, CA 95814

Re: Mountain Lion CESA Petition: Agenda Item #17 of the February 12, 2026 California Fish and Game Commission Meeting

Dear President Zavaleta and Commissioners:

On behalf of the Center for Biological Diversity (Center), I am writing to strongly urge you to follow the recommendation of the California Department of Fish and Wildlife (CDFW) to formally list the Central Coast and Southern California distinct population segment (DPS) of mountain lions as threatened under the California Endangered Species Act (CESA).

The Center for Biological Diversity (Center) is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 1.8 million members and online activists throughout California and the United States. The Center and its members have worked for many years to protect imperiled wildlife and open space, air and water quality, and overall quality of life for people in California.

We commend CDFW staff for their thorough and thoughtful status review, for taking the time to understand the science, and for listening to the external reviewers and subject matter experts when undertaking this complex and critically important issue. We also thank the dedicated researchers who have spent many years investigating these majestic cats so that we can better understand the barrage of threats they face as they navigate our human-modified landscapes.

Science clearly shows that lack of wildlife connectivity is driving Central Coast and Southern California mountain lions towards extinction. Roads and poorly planned development present significant barriers to movement, which have led to high levels of inbreeding and poor genetic health (Benson et al., 2019; Ernest et al., 2003, 2014; Gustafson et al., 2018, 2021; Huffmeyer et al., 2021). Compounding habitat fragmentation and genetic isolation, human-caused mortalities—including vehicle strikes, depredation kills, rodenticide poisoning, poaching, disease, and wildfire—are the leading cause of death for mountain lions across California (Benson et al., 2020, 2023; Nisi et al., 2023; Vickers et al., 2015). Edge effects of roads and development can also injure, sicken, or cause costly behavioral shifts in these big cats (Barrientos et al., 2023; Nickel et al., 2021; Nisi et al., 2022; Smith et al., 2017; Suraci et al., 2019; Wang et al., 2017; Wilmers et al., 2013; Yovovich et al., 2020). If we do nothing, we could lose some of the populations within the proposed DPS within decades (Benson et al., 2019).

These wide-ranging cats require room to roam away from human-disturbed areas and in connected, intact, heterogeneous habitats (Dickson et al., 2005; Dickson & Beier, 2002; Kertson et al., 2011; Zeller et al., 2017). As discussed in CDFW's status review and in many of the external reviewers' comments, connectivity and gene flow are essential among and between the populations within the proposed DPS as well as between the proposed DPS and the relatively robust Western Sierra Nevada population. The Tehachapis and the Transverse Ranges (including the San Emigdio, Sierra Pelona, San Gabriel, and San Bernardino Mountains) are exceptionally crucial: in these areas existing habitat must be preserved and connectivity must be enhanced to ensure gene flow between the Central Coast populations, the Southern California populations, and the Western Sierra Nevada population. These areas are critical for statewide connectivity and healthy mountain lion populations, and the Center is thrilled to see that mountain lions in these geographic areas are included in the proposed DPS.

CESA protections allow for hope. Permanent protections under CESA could help steer California towards protecting and enhancing wildlife connectivity to ensure that Central Coast and Southern California mountain lions will have a chance to thrive alongside us. The Center appreciates CDFW's management and recovery action recommendations. Proactive efforts should include the following:

- Preserving high quality mountain lion habitat in important connectivity areas;
- Restoring degraded habitats that are beneficial for wildlife movement;
- Identifying appropriate locations and building wildlife crossings at priority barriers, including those identified by CDFW and other experts (*e.g.*, I-5 between Grapevine and Castaic);
- Requiring land use and planning agencies to identify important wildlife connectivity areas in their jurisdictions and implement wildlife-friendly infrastructure and design;
- Restricting the use of the most harmful rodenticides on the landscape, including ensuring that the California Department of Pesticide Regulation does not expand the use of anticoagulant rodenticides as they are currently proposing in their new regulations;
- Investing in safe coexistence strategies that minimize conflicts with domestic animals, including public education and outreach and committing resources to facilitate the use of conflict prevention measures (e.g., using predator-proof enclosures at night); and
- Continuing important research and monitoring that informs how we can minimize human-caused mortalities and improve our ability to safely coexist.

We urge the commission to direct CDFW to develop and implement a recovery plan that includes the above suggestions and CDFW's recommended management and recovery actions (CESA; Fish & G. Code, §2079.1).

Although the Center is disappointed that portions of the desert in southeastern California were excluded from the DPS, we understand that data limitations may justify their exclusion. We hope that CDFW commits resources to studying mountain lions in that area to fill data gaps, particularly given that connectivity to the south will likely be hindered by border wall construction. Mountain lions in the desert could be imperiled and/or they could serve as an

important connection with mountain lions along the Colorado River and in Arizona. Understanding their status would help inform management and recovery actions.

CESA protections will help protect and recover the species and support the state's rich biodiversity, landscapes, and culture. As a keystone species and ecosystem engineer, mountain lions play an important role in the food chain and predator-prey dynamics. Their kills provide a reliable food source for numerous scavengers and other wildlife, including bears, raptors, and beetles (Barry et al., 2019; Elbroch et al., 2017; Labarge et al., 2022; Ruth & Elbroch, 2014). And their presence as a wide-ranging top predator has been shown to modify the behavior of their prey and mesocarnivores, which can help to promote watershed health and maintain diverse habitats that support native wildlife and plants (Ripple et al., 2014; Ripple & Beschta, 2006, 2008). Local extinction of mountain lions could have cascading consequences that result in the loss of a beloved species, degraded ecosystems, and decreased biodiversity.

We urge the Commission to grant CESA protections to the Central Coast and Southern California DPS of mountain lions and officially recognize that habitat connectivity is paramount to prevent extinction. At a time when the federal administration is rolling back protections of imperiled species and lands, California can provide a bright spot of hope for nature and reaffirm their status as an environmental leader.

Thank you for the opportunity to submit comments on CDFW's status review of Southern California and Central Coast mountain lions. Please do not hesitate to contact the Center with any questions at the email listed below.

Sincerely,



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TEMESCAL CANYON ASSOCIATION
VENTURA LAND TRUST
California Wildlife Foundation

January 29, 2026

Dr. Erika Zavaleta, President
California Fish and Game Commission
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Submitted via email to fgc@fgc.ca.gov

Re: Mountain Lion CESA Petition: Agenda Item #17 of the February 12, 2026 California Fish and Game Commission Meeting

Dear President Zavaleta and Commissioners,

Thank you for the opportunity to provide comments on the California Department of Fish and Wildlife's (CDFW's) status review of the petition to list Southern California and Central Coast mountain lions under the California Endangered Species Act (CESA).

The 70 undersigned organizations, which represent millions of supporters throughout California, strongly support CDFW's recommendation to list a distinct population segment (DPS) consisting of the six petitioned genetically isolated populations of mountain lions as threatened. We urge the Commission to grant formal protections to these iconic cats so that we can move forward to reduce the threats they face and give them a fighting chance to survive and inspire generations to come.

We commend CDFW staff for their thorough review and for following the science. We also thank the external reviewers and the many scientists who have investigated this elusive species and shared a greater scientific understanding of how mountain lions live and move through the landscape and how our development and actions threaten their long-term survival. Listing the Southern California and Central Coast mountain lions DPS as threatened under CESA would rightfully acknowledge that people are driving these populations towards extinction *and* we have the power to reverse course.

Lack of connectivity is the primary threat to Southern California and Central Coast mountain lions. Humans have extended roads and development into mountain lion habitat with little regard for their biological and movement needs, which has led to the formation of dangerously isolated populations with poor genetic health and high levels of human-caused mortalities, including car strikes, depredation kills, rodenticide poisonings, disease, wildfires and more.[1,2] Since these populations were granted CESA candidacy status in 2020, scientists have continued to document mounting evidence of their imperilment, including ongoing genetic drift,[3]

[1] Gustafson, Kyle D., et al. "Genetic source–sink dynamics among naturally structured and anthropogenically fragmented puma populations." *Conservation Genetics* 20.2 (2019): 215-227.
[2] Benson, John F., et al. "The ecology of human-caused mortality for a protected large carnivore." *Proceedings of the National Academy of Sciences* 120.13 (2023): e2220030120.
[3] Gustafson, Kyle D., et al. "Multi-population puma connectivity could restore genomic diversity to at-risk coastal populations in California." *Evolutionary applications* 15.2 (2022): 286-299.

reproductive signs of inbreeding depression,[4] and high levels of rodenticide exposure.[5] If nothing is done to preserve and enhance connectivity among and between the petitioned populations of the DPS and throughout the state, we could lose some of these populations within our lifetimes.[6]

Protecting mountain lions will benefit not only the species itself, but also the many wildlife and plants that are the cornerstone of California's landscape and culture. As a keystone species, healthy mountain lion populations support high levels of biodiversity. Their kills provide a reliable food source for numerous scavengers and opportunists, from bears and foxes to raptors and beetles. And their presence as a wide-ranging top predator has been shown to modify the behavior of their prey and smaller carnivores, which can help to promote watershed health and maintain diverse habitats that support native wildlife and plants. Loss of the species could potentially lead to degraded ecosystems and decreased biodiversity.

CESA protections will help address the many threats these mountain lions face. State agencies will have a legal mandate to protect mountain lions, which, as the status review highlights, should include the following overarching goals:

- Maintaining and enhancing landscape connectivity between robust core populations and the smaller, more isolated populations within the proposed threatened Central Coast and Southern California DPS
- Protecting important patches of remaining habitat within the DPS from development and enhancing degraded habitats where feasible
- Reducing human-related mortality rates within the populations of the DPS

We appreciate CDFW's management and recovery action recommendations, and we encourage the department to develop and implement a recovery plan that includes preserving intact connected landscapes, building more wildlife crossings at existing barriers, integrating wildlife connectivity into land-use planning, restoring degraded habitats that are beneficial for mountain lion movement, restricting the use of deadly rat poisons, providing depredation prevention resources to homeowners with farm animals and pets in mountain lion habitat, and continuing important research and monitoring.

We strongly urge the California Fish and Game Commission to follow the Department's recommendation to grant the Southern California and Central Coast mountain lion DPS permanent protections as a threatened species under CESA.

Thank you,

Tiffany Yap, DEnv/PhD
Urban Wildlands Science Director
Center for Biological Diversity

Byron Weckworth
Chief Conservation and Advocacy Officer
Mountain Lion Foundation

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[4] Huffmeyer, Audra A., et al. "First reproductive signs of inbreeding depression in Southern California male mountain lions (Puma concolor)." *Theriogenology* 177 (2022): 157-164.
[5] CDFW. "Pesticide Exposures & Mortalities in Non-target Wildlife 2024 Annual Report." (2025).
[6] Benson, John F., et al. "Extinction vortex dynamics of top predators isolated by urbanization." *Ecological Applications* 29.3 (2019): e01868.

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January 15, 2026

Erika Zavaleta, President
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Subject: Letter of support for listing a distinct population segment of mountain lion in southern and central coastal California as a threatened species under the California Endangered Species Act

Dear President Zavaleta and Members of the Commission:

The Puente Hills Habitat Preservation Authority (Habitat Authority) writes to express SUPPORT for listing a distinct population segment of mountain lion in southern and central coastal California as a threatened species under the California Endangered Species Act.

The Habitat Authority is a joint powers authority established pursuant to California Government Code Section 6500 *et seq*. with a Board of Directors representing the City of Whittier, County of Los Angeles, Sanitation Districts of Los Angeles County, and a representative from the community of Hacienda Heights. According to its mission, the Habitat Authority is dedicated to the acquisition, restoration, and management of open space in the Puente Hills for preservation of the land in perpetuity, with the primary purpose to protect the biological diversity. Additionally, the agency endeavors to provide opportunities for outdoor education and low-impact recreation. The Habitat Authority owns and/or manages over 3,890 acres which comprise the Puente Hills Preserve in which over $100 million of public funds have been invested.

The Habitat Authority's Puente Hills Preserve is the western anchor of the Puente-Chino Hills Wildlife Corridor, which is biologically connected in the east to Chino Hills State Park and the Santa Ana Mountains. We are very concerned about recent research findings indicating severe inbreeding issues with the population of mountain lions inhabiting the Santa Ana Mountains, as this is the source population for individuals that utilize the Puente-Chino Hills Wildlife Corridor and contribute to the ecological balance of Habitat Authority-managed publicly owned open space. Mountain lions have been the focus of considerable regional investment and collaborative efforts aimed at maintaining habitat connectivity to ensure ecosystem integrity. Failure to adequately protect this species, given the myriad threats outlined in the Petition, will undermine those significant efforts.

In December 2025, the California Department of Fish and Wildlife (Department) completed its status review and determined that the mountain lion population composed of the six petitioned genetic populations is discrete, significant, and imperiled; therefore, it recommended that the Commission list a distinct population segment (DPS) of mountain lions, largely coinciding with the petitioned area, as threatened. We strongly agree with the Department's determination and recommendation.

The Habitat Authority respectfully requests that the members of the Commission consider the Department's recommendation and make a final determination in favor of listing mountain lion as a threatened species at their upcoming February meeting.

Sincerely,

Ivan Sulic
Chair, Board of Directors

C: Habitat Authority Board of Directors and Advisory Committee

Transmitted Via Email

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January 26, 2026

Dr. Erika Zavaleta, President
California Fish and Game Commission
1416 Ninth Street, Suite1320
Sacramento, CA 95814

Submitted via email to fgc@fgc.ca.gov

Re: Agenda Item #17 – CESA Petition for southern California/central coast evolutionarily significant unit of mountain lion - SUPPORT

Dear President Zavaleta and Commissioners,

On behalf of the **Midpeninsula Regional Open Space District (Midpen)**, I am writing to urge you to **support** listing the Central Coast and Southern California mountain lion populations as Threatened under California law. Comprised of over 72,000 acres of acquired and protected open space on the San Francisco Peninsula, Midpen is one of the largest regional open space districts in California, serving almost 770,000 constituents. Our braided mission is to acquire and preserve in perpetuity open space and agricultural land of regional significance, to protect and restore the natural environment, to preserve rural character and encourage viable agricultural use of land resources, and to provide opportunities for ecologically sensitive public enjoyment and education.

These mountain lions face well-documented and increasing threats from habitat loss, fragmentation, and isolation. Scientific research clearly shows that without stronger protections - particularly for critical habitat and wildlife connectivity - these populations will continue to decline, with serious consequences for their long-term survival and for the health of California's ecosystems. Midpen is doing its part to help reduce mountain lion mortalities and restore their genetic diversity in the Santa Cruz Mountains through the construction of a major wildlife crossing at Highway 17.

I strongly encourage the Commission to follow the best available science and the recommendation of the California Department of Fish and Wildlife by approving this listing. Protecting habitat and ensuring connectivity across

landscapes is essential to maintaining resilient mountain lion populations and preventing further genetic isolation.

Thank you for your leadership and for considering the science-based actions needed to safeguard California's wildlife for future generations.

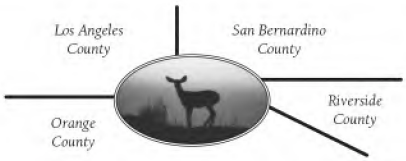
Sincerely,



Kirk Lenington, Natural Resources Department Manager

Hills For Everyone

Southern California comes together at the Puente-Chino Hills



January 28, 2026

Letter submitted electronically to: fgc@fgc.ca.gov

Melissa Miller-Henson
California Fish and Game Commission
715 P Street, 16th Floor
Sacramento, CA 95814

RE: Support for Listing of the Central Coast and Southern California Mountain Lion

Dear Ms. Miller-Henson,

Hills For Everyone (HFE) submits these comments to the California Fish and Game Commission to support the listing of the Central Coast and Southern California Mountain Lion, which we understand to be decided at the February 11 or 12, 2026 Commission board meeting. We are pleased to see the Commission consider this long-awaited protection for one of California's most elusive felines.

By way of background, HFE is a 47-year-old non-profit organization that established Chino Hills State Park (CHSP) and is still working to conserve the remaining natural lands in the Puente-Chino Hills Wildlife Corridor at the juncture of Los Angeles, Orange, San Bernardino, and Riverside Counties. We have avidly worked to protect mountain lion habitat since the early 1980s—even protecting State Parks' first wildlife underpass at the 91 Freeway and Coal Canyon in 2001. CHSP connects to the Santa Ana Mountains and supports the network of protected lands for this top predator.

HFE believes the evolutionarily distinct populations of the Central Coast and Southern California mountain lion is worthy of listing as threatened under the California Endangered Species Act (CESA). Mountain lions in Southern California and the Central Coast, specifically, face a convergence of human-induced threats: habitat fragmentation and loss; road mortality and barriers to movement; toxic rodenticides and other contaminants; inbreeding and loss of genetic diversity; and wildfire and climate-related stressors.

These threats will drive these populations toward collapse. Just in the last week, another mountain lion was killed in the Santa Ana Mountain foothills along Santiago Canyon Road. Current regulatory mechanisms have clearly been insufficient to counter these cumulative threats, as evidenced by the ongoing decline in connectivity and the elevated extinction risk documented for several subpopulations.

As apex predators and a keystone species, mountain lions play a disproportionate role in maintaining ecological balance across Southern California's coastal, chaparral, foothill, and desert ecosystems. By regulating deer and other herbivore populations, they help prevent overbrowsing, support vegetation regeneration, and stabilize food webs, which in turn benefits a wide range of plant and animal species.

We urge the Commission to follow the best available science and the recommendation of the Department of Fish and Game. Protecting these populations, and the habitats and wildlife corridors they rely on, is essential to maintaining healthy, climate-resilient ecosystems across our region. Chronic isolation has already produced documented signs of inbreeding depressions, including physical deformities in certain lions confined by major freeways and urban development.

If the listing is approved by the California Fish and Game Commission, it would help safeguard essential habitat, speed up wildlife crossing projects, and strengthen long-term conservation planning to ensure these iconic cats can survive and roam freely once again. Cougars are the Puente-Chino Hills Wildlife Corridor's top predator. We need them to maintain the suite of species that belong in the hills.

Best-available science clearly demonstrates that Southern California and Central Coast mountain lion populations are small, genetically isolated, and at increasing risk of local extinction within the next few decades without additional human support. The California Department of Fish and Wildlife's recent status review concludes that roughly 1,400 mountain lions in these regions face grave threats from habitat fragmentation, high road mortality, toxic exposure to anticoagulant rodenticides, inbreeding, and increasingly severe wildfires, and therefore warrant listing as Threatened under CESA.

We urge the Commission to support listing the Central Coast and Southern California Mountain Lion.

Sincerely,

Claire Schlotterbeck

Claire Schlotterbeck
Executive Director

FGC@FGC

From: Jeanne Renner
Sent: Wednesday, January 28, 2026 12:59 PM
To: FGC
Subject: Mountain Lion Protection

Friends of the Whittier Hills
PO Box 247
Whittier, CA 90608
(562) 696-8740
friendsofwhittierhills@gmail.com

January 28, 2026

Erika Zavaleta, President
California Fish and Game Commission
PO Box 944209
Sacramento, CA 94244-2090

Re: ***Support*** for Mountain Lions as a threatened species under the California Endangered Species Act

Dear President Zavaleta & Members of the Commission:

The Friends of the Whittier Hills association is writing to ***support*** the listing of a distinct population segment of mountain lions in southern and central coastal California as a threatened species under the California Endangered Species Act.

Recent research shows that there are severe inbreeding issues with the mountain lions in the Santa Ana Mountains, some of whom have been using the nearby Puente-Chino Wildlife Corridor in the Whittier hills. Mountain lions are extremely threatened by habitat fragmentation, vehicle strikes, and rodenticide use.

These magnificent creatures deserve to thrive. We plan to continue the work of our 44-year-old conservation association in the years ahead. Please vote to list these mountain lions as a threatened species at your February meeting.

Yours truly,

Jeanne L. Renner, President

--

CITIZENS FOR LOS ANGELES WILDLIFE
CLAW
PO Box 50003 Studio City, CA 91614
805-225-5766 info@clawonline.org www.clawonline.org

January 28, 2026

Erica Zavaleta, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
Via: fgc@fgc.ca.gov

RE: Support of Report Recommendation to List Southern and Central CA Mountain Lions as "Threatened"

Dear President Zavaleta and Commissioners:

Citizens for Los Angeles Wildlife (CLAW) is a non-profit environmental organization concerned with the well-being of wildlife and their habitat in the city of Los Angeles and beyond. A citizenry of more than 5,000 individuals support our organization's multiple calls for practices and policy to benefit biodiversity in LA City, County, California, and the globe. CLAW adds our voice of strong support to the chorus of organizations recommending protection for the Southern California and Central Coast mountain lions under the California Endangered Species Act (CESA).

In 2020, when protection was first being considered, we commented on the threats facing our local mountain lion population. The threats we listed at that time included habitat loss and fragmentation, wildfires, secondary rodenticide poisoning, genetic drift, and human-related activity such as car accidents and depredation permits. Despite being granted protection that year as a candidate for CESA protection, scientists continue to document genetic drift,[1] reproductive signs of inbreedingdepression,[2] and high levels of rodenticide exposure.[3] Furthermore, in that time we have witnessed the catastrophic fires in the mountain lion ranges of the Pacific Palisades and Altadena, not

[1] Gustafson, Kyle D., et al. "Multi-population puma connectivity could restore genomic diversity to at-risk coastal populations in California." *Evolutionary applications* 15.2 (2022): 286-299.

[2] Huffmeyer, Audra A., et al. "First reproductive signs of inbreeding depression in Southern California male mountain lions (Puma concolor)." *Theriogenology* 177 (2022): 157-164.

[3] CDFW. "Pesticide Exposures & Mortalities in Non-target Wildlife 2024 Annual Report." (2025).

to mention the death of the iconic mountain lion known as P-22, who, as discovered in his 2023 necropsy, had been exposed to five different rodenticides, and hit by a vehicle.

CESA protection is necessary for protecting the dwindling population of mountain lions in the designated regions. An extirpation of this keystone species would have cascading effects on the local ecosystems. As an apex predator, these mountain lions provide feeding opportunities for scavengers and smaller carnivores, and maintain balanced populations and behaviors in prey species, which in turn helps to maintain a healthy plant community.

We would like to emphasize that strong enforcement of the protections granted to mountain lions will be necessary. Since candidacy for the mountain lions was granted in 2020, we have seen multiple state-wide attempts to reduce habitat protection by weakening the California Environmental Quality Act (CEQA), expanding usages of anticoagulant rodenticides, and the continued issuance of lethal depredation permits.[4] Once a "threatened" status is officially designated, we urge regulators to make every possible effort to protect habitat, discontinue rodenticide usage, and reduce lethal outcomes of human-mountain lion conflict.

Thank you for taking this important step at a critical time in California's natural history, protecting wildlife for generations to come.

Sincerely,



Tony Tucci, Chair

[4] California Department of Fish and Wildlife. "Mountain Lion Take within the Southern California/Central Coast Evolutionarily Significant Unit (ESU) (2020-2024)." *Memorandum*, Jan. 2025, nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=233014.

CLAW is a public benefit non-profit 501(c)(3) environmental organization that works to protect and restore the environments of wildlife of Los Angeles and California from dwindling open spaces. Our mission is to promote, educate and protect the fundamental importance of wildlife, wildlife habitats and wildlife corridors everywhere.

January 28, 2026

Dr. Erika Zavaleta, President
California Fish and Game Commission
1416 Ninth Street, Suite1320
Sacramento, CA 95814

Submitted via email to fgc@fgc.ca.gov

Dear President Zavaleta and Commissioners,

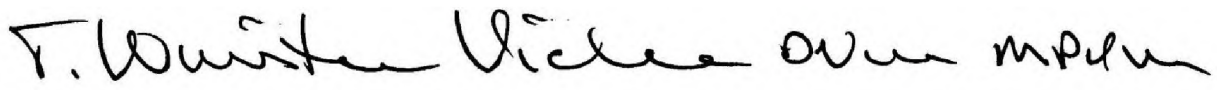
I appreciate you allowing comments to be submitted to you on the California Department of Fish and Wildlife's (CDFW's) status review of the petition to list Southern California and Central Coast mountain lions under the California Endangered Species Act (CESA).

I strongly support CDFW's recommendation to list the six petitioned genetically isolated populations of mountain lions as threatened. I urge the Commission to grant the formal protections of threatened listing under CESA to those populations.

As one of the peer reviewers of CDFW's original response to the CESA petition, I feel that CDFW staff did a thorough job in the review and its revision, and they followed the extensive science that has been published in the professional literature on mountain lions in California and elsewhere.

I fully support the management and recovery recommendations that are in the status review that CDFW has submitted to your Commission. I request that you accept those recommendations in their entirety, and encourage CDFW to develop and implement a recovery plan that includes measures to improve connectivity between the six identified subpopulations, preserve additional intact habitat, and continue research and management efforts to reduce sources of mortality.

Thank you and please contact me if you have questions,



T. Winston Vickers, DVM, MPVM
Retired Director of the UC Davis Wildlife Health Center California Mountain Lion Project
twinstonvickers@gmail.com, 949-929-8643

FGC@FGC

From: Shari Dalal
Sent: Sunday, January 18, 2026 7:53 PM
To: FGC
Subject: Agenda Item- Mountain Lions (Central Coast and Southern California)
Attachments: IMG_9040.jpeg

Dear California Fish and Game Commission,

I strongly urge the California Fish and Game Commission to list the Central Coast and Southern California mountain lion populations as Threatened and protect their remaining critical habitat and wildlife corridors.

In the Santa Ana Mountains, roughly ten mountain lions have already died, most from vehicle strikes, particularly along Ortega Highway, with additional fatalities on Santiago Canyon Road and nearby toll roads. There are no wildlife crossings, no warning signs, and no modern safety tools—such as AI-based wildlife detection and driver alert systems, Wildlife Defense Systems, or Puma Guard—despite these being known movement corridors.

These deaths are preventable. Habitat fragmentation forces mountain lions onto dangerous roads, and without enforceable protections and required mitigation—including crossings, fencing, signage, speed reduction, and available technology—these isolated populations will continue to decline.

The losses are ongoing and urgent. Please approve the Threatened listing and require immediate habitat protection and roadway safety measures before more mountain lions are killed.

Thank you for your consideration.

FGC@FGC

From: Carey Strombotne
Sent: Tuesday, January 20, 2026 4:56 PM
To: FGC
Subject: Agenda Item- Mountain Lions Central Coast and Southern California

Dear President and Members of the California Fish and Game Commission:

I am writing to urge the Commission to take decisive action to protect mountain lion populations in Southern California and along the Central Coast. These populations are at a critical tipping point. Ongoing habitat loss, extreme fragmentation, vehicle strikes, and expanding development pressures are rapidly pushing already isolated mountain lion populations toward irreversible decline.

Mountain lions are a keystone species essential to the ecological health and balance of California's landscapes. The loss of viable mountain lion populations would have cascading consequences for biodiversity, ecosystem function, and overall environmental resilience. The science is clear: without immediate and sustained protections, these populations will not recover.

Maintaining the mountain lion's status as a threatened species is not only appropriate, it is absolutely necessary. This designation provides the minimum level of protection required to prevent further population collapse. Weakening or removing this status would accelerate local extirpation, particularly in Southern California, where genetic isolation and mortality rates are already dangerously high.

Equally urgent is the protection and restoration of healthy habitat and functional wildlife corridors. Mountain lions require large, connected landscapes to disperse, maintain genetic diversity, and adapt to changing environmental conditions. Freeways, dense development, and infrastructure have created near-complete barriers between populations, resulting in inbreeding, increased mortality, and heightened conflict with humans. Without immediate action to preserve and enhance connectivity, these populations will not survive.

Wildlife corridors through protected open space, habitat linkages, and dedicated wildlife crossings are not optional mitigation measures. They are essential life-support systems for mountain lions. Protecting and restoring connectivity across Southern California and the Central Coast must be treated as an urgent conservation priority.

I strongly urge the Commission to rely on the newest and best available science when making decisions that affect mountain lion populations. This includes current genetic research, movement and mortality data, population viability modeling, and adaptive management strategies that account for climate change and increasing human pressures. Science-based decision making must remain the foundation of all policies affecting this species.

The choices made by the California Fish and Game Commission in this moment will determine whether mountain lions continue to exist as viable, wild populations in large portions of the state. I respectfully but urgently ask the Commission to uphold strong protections, prioritize habitat conservation and connectivity, and act decisively to ensure the long-term survival of California's mountain lions.

Thank you for your leadership and for your commitment to protecting California's wildlife and natural heritage.

Sincerely,

Carey Strombotne

FGC@FGC

From: Farmer
Sent: Monday, January 26, 2026 5:08 PM
To: FGC
Subject: Mountain Lion listing as Threatened Species

We belong to the Farm Bureau and they just contacted us to write to you about your consideration of listing mountain lions as a threatened species. Unlike some Farm Bureau members, we support the added protections such a listing would bring in Southern California. We farm in the wild in an area surrounded by open, unfarmed land, which is prime grounds for mountain lion habitat. We understand that predation from lions can occur, although such events are extremely rare, but highly reported. We have learned to live and farm with the "wild", not in conflict with it, although this means we are at risk of losing livestock. We understand this and view it as a business cost - not something Fish and Wildlife needs to protect our agri-business from.

So as Farm Bureau members we urge you to list mountain lions at a threatened species.

Nicolette Ausschnitt & Steve Krieg
Petit Teton Farm

FGC@FGC

From: Kristen Ochoa
Sent: Tuesday, January 27, 2026 1:43 PM
To: FGC
Subject: Support for our San Gabriel Mountains Pumas

Dear Dr. Erika Zavaleta,

My name is Kristen Ochoa and I am the founder of the Chaney Trail Corridor Project. I am writing to you to ask that the California Fish and Game Commission accept CDFW's recommendation to list Southern California and Central Coast mountain lions as threatened under the California Endangered Species Act.

We are trying to save a 78 acre piece of land here in Altadena; we want it protected as a wildlife corridor. This is needed now more than ever after the Eaton Fire. We have been documenting mountain lions in our area with the hope of protecting the habitat.

I've called on our supporters to send in emails, so hopefully you will receive a few. Altadena, despite everything we've been through, remains connected to and committed to our wildlife.

With many thanks for your work.

-Kristen

Kristen Ochoa
MD, MPH

Director
Chaney Trail Corridor Project
Website iNaturalist Project Instagram

Health Sciences Clinical Professor
UCLA David Geffen School of Medicine
kochoa@ucla.edu Publications Linkedin


REVEAL
TACTACAM
69F 21℃ 10/07/2024 20:48:47

FGC@FGC

From: amanda smith
Sent: Tuesday, January 27, 2026 12:24 PM
To: FGC
Subject: Please Protect Southern and Central Coast Mountain Lions

Dear Dr. Erika Zavaleta, President of the California Fish and Game Commission:

I am writing to request that the California Fish and Game Commission accept the California Department of Fish and Wildlife's recommendation to list Southern California and Central Coast mountain lions as threatened under the California Endangered Species Act.

Mountain lions are part of the ecosystem of the Chaney Trail Corridor in Altadena and the Angeles National Forest, where the community is working to protect undeveloped wildland. Listing mountain lions as threatened will help us protect their habitat and facilitate their movement, aiding in their recovery and long-term survival in our region.

Respectfully Submitted.

FGC@FGC

From: Ruta Soltanpour
Sent: Monday, January 12, 2026 12:43 PM
To: FGC
Subject: Agenda Item – Mountain Lions (the Central Coast and Southern California)

Dear Commissioners,

I am writing to urge you to support listing the Central Coast and Southern California mountain lion populations as Threatened under California law.

These mountain lions face well-documented and increasing threats from habitat loss, fragmentation, and isolation. Scientific research clearly shows that without stronger protections—particularly for critical habitat and wildlife connectivity—these populations will continue to decline, with serious consequences for their long-term survival and for the health of California's ecosystems.

I strongly encourage the Commission to follow the best available science and the recommendation of the California Department of Fish and Wildlife by approving this listing. Protecting habitat and ensuring connectivity across landscapes is essential to maintaining resilient mountain lion populations and preventing further genetic isolation.

Thank you for your leadership and for considering the science-based actions needed to safeguard California's wildlife for future generations.

Sincerely,

Ruta Soltanpour

FGC@FGC

From: John Teevan
Sent: Monday, January 12, 2026 8:16 PM
To: FGC
Subject: Approve the listing and protect the habitat and wildlife corridors mountain lions need to survive

I am writing to urge the Commission to approve the listing and protect the habitat and wildlife corridors mountain lions need to survive

That would include the following actions:

- Listing the Central Coast and Southern California mountain lions as **Threatened**;
- Assessing the importance of protecting critical habitat and wildlife connectivity; and
- Following the best available science and CDFW's recommendation

Thank you for considering my comments.

Sincerely,
--
John P Teevan III

RANCHO MISSION VIEJO

Via Email to fgc@fgc.ca.gov
January 27, 2026

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Reference: Agenda Item #17 - Mountain Lion

Subject: Rancho Mission Viejo Comments

Dear Members of the California Fish and Game Commission:

Rancho Mission Viejo (RMV) provides the following comments on the Status Review of the Petitioned Southern California/Central Coast Evolutionary Significant Unit (ESU) of Mountain Lion (*Puma concolor couguar*) in California ("Status Review Report") as you consider whether to list the Mountain Lion under the California Endangered Species Act (CESA) as recommended in the Petition to List One or More Evolutionary Significant Units of Mountain Lion in Southern and Central Coastal California as Threatened or Endangered under the CESA ("Petition").

Rancho Mission Viejo (RMV or Ranch) is located in southern Orange County and is owned and managed by the O'Neill family. The Ranch is bound by the existing communities of Rancho Santa Margarita, Mission Viejo, San Juan Capistrano and the undeveloped Cleveland National Forest and MCB Camp Pendleton. Various habitat types including but not limited to coastal sage scrub, chaparral, grassland, oak woodland and riparian are present on the Ranch. Since 1882, the O'Neill family has been a responsible steward of the Ranch. We have, and continue to actively manage the Ranch to protect the resources on it. We intend to continue this tradition of stewardship into the future through implementation of the Southern Subregion Habitat Conservation Plan (SSHCP), approved by U.S. Fish and Wildlife Service (USFWS) on January 10, 2007.

28811 ORTEGA HIGHWAY • P.O. BOX 9 • SAN JUAN CAPISTRANO, CA 92693 • (949) 240-3363 • FAX (949) 248-1763

RMV is the principal permittee under the SSHCP. In summary, the SSHCP Conservation Strategy provides a comprehensive, habitat-based approach to the protection of Covered Species and their habitats by focusing on the lands and aquatic resource areas essential for the long-term conservation of the Covered Species and by providing for appropriate management for those lands. The SSHCP Habitat Reserve ultimately will conserve approximately 32,818 acres in southern Orange County, comprised of historic RMV lands and three County of Orange regional/wilderness parks.

We have previously commented on the petition to list the mountain lion and explained how the SSHCP Habitat Reserve, a product of existing regulatory mechanisms and management efforts, benefits the mountain lion, and in particular the Santa Ana Mountain (SA) population (see RMV, March 30, 2020, attached). As described in the March 2020 comment letter, the 2004 Draft Southern NCCP/HCP Planning Guidelines included the mountain lion as a "planning species." The Planning Guidelines were prepared by an inter-agency working group made up of representatives from USFWS, California Department of Fish and Game, U.S. Army Corps of Engineers, the County of Orange, RMV, and consultant support staff.

Establishment and management of the SSHCP Habitat Reserve addresses several of the management and recovery recommendations contained in the Petition and the Status Review Report, including: 1) Habitat Protection, 2) Crossing Infrastructure, 3) Rodenticides and Pesticides, and 4) Other Protective Measures and Management. We wish to update the Commission on our progress on habitat protection and our successes with crossing infrastructure. We also wish to offer specific comments on the Status Review Report.

Habitat Protection Update

In our letter of March 30, 2020, we provided detailed information to the Commission on how RMV thoroughly considered the available information regarding mountain lion habitat use and movement in the SSHCP planning area. As described previously, 89 percent of the SSHCP Habitat Reserve/Supplemental Open Space occurs in three large, contiguous and functionally connected Habitat Blocks: Eastern Block (23,210 acres), Western Block (7,300 acres) and the Arroyo Trabuco Block (1,900 acres).

We wish to update the Commission on the progress of dedication of RMV lands in the Eastern and Western blocks to the SSHCP Habitat Reserve. Exhibit A depicts Currently Enrolled and Future Habitat Reserve Lands. At this time, RMV has dedicated all of San Juan Creek and the majority of Verdugo Canyon within RMV ownership to the Habitat Reserve thereby permanently protecting these lands in the Eastern Block. RMV has also completed its dedication of Chiquita Ridge and Canyon, and Chiquadora Ridge in the Western Block. Furthermore, additional lands in the Trampas Sub-basin have also been enrolled thus expanding habitat for east-west habitat

connectivity via Linkage K that could be used by mountain lions. To date RMV has conserved 8,704 acres of inter-connected habitat via recordation of the SSHCP Conservation Easement. CDFW is a third party beneficiary of this easement. The County of Orange previously enrolled O'Neill Regional Parks, Riley and Caspers Wilderness Parks in the SSHCP Habitat Reserve. Combined 20,343 acres of the planned 32,818 acres are permanently protected and managed.

Crossing Infrastructure Update

The Petition and the Status Review Report recommend designing and building wildlife crossings in strategic locations to improve wildlife connectivity, including overcrossings, underpasses, culverts, and exclusionary fencing to guide wildlife to safer crossings. As described above, the SSHCP incorporated planning principles that included the mountain lion as a planning species dating back to 2004.

In 2020 we described to the Commission how the SSHCP requires that each road crossing of identified wildlife linkages be designed to maximize the likelihood of long-term connectivity and contiguity. To date, the Cow Camp Road bridge over Chiquita Creek and Cow Camp Road bridge over Gobernadora Creek have been constructed. The Chiquita bridge spans more than 1,400 feet across the confluence of Chiquita and San Juan creeks and is 50-60 feet high. The Gobernadora bridge spans 1,360 feet across Gobernadora Creek and is also 50-60 feet high. In addition, RMV has constructed Gibby Bridge over San Juan Creek to replace an Arizona style crossing. All three bridges provide for the continuous connection between identified linkages and are highly suitable for unrestricted mountain lion passage.

Los Patrones Parkway, a four-lane arterial roadway, was constructed with two large wildlife undercrossings to facilitate wildlife movement, including mountain lion, in the Western Block, and wildlife exclusion fencing to keep wildlife off the roadway. Camera studies continue to document use of these undercrossings by mountain lion, as well as numerous mule deer. See Exhibit B.

Comment on Status Review Report

The Status Review Report discusses four HCP/NCCP's that include the mountain lion as a Covered Species (see page 62) but fails to acknowledge other approved landscape level conservation and management plans, such as the SSHCP. These plans conserve large, relatively unfragmented habitat blocks and linkages that provide both high quality "live in" and movement habitat for wildlife including mountain lion, while still meeting the need for additional housing and infrastructure to support the state's population. These habitat blocks and linkages, which are protected through legally enforceable permit requirements, conditions of approval and/or conservation easements, ensure that large scale planned developments are consistent with the continued existence of the mountain lion. As noted above, in the case of the SSHCP, CDFW is a

third party beneficiary to the SSHCP conservation easement with the power to enforce its terms. Furthermore, the SSHCP like other approved landscape level plans, is subject to annual reporting requirements that ensure proper implementation. RMV has been submitting annual compliance and effectiveness reports for the SSHCP to CDFW since 2007. This lack of acknowledgement of benefits to the mountain lion from other approved landscape level conservation and management plans, like the SSHCP, is a serious shortcoming of the status report that needs to be rectified.

Summary and Conclusion

RMV understands the current and future risk to the SAM mountain lion population, primarily due to the inherent small population size and adverse effects of inbreeding and human-caused mortality. For this reason, RMV has made a substantial effort toward conserving mountain lion habitat in the SA range through:

a. Including mountain lion in the SA range as a planning species in the original design of the SSHCP Habitat Reserve;

b. The preservation and management of large, relatively unfragmented habitat blocks and linkages that provide both high quality "live-in" and movement habitat for mountain lion;

c. The provision of large bridge and culvert crossing structures that will accommodate mountain lion passage;

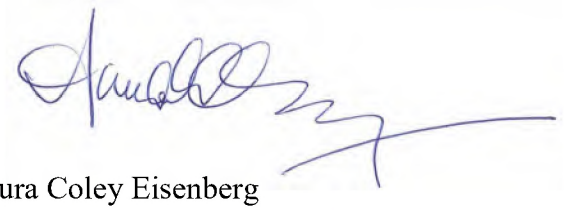
d. The provision of exclusionary fencing in areas where wildlife such as mountain lion may attempt at-grade road crossings; and

e. The practice of not allowing use of anticoagulant rodenticides within the Habitat Reserve, and only using other approved biocides (e.g., herbicides) in a targeted way to support implementation of the SSHCP Adaptive Management and Monitoring Program.

Therefore, RMV believes that the SSHCP adequately addresses the needs of the mountain lion within its portion of the SA population. If the mountain lion is listed under CESA, the SSHCP Conservation Strategy should be recognized as contributing to the protection and management of the SAM population, and that the SSHCP Covered Activities likely would not result in a "take" pursuant to California Fish and Game Code Section 86 therefore a Section 2081(b) Incidental Take Permit would not be required for such Covered Activities.

RMV appreciates the opportunity to provide these comments. Should you have any questions regarding our comments, please feel free to contact me at (949) 240-3363 Ext. 297 or via email at lcoleyeisenberg@ranchomv.com.

Sincerely,



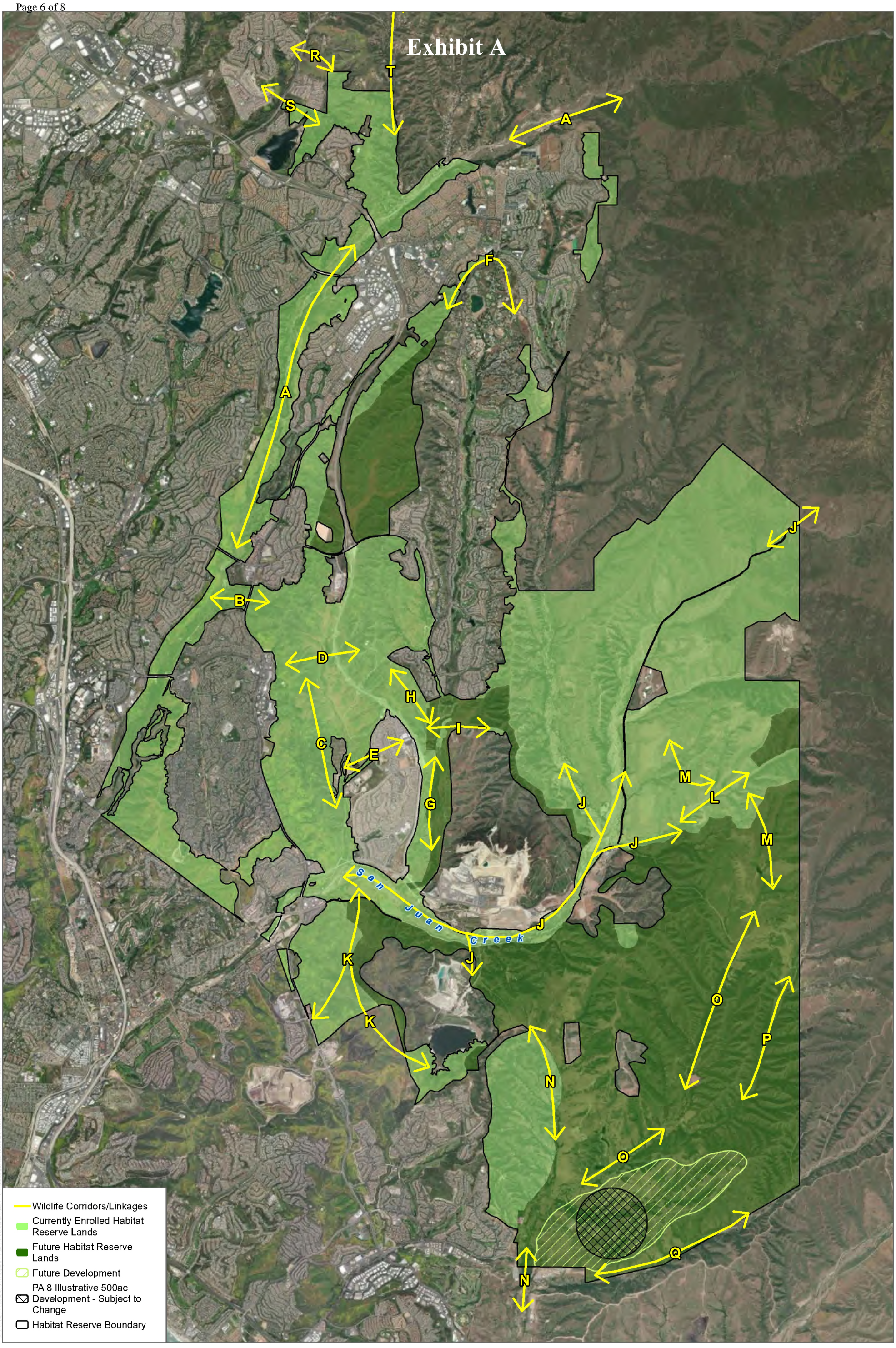
Laura Coley Eisenberg
Senior Vice President, Regulatory Compliance & Open Space Management

Attachments:

Exhibit A: Currently Enrolled and Future SSHCP Habitat Reserve Lands

Exhibit B: Wildlife Use of Los Patrones Parkway Wildlife Undercrossings

March 30, 2020, Rancho Mission Viejo Letter of Comment



SOURCE: ESRI 2024

DUDEK 0 2,950 5,900 Feet

EXHIBIT A

Habitat Reserve with Wildlife Corridors/Linkages

Rancho Mission Viejo

Exhibit B

Los Patrones Parkway Wildlife Undercrossing #1





Los Patrones Parkway Wildlife Undercrossing #2





RANCHO MISSION VIEJO

March 30, 2020

VIA EMAIL

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Reference: Agenda Item 32: Mountain Lion CESA Petition

Subject: Rancho Mission Viejo Comments

Dear Members of the California Fish and Game Commission:

Rancho Mission Viejo (RMV) provides the following comments for your consideration as you determine whether listing under the California Endangered Species Act (CESA) is warranted for the mountain lion as recommended in the Petition to List One or More Evolutionary Significant Units of Mountain Lion in Southern and Central Coastal California as Threatened or Endangered under the CESA ("Petition").

Rancho Mission Viejo (RMV) is located in Southern Orange County and is owned and managed by the O'Neill family. The ranch is bound by the existing communities of Rancho Santa Margarita, Mission Viejo, San Juan Capistrano and the undeveloped Cleveland National Forest and MCB Camp Pendleton. Various habitat types including but not limited to coastal sage scrub, chaparral, grassland, oak woodland and riparian are present on the ranch. Since 1882, the O'Neill family has been a responsible steward of the Ranch. We have, and continue to actively manage the Ranch to protect the resources on it. We intend to continue this tradition of stewardship into the future through implementation of the Southern Subregion Habitat Conservation Plan (SSHCP), approved by U.S. Fish and Wildlife Service on January 10, 2007.

RMV is the principal permittee under the SSHCP. In summary, the SSHCP Conservation Strategy provides a comprehensive, habitat-based approach to the protection of covered species and their habitats by focusing on the lands and aquatic resource areas essential for the long-term conservation of the covered species and by providing for appropriate management for those

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lands. The SSHCP Habitat Reserve ultimately will conserve approximately 32,818 acres in southern Orange County, comprised of historic Rancho Mission Viejo lands and three County of Orange wilderness parks.

We wish to inform the Commission of how the SSHCP Habitat Reserve, a product of existing regulatory mechanisms and management efforts, benefits the mountain lion, and in particular the Santa Ana Mountain (SAM) population. Establishment and management of the SSHCP Habitat Reserve address several of the management and recovery recommendations contained in the Petition, including: 1) Habitat Protection, 2) Crossing Infrastructure, 3) Rodenticides and Pesticides, and 4) Other Protective Measures and Management.

Habitat Protection

The Petition recommends full protection of mountain lion habitat, including resource-use patches and movement corridors, and a prohibition on large-scale development in primary travel corridors and habitat linkages, including between the SAM and Eastern Peninsula Range (EPR).

The mountain lion was addressed as a "planning species" in preparation of the SSHCP even though it was not a federally listed species or otherwise protected by federal regulations (Draft NCCP/HCP Planning Guidelines 2004, or "Planning Guidelines"). It is not a "Covered Species" in the SSHCP. Because the SSHCP was originally planned as a joint NCCP/HCP, the Planning Guidelines incorporated the "NCCP Tenets" outlined in the NCCP Conservation Guidelines and "Reserve Design Principles" based on the NCCP Tenets prepared by a panel of NCCP Science Advisors convened by The Nature Conservancy. The Planning Guidelines were

> *intended to provide an objective and common set of planning considerations and recommendations for use by resource and regulatory agencies and program participants in selecting and evaluating reserve program, restoration and management alternatives for the Southern Subregion NCCP/HCP.*
>
> (p. 1-1)

With respect to the mountain lion, and consistent with the information presented in the Petition, this species ranges throughout much of undeveloped portions of the SSHCP planning area. A radiotracking study found that virtually the entire planning area is habitat for the SAM population (Barrett and Beier 1993) (see attached Figure 169-M). Identified important use areas in this study include Arroyo Trabuco, Thomas Riley Wilderness Park, and the Richard & Donna O'Neill Conservancy. Surveys in the early 1990s for the proposed Foothill Transportation Corridor (SR-241), which was proposed to run north-south through the central portion of the planning area, recorded mountain lions at three camera stations, including within Cristianitos Canyon and Blind and Gabino canyons within the San Mateo Watershed and Sulphur Canyon

within the San Juan Creek Watershed. Other identified important "live-in"[1] and movement habitat in the planning area that connects to larger core habitat in the Cleveland National Forest includes La Paz and Blind canyons in the San Mateo Watershed and Verdugo Canyon in the San Juan Creek Watershed. The western portion of the planning area, including Arroyo Trabuco, Sulphur Canyon (associated with Chiquadora Ridge) and Chiquita Ridge in the San Juan Creek Watershed, was considered less suitable as live-in habitat for mountain lions when planning for the SSHCP was initiated in 1993 due to existing urbanization and agricultural land uses, resulting in smaller core habitat patches, but these areas still provide important movement habitat.

The Planning Guidelines included two main Planning Recommendations for mountain lion - Protection Recommendations and Management Recommendations:

1. Protection Recommendations

- *Protect "live-in" habitat within the portion of the San Mateo Watershed in the planning area and Verdugo Canyon in the San Juan Creek Watershed adequate to meet the life history requirements of the mountain lion, comprising a large, unfragmented block of chaparral and coastal sage scrub directly connected to more than 100,000 acres in Caspers Wilderness Park, the Cleveland National Forest, and Camp Pendleton. (Beier and Barrett [1993] describe the Santa Ana Mountain Range as encompassing 800 mi^2 [512,000 acres) of "contiguous wildlands used by cougars." This habitat includes the Santa Margarita Mountains, the Santa Rosa Plateau, the Chino Hills and the San Joaquin Hills.) "Live-in" habitat provides adequate prey (primarily mule deer) and vertical and horizontal cover suitable as resting and bedding sites (e.g., woodlands and riparian areas, rocky areas). The reader should note that the "live-in" habitat within in* [sic] *the San Mateo Watershed portion of the planning area and Verdugo Canyon would only provide about 25-30 percent of an average mountain lion home range in the Santa Ana Mountains (Padley 1989, 1996), and that the home range of any lions using the planning area likely will include Caspers Wilderness Park, Audubon Starr Ranch Sanctuary, Cleveland National Forest, and Camp Pendleton.*

- *Maintain habitat connections throughout the planning area to provide movement opportunities for the mountain lion. As described above for individual sub-basins, as well as other areas in the planning area, important movement areas for mountain lion include Arroyo Trabuco, the Foothill-Trabuco Specific Plan Area, Chiquita Ridge, Sulphur Canyon, San Juan Creek, Trampas Canyon, Cristianitos Canyon, Verdugo Canyon, Gabino Canyon, La Paz Canyon and Talega Canyon.*

[1]Live-in habitat is includes large, unfragmented areas that provide for most if not all of the mountain lion's life history requirements including food, shelter, denning sites, and food sources (primarily mule deer).

2. Management Recommendations

In areas identified as "live-in" habitat or habitat connections, roads that are necessary to serve approved land and water uses located inside or outside the Habitat Reserve shall be designed and sited to accommodate mountain lion movement to the maximum extent feasible. Where roads are necessary, under the approved NCCP/HCP, they will be designed consistent with safety, roadway design criteria that are appropriate for the setting and desired roadway function. Roadway design shall include bridges and/or culverts large enough to accommodate mountain lion movement at key areas and, where appropriate and feasible, may include wildlife over crossings. As appropriate, fencing, grading and plant cover will be provided to serve wildlife crossings consistent with conservation principles and the adaptive management program. Where feasible and safe, lighting along roadways within the Habitat Reserve should be avoided. Where roadway lighting within the Habitat Reserve is necessary for public safety reasons, it should be low-sodium or similar low intensity lighting that is directed away or shielded from the Habitat Reserve.

These Protection and Management Recommendations for mountain lion were incorporated into the SSHCP in Appendix E.

Upon completed phased dedication of open space timed in relation to development, the SSHCP Habitat Reserve ultimately will conserve approximately 32,818 acres, representing about 72 percent of the vegetation communities and other landcovers in Subarea 1[2], as well as an additional 4,400 acres of Supplemental Open Space (SOS)[3], resulting in the protection of at least 81 percent of the vegetation communities/landcovers in Subarea 1. Approximately 16,536 acres of the planned Habitat Reserve are located on RMV-owned lands.[4] The SSHCP concluded that this level of protection would be adequate to support the wildlife planning species addressed in the Planning Guidelines, including mountain lion and its main prey mule deer (see SSHCP Chapter 13, pp. 199- 226-227). The Petition states that the SAM mountain lion population inhabits about 1,533 km^2 (~379,000 acres) of undeveloped areas, so the Habitat Reserve and SOS comprise just under 10% of the total inhabited area in the SAM range. As noted above, habitat within in the San Mateo Watershed portion of the planning area and Verdugo Canyon in the San Juan Creek Watershed would provide about 25-30 percent of an average mountain lion home range in the SAM range and that the home range of any lions using the Habitat Reserve likely

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[2] The Southern Subregion NCCP/HCP planning area is divided into four Subareas. Subarea 1 includes the RMV General Plan Amendment/Zone Change ownership, previously set aside open space owned by RMV, the County-owned parklands and Prima Deshecha landfill, the National Audubon Society Starr Ranch and portions of the Santa Margarita Water District lands.

[3] Supplemental Open Space (SOS) refers to designated open space that although not a part of the managed Habitat Reserve, serves to contribute to the subregional Conservation Strategy by providing additional open space containing a combination of vegetation communities supporting Covered Species, wildlife connectivity and refugia areas within the study area which enhance the overall function and value of the Habitat Reserve.

[4] Changes to the Habitat Reserve boundaries that have occurred since approval of the HCP have increased the size of the Habitat Reserve to 33,306 acres.

will include Caspers Wilderness Park, Audubon Starr Ranch Sanctuary, Cleveland National Forest, and/or Camp Pendleton as these areas comprise a large, mostly unfragmented habitat area.

Further, 89 percent of the Habitat Reserve/SOS occurs in three large, contiguous and functionally connected Habitat Blocks analyzed in the context of the NCCP Conservation Guidelines Reserve Design Tenets and the Reserve Design Principals, based on the NCCP Tenets, prepared by the NCCP Science Advisors. These Tenets and Reserve Design Principals consider the conservation of planning species (including mountain lion); habitat block size; habitat contiguity (i.e., lack of fragmentation) and connectivity; and biological diversity and physiographic representativeness (e.g., spatial distribution and elevation).

As shown in attached Figure 159-M, the Eastern Block is a large, contiguous habitat block containing approximately 23,210 acres. It includes the San Mateo Watershed within RMV lands south of Verdugo Canyon and the San Juan Creek Watershed north of Verdugo within Caspers Wilderness Park, Starr Ranch Sanctuary, and Cleveland National Forest. The Eastern Block provides core live-in habitat and several movement corridors for mountain lions, including along San Juan Creek, Bell Canon, Verdugo Canyon, Gabino Canyon, La Paz Canyon, Cristianitos Canyon, and Talega Canyon (see attached Figures 159-M and 169-M).

The Western Block is a smaller 7,300-acre block to the west, extending from the Upper Chiquita Canyon Conservation Area in the northern portion of Chiquita Canyon to San Juan Creek and connecting with adjacent portions of Chiquadora Ridge, the Riley Wilderness Park, Gobernadora Creek, and to Caspers Wilderness Park via an open space corridor (linkage I) at the northern edge of the PA 3 development area. This Western Block is less suitable as live-in habitat for mountain lion due to adjacent existing and planned/under construction development (PA 3) and agricultural land uses, resulting in smaller unfragmented habitat patches, but this block still provides movement habitat through the Habitat Reserve for the species.

The Arroyo Trabuco Block is a 1,900-acre block of habitat in Arroyo Trabuco that extends north-south from the Cleveland National Forest to San Juan Capistrano. Most of Arroyo Trabuco has been constrained by adjacent urban development for decades, but still provides movement habitat for mountain lions.

The three habitat blocks are all interconnected by habitat linkages that will be preserved and managed in the Habitat Reserve by RMV or the County of Orange, as shown in Figure 159-M. The Arroyo Trabuco and Western habitat blocks are connected by existing linkage B between the existing Ladera Ranch and Las Flores developments, which has a minimum width of about 1,500 feet. The Western and Eastern blocks are connected by linkages I and J. Linkage I is located between existing Coto de Caza and planned PA 3 and would have a minimum width of 2,000 feet. Linkage J is located along San Juan Creek and would have a minimum width of about 1,320

feet with planned setbacks from the 100-year floodplain. Basically all the labeled linkages except F, K, R and S, which are either constrained by size, or do not connect to suitable mountain lion habitat under the SSHCP, may be used by mountain lions for movement through the Habitat Reserve. However, since the SSHCP was approved in 2007, additional open space has been planned for linkage K related to development of PA 5. Under the SSHCP, linkage K would have had narrow dimensions (just a few hundred feet wide at some points) had PA 5 development occurred all the way to its southern boundary as proposed under the adopted B-12 Alternative (Figure 155-M). With the proposed additional open space, linkage K would be more than 1,200 feet wide at its narrowest point if one includes the natural open space along the northern border of the Talega development south of the RMV property boundary, thus expanding habitat for east-west habitat connectivity via linkage K that could be used by mountain lions.

Further, the SSHCP Habitat Reserve Management Program (HRMP) requires monitoring and management of certain vegetation communities in habitat linkages and wildlife corridors in the Habitat Reserve, including oak woodlands, riparian/wetland, coastal sage scrub and chaparral. Periodic 5-year Management Action Plans (MAPs) include goals and objectives for each community to ensure their functionality for wildlife use and movement, including mountain lions. For example, the most recent 2019-2024 MAP includes *Objective OW1.3. Maintain acreage of oak woodland communities in the identified habitat linkages and corridors in 2023 within 5% of 2008 baseline values.* Along with each explicit objective, the MAP spells out a Monitoring Approach (e.g., periodic mapping), a Management Action Threshold (e.g., a threshold percent change below baseline levels), and possible Management Actions (e.g., health assessments and remedial restorative actions).

Crossing Infrastructure

The Petition recommends designing and building wildlife crossings in strategic locations to improve wildlife connectivity, including overcrossings, underpasses, culverts, and exclusionary fencing to guide wildlife to safer crossings. Recommendations of mountain lion experts include crossings of Interstate 15 (I-15) approximately 20 miles east of the Habitat Reserve connecting the SAM to the EPR. The Petition also recommends that suitable habitat exists, through preservation or restoration/enhancement, on both sides of crossing structures, and that human activity be restricted and foot trails located away from the structures.

As described above, the three large habitat blocks - Arroyo Trabuco, Western, and Eastern - have high habitat contiguity and provide suitable habitat for mountain lion movement throughout the Habitat Reserve. As analyzed in the SSHCP, however, the construction of roads and other infrastructure within the Habitat Reserve, would contribute to some additional internal fragmentation in the future that could affect mountain lion movement. PAs 1 and 2 have been mostly fully developed, and construction in PA 3 began in January 2020.

Attached Figure 155-M shows the proposed circulation system analyzed in the SSHCP. Cow Camp Road, running east-west between San Juan Creek and PA 2 and through PA 3, was proposed to cross Chiquita Creek (linkage C), Gobernadora Creek (linkage G) and San Juan Creek (linkage J) with bridges. Per the SSHCP, each of these crossings would be designed to maximize the likelihood of long-term connectivity and contiguity. For example, per the SSHCP, bridge heights would be a minimum of 20 feet high to minimize shading effects on riparian vegetation. To date, the Cow Camp Road bridge over Chiquita Creek has been constructed and the roadway was moved north to within the PA 2 development to minimize direct impacts to the Habitat Reserve. This bridge spans more than 1,400 feet across the confluence of Chiquita and San Juan creeks and is 50-60 feet high, well in excess of the minimum 20-foot requirement in SSHCP. The bridge crossings of Gobernadora and San Juan Creeks are associated with development of PA 3. The Cow Camp Bridge over Gobernadora Creek is under construction and will be complete later this year. This bridge spans 1,360 feet across Gobernadora Creek and is also 50-60 feet high, also well in excess of the minimum 20-foot requirement in the SSHCP. Grandeza Bridge over Gobernadora Creek from PA 2 to PA 3 will fully span Gobernadora Creek (and most of the canyon) at a height of approximately 130 feet, well in excess of the minimum 20-foot requirement in the SSHCP. Cow Camp Road Bridge over San Juan Creek will be designed to at least exceed the 20-foot requirement in the SSHCP.

Most significantly the northern portion of Los Patrones Parkway (referred to as "F Street" in the SSHCP) has been constructed south to PA 2 along the eastern side of Chiquita Canyon from its connection with SR-241 at Oso Parkway in the north. It generally follows the alignment previously proposed for SR-241, as shown in attached Figure 155-M. Attached Figure 159-M shows two conceptual east-west movement linkages across Chiquita Canyon north of PA 2. To facilitate wildlife crossings of Los Patrones Parkway, two large wildlife undercrossings were constructed to convey wildlife between Chiquita Canyon and Sulphur Canyon, which is a documented mountain lion movement corridor that links Chiquita Canyon in the west to Caspers Wilderness Park to the east via linkages H and I. In addition, all drainage culverts were upsized to 60 inches to accommodate mountain lion and other smaller predator movements. Camera studies have documented at least one mountain lion entering one of the undercrossings, as well as numerous mule deer. These studies are part of a Wildlife Corridor Monitoring Report required by CDFW for five years following the roadway opening. In addition, wildlife exclusion fencing was installed along portions of Las Patrones Parkway based on recommendations by mountain lion expert Dr. Winston Vickers, who conducted recent studies in the region.

Rodenticides and Pesticides

The Petition reviewed the available information on pesticide and herbicide effects on mountain lions (pp. 50-51). The Petition cites evidence from several studies for secondary poisoning of predators such as coyotes, bobcats, kit foxes, fishers, and raptors which could be extrapolated to

similar effects on mountain lions. Evidence of secondary poisoning of mountain lions is more limited, but researchers have found high rates of rodenticides in the systems of mountain lions and suspect that these rodenticides could be associated with direct deaths and with weakened immune systems that may make them more vulnerable to risk factors such as intraspecific conflicts. With respect to legal herbicides such as glyphosate, the Petition does not cite specific data for direct or secondary poisoning, but infers that mountain lions could be detrimentally exposed to herbicides through deer, which may browse on contaminated plants. This may be a particular problem in agricultural areas where crops browsed by deer may be subject to broad-scale herbicide treatment. As such, the Petition recommends prohibiting the use of second-generation anticoagulant rodenticides ("SGARs"), such as brodifacoum, bromadiolone, difenacoum, and difethialone in core habitat areas and linkages, and limiting the use of other pesticides and herbicides that may have negative effects.

Appendix J, Invasive Species Control Plan ("Control Plan"), to the SSHCP describes the control and eradication methods to be used in the Habitat Reserve to control invasive plants and introduced predators on sensitive species. Invasive species can have large-scale detrimental effects on natural vegetation communities and wildlife, and thus are an important focus of the HRMP. Control methods included mechanical (e.g., hand pulling, dragging, digging, etc.) and targeted use of chemical herbicides and pesticides. Acceptable uses of pesticides and herbicides are prescribed in the Control Plan, including a consideration of the potential adverse collateral effects on non-target species. The recommended methods for controlling particular plant species in the Control Plan were cross-referenced with the California Interagency Noxious Weed Coordinating Committee and Invasive Plants of California Wildlands' CalWeed Database. Overall, long-term control of invasive plants and introduced predators on RMV and throughout the Habitat Reserve will enhance habitat functions for native plant and animal species, which use and occupy the Habitat Reserve, and will substantially increase the likelihood that the Habitat Reserve will function successfully and provide for persistence and recovery of target species.

Rodenticides, which appear to have significant adverse effects on mountain lions, are not allowed in the Habitat Reserve. Chemical controls in the Habitat Reserve are currently restricted to targeted use of herbicides for pernicious invasive species such as giant reed (*Arundo donax*) which primarily occurs in creeks and artichoke thistle (*Cynara cardunculus*) which occurs in uplands, and chemical controls on the non-native invasive Argentine ant (*Linepithema humile*) and red imported fire ant (*Solenopsis invicta*). As other non-native plant species invasions of the Habitat Reserve occur, targeted herbicidal controls may be applied as needed and appropriate if mechanical removal is not effective, practical, or feasible. Per the SSHCP, use of pesticides in areas adjacent to the Habitat Reserve (e.g., golf courses) will be minimized to the extent feasible and will be used in accordance with an Integrated Pest Management Program designed to avoid and minimize effects on native species and habitats.

An example is San Juan Creek (linkage J) where large-scale giant reed removal has occurred over the past several years and was completed 2018. It is expected that the giant reed control program will be in a maintenance phase in the future where smaller, localized infestations are detected through regular monitoring and treated as-needed. As part of its cattle ranching operations, RMV has consistently performed eradication of artichoke thistle across most of the RMV property since the 1970s and efforts continue as-needed. Artichoke thistle still occurs in certain areas of the Habitat Reserve, but in much smaller populations compared to other un-managed coastal uplands due to the consistent ongoing control efforts.

According to the Invasive Species Control Plan, chemical controls of Argentine ants and fire ants are planned to occur on an as-needed, targeted basis when major outbreaks occur. Emerging methods that avoid and minimize potential impacts to non-target species will be employed to the extent feasible, such as bait traps designed to preclude access by non-target species. Controls on Argentine ant will be conducted as part of the Habitat Reserve management program, primarily along the urban-Habitat Reserve interface where mountain lion activity is less likely. Controls of fire ants is conducted by Orange County Vector Control on an as-needed basis, primarily along Chiquita Creek to date, which is not considered live-in habitat for mountain lions, but which may support movement.

As noted above, rodenticides are not used in the Habitat Reserve as a management tool and thus management actions are not expected to contribute to such impacts in the SAM population. Adverse effects of herbicides, mediated through deer could possibly occur, but are expected to occur at low levels, if at all. Herbivory of artichoke thistle by deer is unlikely because of the plant's spines (https://www.cal-ipc.org/resources/library/publications/ipcw/report38/), so the limited and targeted use of herbicides on thistle is unlikely to be passed onto mountain lions. Likewise, giant reed is considered to be highly "deer resistant" (https://njaes.rutgers.edu/deer-resistant-plants/), so the limited and targeted use of herbicides on giant reed in the future also is unlikely to be passed onto mountain lions.

Other Protective Measures and Management

In addition to habitat conservation measures and the Invasive Species Control Plan that address the management and recovery recommendations in the Petition, the SSHCP provides for several other protective measures and management actions that will ensure the availability of the suitable live-in and movement habitat in the Habitat Reserve for mountain lions.

- An overall Habitat Reserve Management Program, which includes adaptive management of suitable habitat for the mountain lion, such as oak woodlands, riparian communities, chaparral and coastal sage scrub, as well as wildlife linkages and corridors.

- Public and HOA education programs regarding living with native wildlife including mountain lions, Habitat Reserve access restrictions, public education signage regarding Habitat Reserve access restrictions (i.e., no unauthorized access) and prohibitions on dogs in the Habitat Reserve.

- A Habitat Restoration Plan (Appendix H to thc SSHCP).

- A Wildland Fire Management Plan (Appendix N to the SSHCP).

- County Ongoing Management Plans for Caspers Wilderness Park and Thomas Riley Wilderness Park (Appendix F to the SSHCP).

- Construction avoidance and minimization measures implemented through Biological Resources Construction Plans that include specific measures to avoid and minimize impacts to sensitive species and resources, such as any active mountain lion denning sites within or near planned construction sites (Appendix U to the SSHCP).

Future Management Measures by Others

RMV has identified several future management measures by other entities, that RMV would support, that could build on the SSHCP Conservation Strategy and directly benefit the SAM population. These measures include:

1. Installation of wildlife exclusion fencing along State Route 74 (SR-74/Ortega Hwy).

SR-74 is a two lane rural highway operated by Caltrans that provides access between Riverside and Orange counties. Average daily trips on this road are 22,000 vehicles. Studies cited in the Petition have identified that vehicle strikes account for a high proportion of deaths in mountain lions in the SAM, increasing the risk of extinction. Vickers (2015, cited in the Petition) has documented vehicle strikes on SR-74. On the portion of SR-74 within RMV lands there are two large culvert crossings that provide opportunities for mountain lions to cross under the highway; however, there is no fcncing in place that would push lions to using these culverts. The lack of exclusionary fencing results in lions opportunistically crossing the highway at grade. A management measure to address this issue would be the installation of wildlife exclusion fencing along appropriate sections of SR-74 by Caltrans.

2. Support and provide funding for population estimate studies of mountain lions in the SAM.

RMV has previously provided a letter of support for the NCCP Local Assistance Grant Program application submitted by Dr. Winston Vickers of UC Davis for the study titled: *Estimation of the population of mountain lions in the Santa Ana Mountains and comparison of techniques for population estimation and DNA collection, wildlife photo technology development, and development of a long-term monitoring plan and collaborations for mountain lion populations in regional NCCP's.* Studies such as this should be funded.

3. Support the provision of a functional wildlife crossing of I-15 to connect the SAM and EPR mountain lion populations.

The Petition identifies I-15 as significant barrier to mountain lion movement between the SAM and EPR, thus contributing to the SAM mountain lion population risk of extirpation. According to the Petition, this risk is primarily due to its small inherent population size and the lack of interchange between the SAM and EPR populations needed to prevent inbreeding, in combination with human-caused mortality due to vehicle strikes, depredation kills, and other factors within the SAM range. Vickers et al. (2015, cited in the Petition) documented only one radio-collared mountain lion crossing between EPR and SAM in the last 13 years, and this individual was killed 25 days later for depredating sheep. Gustafson et al. (2017, as cited in the Petition) documented three males moving from the EPR to the SAM over 15 years, but only one successfully bred. According to the Petition, with inbreeding depression, it is projected that the SAM population will likely be extirpated within 50 years. A viable wildlife crossing of I-15 would therefore seem essential to the viability of the SAM population.

Summary and Conclusion

RMV understands the current and future risk to the SAM mountain lion population, primarily due to the inherent small population size and adverse effects of inbreeding and human-caused mortality. For this reason RMV has made a substantial effort toward conserving mountain lion habitat in the SSHCP Habitat Reserve. During the SSHCP planning process, and associated CEQA and NEPA reviews, RMV thoroughly considered the available information regarding mountain lion habitat use and movement in the SSHCP planning area, which is a relatively small subset of the SAM range used by mountain lions. As discussed in detail above, the SSHCP provides for comprehensive conservation and management of the species within the Habitat Reserve, including providing for and maintaining mountain lion movement via natural habitat linkages and corridors, and large bridge and culvert crossing structures. In addition, RMV has coordinated with, and supported, Dr. Vickers more recent work on mountain lions in the region, and supports future work by Dr Vickers.

As described above, live-in habitat within the SSHCP in the San Mateo Watershed portion of the planning area and Verdugo Canyon in the San Juan Creek Watershed provides about 25-30 percent of an average mountain lion home range in the SAM, and thus has a limited, albeit important, contribution to the overall viability of the SAM population, estimated in the Petition to be approximately 29 individuals (Benson et al. 2019, as cited in the Petition). As the sole owner and manager of more than 16,500 acres of the 32,800-acre Habitat Reserve, RMV is able to effectively protect and manage important habitat for the mountain lion in the SAM range through open space dedication and implementation of the HRMP. Therefore, RMV believes that the SSHCP adequately addresses the needs of the mountain lion within its portion of the SAM population. If the mountain lion is listed under CESA, the SSHCP should be recognized as contributing to the protection and management of the SAM population.

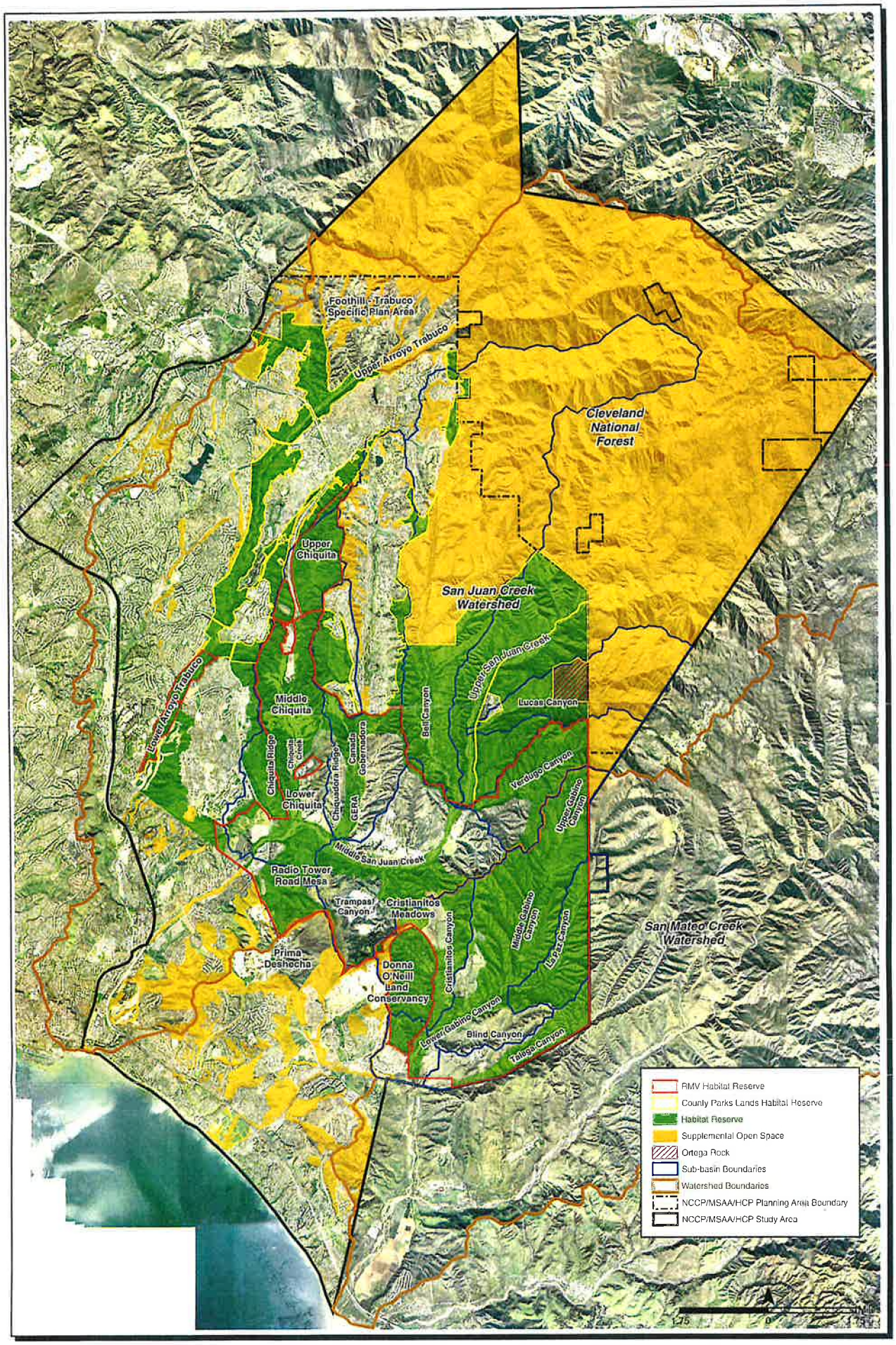
RMV appreciates the opportunity to provide these comments. Should you have any questions regarding our comments, please feel free to contact me at (949) 240-3363 Ext. 297 or via email at lcoleyeisenberg@ranchomv.com.

Sincerely,

Laura Coley Eisenberg
Senior Vice President, Open Space & Resource Management

Attachments

SSHCP Figures 169-M, 155-M & 159-M



NCCP/MSAA/HCP

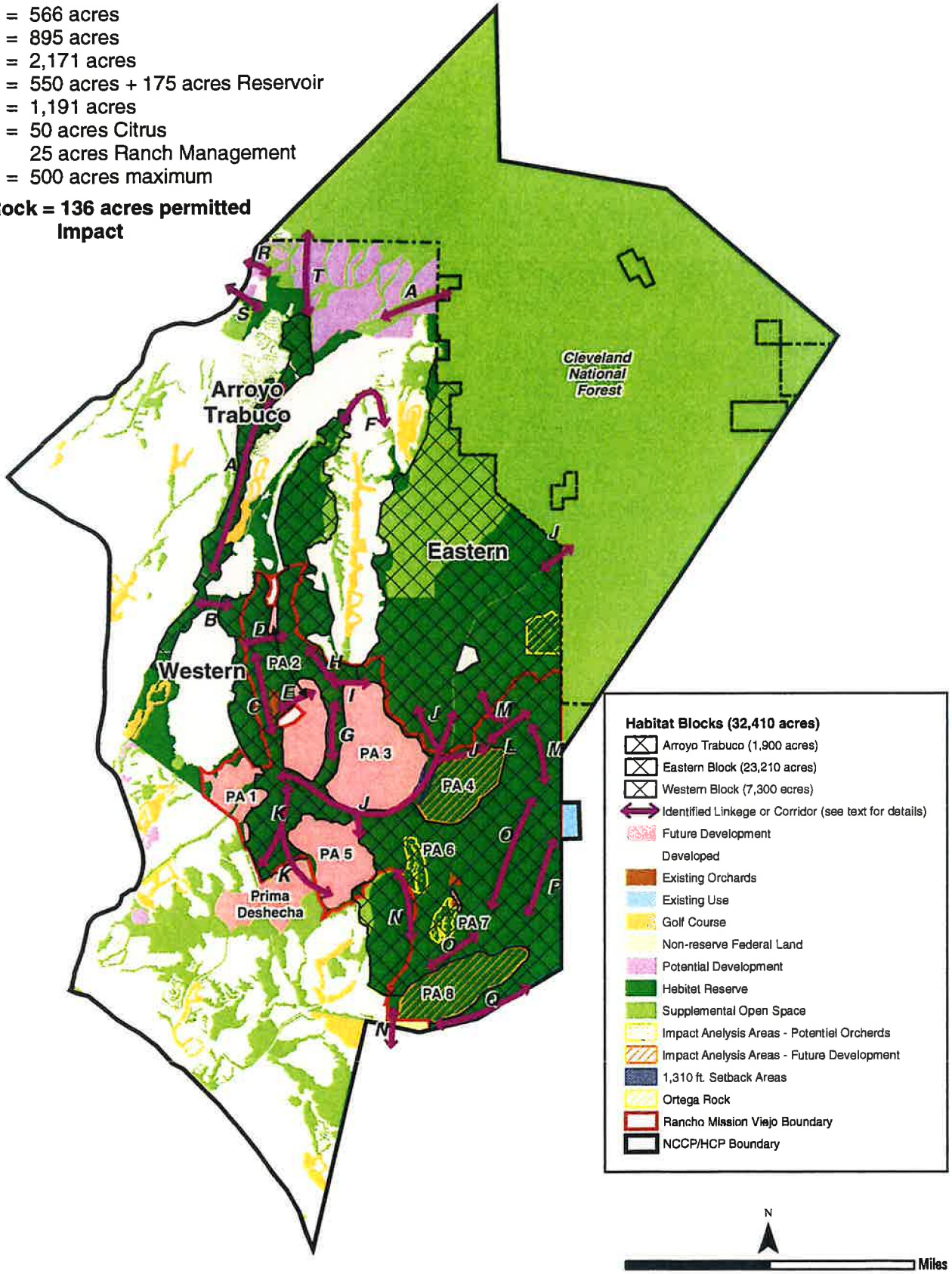
Habitat Reserve with Major Landscape Features

FIGURE 169-M

Planning Area Development

PA 1 = 566 acres
PA 2 = 895 acres
PA 3 = 2,171 acres
PA 4 = 550 acres + 175 acres Reservoir
PA 5 = 1,191 acres
PA 6,7 = 50 acres Citrus
25 acres Ranch Management
PA 8 = 500 acres maximum

Ortega Rock = 136 acres permitted Impact



NCCP/MSAA/HCP

Alternative B-12 Habitat Blocks with Habitat Linkages & Wildlife Corridors

FIGURE 159-M

Planning Area Development

PA 1 = 566 acres
PA 2 = 895 acres
PA 3 = 2,171 acres
PA 4 = 550 acres + 175 acres Reservoir
PA 5 = 1,191 acres
PA 6,7 = 50 acres Citrus
25 acres Ranch Manegement
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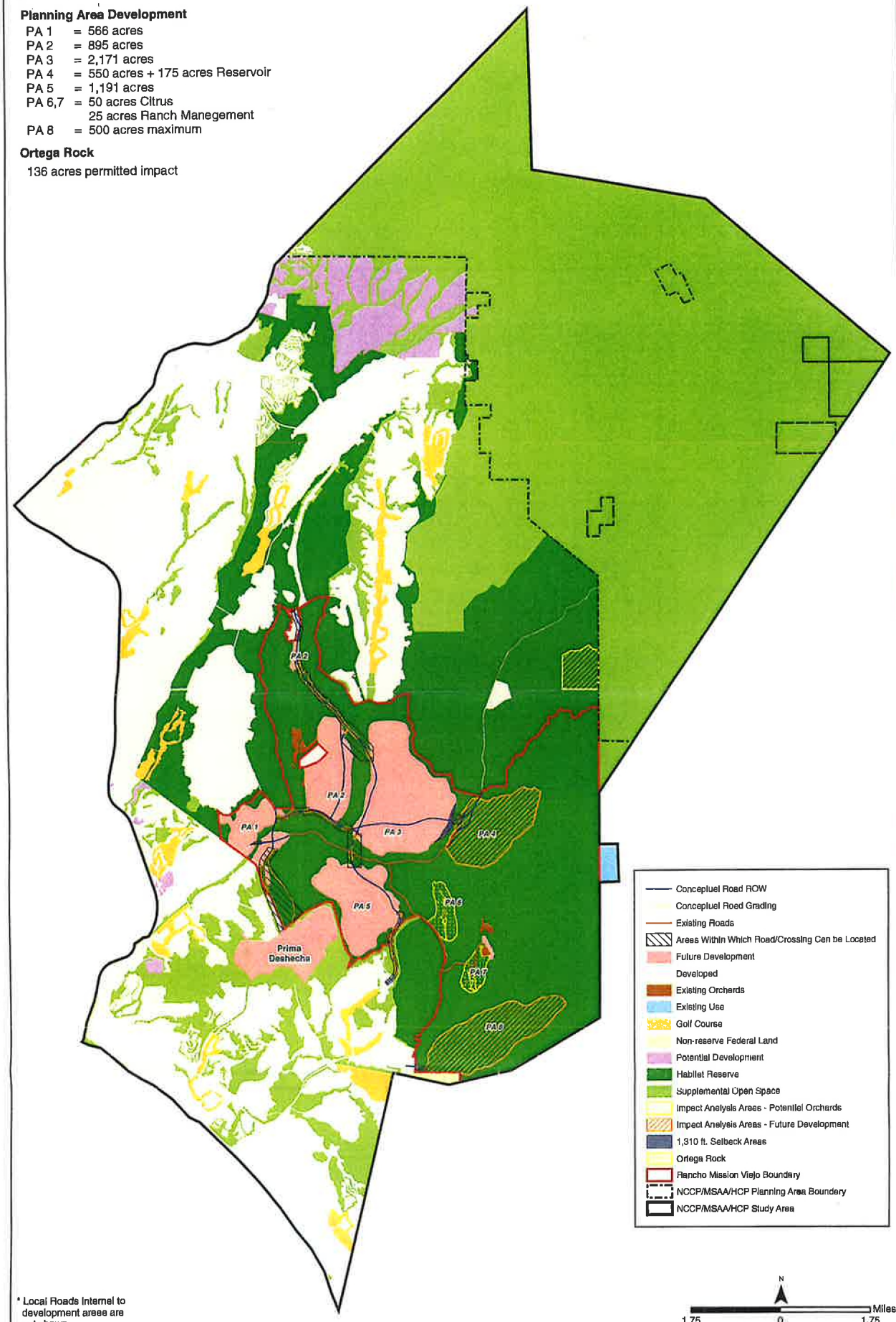
Ortega Rock

136 acres permitted impact



* Local Roads internal to development areas are not shown.

NCCP/MSAA/HCP

Alternative B-12 with Proposed Circulation System

FIGURE 155-M

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 4

May 5, 2026 Letter – Footnote 12

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EXECUTIVE SUMMARY

Purpose

The *L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles* (*Thresholds Guide*) is a guidance document that draws together practical information useful to City staff, project proponents, and the public involved in the environmental review of projects in the City of Los Angeles subject to the California Environmental Quality Act (CEQA). The CEQA process, established by state law, requires the review of proposed projects in order to identify and address potential environmental effects.

This is the City's initial effort to develop citywide guidance for CEQA impact analyses. The applicability and use of the *Thresholds Guide* may be re-evaluated after a period of use. The *Thresholds Guide* is intended to be available as a voluntary tool. It supports the City's development reform efforts to streamline and enhance the City's permit and development processes. The *Thresholds Guide* is a consensus document that represents the technical input from a citywide working group, comprised of representatives from 18 City departments and bureaus, including the Environmental Affairs Department (EAD).

Content

The *Thresholds Guide* includes two sets of criteria to evaluate project impacts: screening and significance criteria. The **screening criteria** provide assistance in responding to the questions in the State's Initial Study Checklist and, thus, determining the appropriate environmental document to prepare (e.g., negative declaration, mitigated negative declaration, or environmental impact report). The **significance thresholds** assist in determining whether a project's impacts would be presumed significant under normal circumstances and, therefore, require mitigation to be identified.

The *Thresholds Guide* contains three types of significance thresholds - **quantitative, qualitative, and case-by-case**. Quantitative thresholds provide a measurable criterion with which to compare one or more characteristics of the proposed project, such as "the vehicle-to-capacity ratio increase at a study intersection is greater than 0.020." A qualitative threshold requires comparison to non-numerical criteria, such as "interference with a wildlife movement corridor." The case-by-case thresholds were developed for issue areas where a definitive threshold could not be established, either because impacts are site- or project-specific or because there is no consistent technical guidance available. The existence of screening criteria and significance thresholds may also encourage project proponents to incorporate impact-reducing measures into project designs, prior to submitting project applications to the City, to reduce potential impacts below the significance level.

The screening criteria and significance thresholds are based on a variety of factors, including existing local, state, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. Each threshold has been reviewed with respect to meeting the following goals: objectivity and applicability, defensibility, practicality, nexus between impacts and mitigation, and legal liability.

The *Thresholds Guide* provides assistance in evaluating 46 of the most common environmental issues in the City of Los Angeles, grouped into the following categories:

- Air Quality
- Population and Housing

- Biological Resources
- Cultural Resources
- Geology
- Hazards
- Land Use
- Noise
- Public Services
- Public Utilities
- Transportation
- Visual Resources
- Water Resources

The information is organized generally in the same order in which the issues appear in the State's Initial Study Checklist, although the *Thresholds Guide* does not identify thresholds for all issues found in the Checklist.

Within each issue area, the *Thresholds Guide* includes three parts: **1. Initial Study Screening Process** (Initial Study Checklist Question, Introduction, Screening Criteria, and Evaluation of Screening Criteria); **2. Determination of Significance** (Significance Threshold, Environmental Setting, Project Impacts, Cumulative Impacts, and Sample Mitigation Measures); and **3. Data, Resources, and References** (Resources, Background Information, Selected Legislation, and Exhibits).

How the *Thresholds Guide* works

The *Thresholds Guide* provides technical assistance in evaluating the potential significance of a project's environmental impacts by putting in one place existing information and practices from a variety of sources which are useful for impact analyses. The *Thresholds Guide* applies to non-exempt, discretionary projects (including public and private projects and plans) in the City of Los Angeles under "normal" conditions. It recognizes that the impacts resulting from a particular action depend on the project setting, design, and operational components and that the determination of significance and the appropriate criteria for evaluation are the responsibility of the lead agency.

The *Thresholds Guide* does not change the authority of decision-makers or the lead agency or affect the City's CEQA Guidelines (including the list of categorical exemptions). The *Thresholds Guide* does not change existing department procedures for processing CEQA documents or introduce new evaluation methods.

The purpose and applicability of the *Thresholds Guide* are fully described in the Preface and Content and Use Sections of the Introduction. The *Thresholds Guide* provides some general information about CEQA requirements, but should not be used as a substitute for professional or legal advice. For more information, the reader should refer to the CEQA Statutes and State and City Guidelines; current case law, regulations, and scientific methods; and consult with the appropriate City departments, as necessary.

Background and Process

Numerous public and private projects and plans are undertaken each year within the City of Los Angeles. Each of these must comply with all applicable laws, regulations, and policies, including CEQA. For those projects needing discretionary approval from the City of Los Angeles, the department granting the approval generally acts as the lead agency on behalf of the City and ensures that all CEQA requirements are fulfilled. The *Thresholds Guide* can simplify the CEQA process by offering a consistent set of evaluation criteria applicable to most discretionary projects in the City.

The *Thresholds Guide* was presented and discussed at a public workshop hosted by the Environmental Affairs Commission (EAC). The EAC sent recommendations on the *Thresholds Guide* to the Environmental Quality and Waste Management Committee of the City Council, and the full Council authorized departments to use the *Thresholds Guide* in CEQA analyses in August 2001 (see Council File 98-2064).

For information, and to view or download a copy of the *Thresholds Guide*, please point your browser to EAD's Home Page at http://www.lacity.org/EAD, and click on CEQA/.

INTRODUCTION

PREFACE

The *L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles (Thresholds Guide)* is a guidance document that draws together practical information useful to City staff, project proponents, and the public involved in the environmental review of projects subject to the California Environmental Quality Act (CEQA). The *Thresholds Guide* is a resource available to provide information to those interested in the CEQA process.

The *Thresholds Guide* provides assistance in evaluating the significance of project impacts on 46 of the most common environmental issues in the City of Los Angeles. This guidance is supplemented by an introduction to each issue area, a recommended analysis method for project impacts, guidance for environmental setting and cumulative impact sections, sample mitigation measures, and references. The *Thresholds Guide* is geared toward readers familiar with the CEQA process. For additional information on the terminology and requirements of CEQA, please refer to the Glossary to the *Thresholds Guide*, The Los Angeles City CEQA Guidelines (City CEQA Guidelines), the State Guidelines for Implementation of the California Environmental Quality Act (State CEQA Guidelines) or the City's Guide to Understanding CEQA in the City of Los Angeles.

The preparation of the *Thresholds Guide* was initiated as part of the City's Development Reform efforts to streamline the City's permit and development processes. It is a tool that compiles information that is useful in the preparation of environmental documents. This information can be used to improve the level of consistency, predictability, and objectivity of the City's environmental documents, while reducing costs and time delays in the environmental review process.

CEQA requires the analysis of discretionary projects to disclose their potential effects on the environment and to allow public participation in the environmental review process. Central to the implementation of CEQA is the identification of "significant" or "potentially significant" impacts that would occur as a result of a proposed project, as this determines the level of review required and the need for mitigation measures to reduce or eliminate project impacts. For projects needing discretionary approval from the City of Los Angeles, the department granting the approval generally acts as the lead agency on behalf of the City and is known as the lead City agency.

The *Thresholds Guide* applies only to those non-exempt projects subject to CEQA that require an Initial Study, negative declaration, mitigated negative declaration, or EIR. It applies both to public and private projects, including residential, commercial, institutional, industrial, and infrastructure projects. Most screening criteria and significance thresholds also apply to Master planned developments, specific plans, zone changes, and other "plan" level proposals.

The *Thresholds Guide* does not impact the existing discretionary authority of decision-makers, although the guidance contained in it could provide more complete information to these decision-makers. The *Thresholds Guide* does not replace or invalidate the City's CEQA Guidelines, as it addresses the content of environmental documents as opposed to procedural requirements. It has no effect on the City's list of projects exempt from the CEQA process (see Article X of the City CEQA Guidelines, which lists project types eligible for categorical exemptions). The *Thresholds Guide* can be used as a complement to existing department procedures for processing CEQA documents, by building on the information in the CEQA Guidelines and providing technical assistance for the environmental analysis and determination of significance. The *Thresholds Guide* does not change the authority of the lead agency, as identified in the State CEQA Guidelines, to determine significance thresholds on a case-by-case basis dependent upon unique environments, evolving regulatory requirements, and the nature of projects encountered by each lead agency.

The guidance in the *Thresholds Guide* does not substitute for the use of independent judgment to determine significance or the evaluation of the evidence in the record, but is intended to provide sufficient flexibility to use the most appropriate criteria for a particular project. CEQA includes additional topics and requirements that are not addressed in the *Thresholds Guide*. The project evaluator and lead agency are still responsible for all CEQA requirements, whether or not they are discussed in the *Thresholds Guide*. The City CEQA Guidelines, the State CEQA Guidelines, and other references describe all of the requirements of the CEQA process and should be consulted if additional assistance is required.

As noted above, the fundamental purpose of CEQA is to publicly disclose and evaluate potential environmental impacts associated with proposed projects. As such, CEQA contains specific public notification and participation requirements. In addition, City policy in the General Plan Framework Element and a similar policy in the Transportation Element is to "assure that (sic) fair treatment of people of all races, cultures, incomes and education levels with respect to the development, implementation and enforcement of environmental laws, regulations, and policies, including affirmative efforts to inform and involve environmental groups, especially environmental justice groups, in early planning stages through notification

and two-way communication.[1]" This assurance may involve efforts to identify and reach affected populations, including low-income communities and communities of color.

CONTENT AND USE

The *Thresholds Guide* presents two sets of criteria to evaluate project impacts: the screening and significance criteria. The screening criteria provide assistance in responding to Initial Study Checklist questions, and can help determine when further study is needed to decide whether a significant impact could potentially occur. Additional study (either in the context of an expanded Initial Study, negative declaration, or EIR) will assist project evaluators in determining whether the project impact falls above or below the significance threshold. The significance threshold identifies the level of impact over which mitigation (or a Statement of Overriding Considerations, if mitigation is not feasible) is required.

By defining screening criteria and significance thresholds, the *Thresholds Guide* provides guidance in determining the appropriate environmental document required for a project within the City of Los Angeles – negative declaration, mitigated negative declaration, or environmental impact report (EIR) – and whether a project's impacts would be presumed significant under normal circumstances, and therefore, require mitigation. The existence of screening criteria and significance thresholds may also encourage project proponents to incorporate impact-reducing measures into project designs, prior to submitting project applications to the City, to reduce potential impacts below the significance level.

The screening criteria and significance thresholds presented in the *Thresholds Guide* are based on a variety of factors, including existing local, state, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards (common practice). Each threshold was then reviewed with respect to meeting the following goals: objectivity and applicability, defensibility, practicality, nexus between impacts and mitigation, and legal liability. This document, therefore, represents a compilation of existing information and practices and does not introduce new evaluation methods, nor does it diminish the value of independent judgment on the part of the project evaluator. However, the guidance provided in the *Thresholds Guide* can simplify the CEQA process by providing a consistent set of criteria applicable to most discretionary projects in the City. Because evaluation practices continue to evolve due to changing regulations, scientific methods, and court decisions, the project evaluator and lead City agency should always use the best information and evaluation methods available, including those from sources other than the *Thresholds Guide*.

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1 *City of Los Angeles, General Plan Framework Element, Policy 3.1.9, page 3-8.*

There are three types of significance thresholds identified in the *Thresholds Guide*: quantitative, qualitative, and case-by-case (also called factors for consideration). Quantitative thresholds provide a measurable criterion with which to compare one or more characteristics of the proposed project, such as "the vehicle-to-capacity ratio increase at a study intersection is greater than 0.020." A qualitative threshold requires comparison to non-numerical criteria, such as "interference with a wildlife movement corridor." For some issue areas, a definitive threshold could not be established, either because the significance of impacts is specific to site conditions or project operations, or because there is no consistent technical guidance available. For these issues, the case-by-case thresholds provide factors for the project evaluator to consider, in light of specific project circumstances, in the determination of significance.

The *Thresholds Guide* does not identify thresholds for all issues found in the State's Initial Study Checklist, but focuses on those that are most commonly of concern throughout the City. In addition, the *Thresholds Guide* provides information on the topic of Shading, which is not listed in the Initial Study Checklist. It also provides expanded information on transportation issues, consistent with the City Department of Transportation's traffic study policies and procedures.

The impact resulting from a particular action depends on the project setting, design, and operational components. Therefore, the use of the *Thresholds Guide* may be appropriate for projects located within City boundaries under "normal" conditions, but there may be circumstances in which another set of criteria better applies to the proposed action or setting, and should be used for the determination of significance. For City-sponsored projects located outside City boundaries, City departments conducting CEQA review must consider the local environmental setting, as well as applicable regulations and policies, and determine if another set of criteria applies or is more appropriate.

Since conditions may vary depending upon the type of project and/or approval that is required, the lead City agency responsible for the implementation of CEQA for a particular project may develop internal departmental direction (e.g., thresholds), not inconsistent with the guidance in the *Thresholds Guide,* to address issues that commonly arise within the jurisdiction of that department. Project applicants should consult with the lead City department regarding any additional or further defined screening criteria or significance thresholds that may apply.

The case study and flowcharts in Exhibits 1-4 illustrate the process of using the screening criteria and significance thresholds, and how their use relates to the Initial Study Checklist and the impact evaluation process. The exhibits all assume that a project is not exempt from CEQA

requirements. The case study (Exhibit 1) assesses operational noise impacts for four project types by posing a series of questions about each "project." This exercise concludes with an Initial Study evaluation and a determination of the type of CEQA document appropriate for that project. The flowcharts (Exhibits 2-4) describe the steps in conceptual terms, focusing on three phases of the CEQA process: 1) the Initial Study Checklist Process (using the screening and significance criteria to determine which boxes to check on the Checklist); 2) the Initial Study Determination (what type of CEQA document to prepare); and 3) the Impact Evaluation and Mitigation Process. The impact from a particular project may fall (a) below the screening criteria, (b) between the screening criteria and the significance threshold, or (c) above the significance threshold.

Exhibit 1
CASE STUDY: OPERATIONAL NOISE

Initial Study Checklist Questions

X.a): Would the proposal result in increases in existing noise levels?
X.b): Would the proposal result in exposure of people to severe noise levels?

Initial Study Screening Criteria

- Would the proposed project introduce a stationary noise source that is likely to be audible beyond the property line of the project site?
- Would the project include 75 or more dwelling units or 100,000 square feet (sf) or greater of nonresidential development, or have the potential to generate 1,000 or more average daily vehicle trips (ADT)?

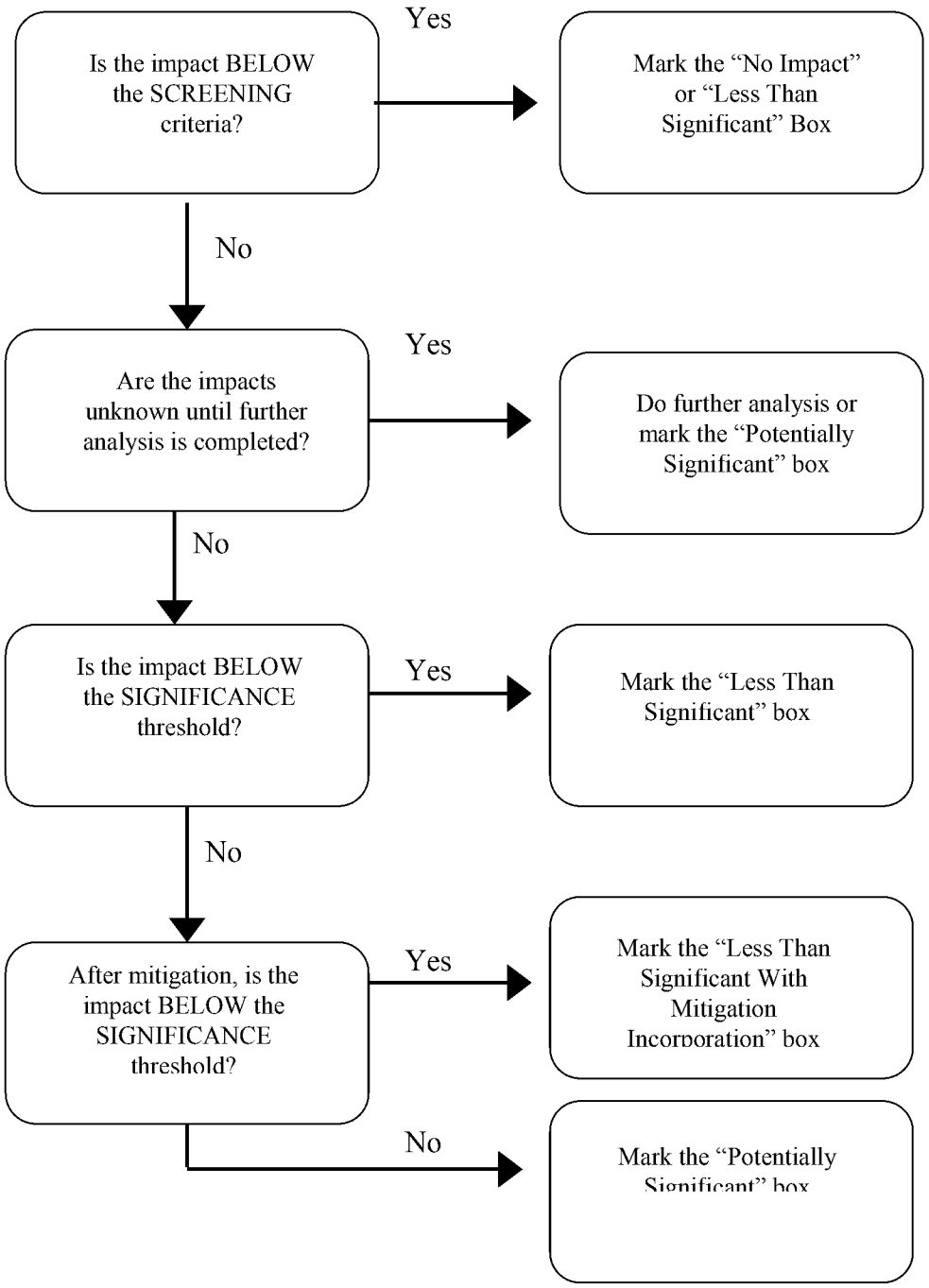
Significance Threshold

A project would normally have a significant impact on noise levels from project operation if the project causes the ambient noise level measured at the property line of an affected use to increase by 3 decibels (dBA) or more in community noise equivalency level (CNEL) to or within the "normally unacceptable" or "clearly unacceptable" category of the noise exposure chart prepared by the California Department of Health Services (DHS), or any 5 dBA or greater noise increase.

Case	Introduce Stationary Source with Noise Emissions Audible Beyond Property Line?	Include more than 75 du, 100,000 sf nonresidential, or 1,000 ADT?	Increase in Ambient Level?	Increase Remaining After Mitigation	Initial Study Evaluation	Results/ Document Prepared
1	No	No	-	-	No Impact	Neg Dec
2	No	Yes	2 dBA	-	Less Than Significant Impact	Neg Dec
3	Yes	No	5 dBA	2.5 dBA	Potentially Significant Unless Mitigation Incorporated	Mitigated Neg Dec
4	Yes	Yes	7 dBA	5 dBA	Potentially Significant Impact	EIR

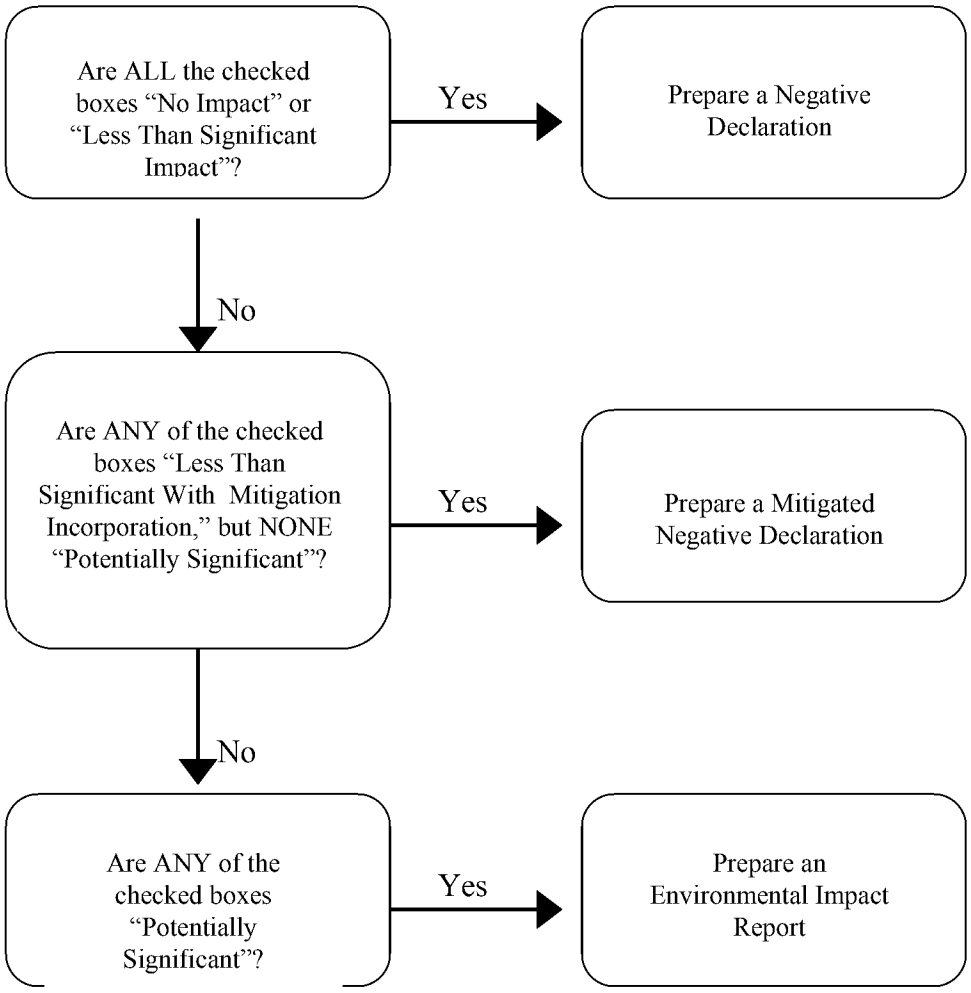
Notes: Assumes project is not exempt under CEQA.
The noise exposure chart prepared by the DHS is reproduced in the *Thresholds Guide.*
If the noise level before and/or after mitigation is not known or cannot be determined, additional analysis could be undertaken prior to completing the Initial Study Evaluation or within an EIR.

Exhibit 2
INITIAL STUDY CHECKLIST PROCESS*



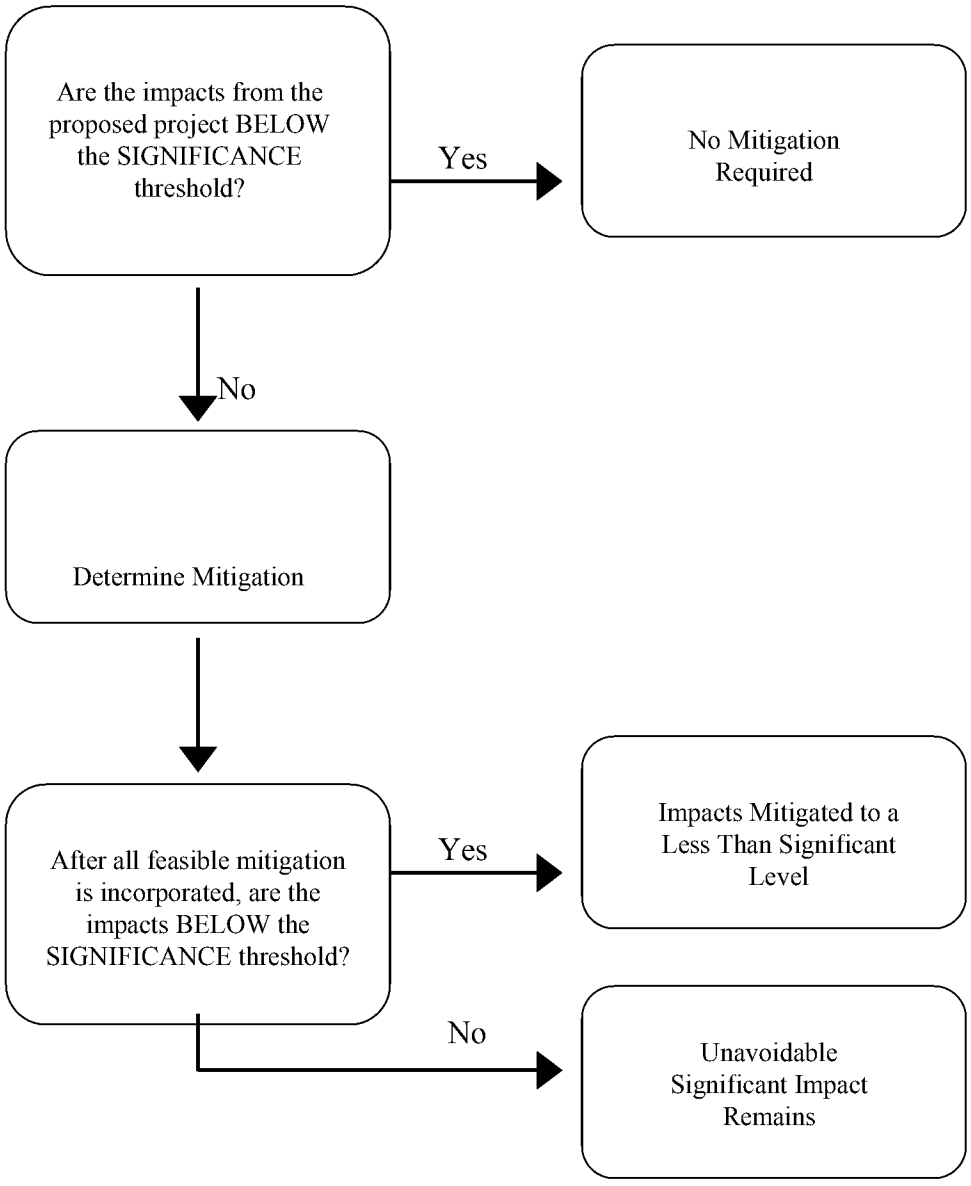
* *Assumes the project has had no previous review and is not exempt under CEQA.*

Exhibit 3
INITIAL STUDY DETERMINATION*



* *Assumes the project is not exempt under CEQA.*

Exhibit 4
IMPACT EVALUATION AND MITIGATION PROCESS



Note: If a project would result in one or more significant impacts, the lead agency, prior to project approval, must adopt certain findings as stated in CEQA Section 21081. Additional requirements related to mitigation measures are described in Section 21081.6.

DOCUMENT STRUCTURE

The *Los Angeles CEQA Thresholds Guide* is arranged by issue area, generally in the same order in which the issues appear in the State's Initial Study Checklist. The major environmental categories covered in the document are as follows:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology
- Hazards
- Land Use
- Noise
- Population and Housing
- Public Services
- Public Utilities
- Transportation
- Visual Resources
- Water Resources

For each environmental issue area, the following information is provided:

1. Initial Study Screening Process

Initial Study Checklist Question: This lists the question(s) from the State's Initial Study Checklist addressed within this issue area.

Introduction: The introduction provides a brief description of the issue area, including what types of project activities could be expected to have an impact, how the resource/issue would be affected, and important regulatory agencies and/or regulations.

Screening Criteria: The screening criteria assist in deciding when further study (additional review) is needed to determine whether a project impact could be significant. It assumes that the project is not exempt from CEQA requirements. Criteria are phrased as yes/no questions. For many issue areas, further study is recommended when one or more questions are answered with a "yes." A "no" response to all questions indicates that further study is not required, and there would normally be no significant impact from the proposed project on the subject issue.

Evaluation of Screening Criteria: This section contains any additional information needed to apply the screening criteria and identifies references that may be used in the evaluation.

2. Determination of Significance

Significance Threshold: The significance threshold provides guidance in determining whether or not a project impact would be significant. The threshold assumes that a project

exceeds the screening criteria. The quantitative and qualitative thresholds are phrased in the positive, so that if the project meets one or more of the criteria listed (a "yes" response), it would normally be considered to have a significant impact on the environment. Where a definitive threshold is not available, the *Thresholds Guide* provides case-by-case thresholds which consist of a list of conditions or criteria to be considered for an individual determination of significance.

Environmental Setting: This section identifies the type of information that is appropriate for a project setting or background section.

Project Impacts: This section provides a recommended methodology with which to analyze the proposed project, including the identification and evaluation of direct and indirect impacts, as appropriate, that may occur during construction or operation. It also identifies sources of relevant information and technical resources, and provides the basic steps to follow in the analysis. Impact methodologies are assumed to apply to both project level and plan level analyses unless otherwise specified. Other analysis methods may be appropriate, depending on project circumstances.

Cumulative Impacts: This section presents a method to evaluate cumulative impacts, based on either a related projects list or a planned development approach (the amount of overall growth expected for the project area, according to planning documents or forecasts, by the time of project completion). The methodology describes only the type of analysis that is appropriate and does not address the size or location of related projects to consider in the analysis. In cases where the methodology is the same as that for project impacts, the project impact section is referenced rather than repeating the information.

Sample Mitigation Measures: This section provides a sample list of measures that may be used to reduce project impacts. It does not address specific mitigation measures for certain project types, nor does it recommend or prioritize mitigation measures. Consideration of alternative projects (e.g., smaller scale, different uses) to reduce impacts is assumed to be part of the project alternatives analysis required in an EIR and is not included in the sample mitigation measures listed in the *Thresholds Guide*.

3. Data, Resources, and References

This section provides additional information related to the environmental issue. It may contain references to agencies or others with expertise in the subject area, reference documents, and selected legislation. For references that do not identify an agency or author, the entry refers to the City of Los Angeles. Several sections also provide exhibits and/or supplemental background information that illustrates or further explains concepts addressed in the section.

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INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE

INITIAL STUDY CHECKLIST QUESTION	THRESHOLDS GUIDE SECTION
I. AESTHETICS: *Would the project:*	
a) Have a substantial adverse effect on a scenic vista?	A.1 Aesthetics A.2 Obstruction of Views
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	A.1 Aesthetics E.3 Landform Alterations
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	A.1 Aesthetics A.3 Shading
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	(Glare Not Addressed) A.4 Nighttime Illumination

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

INITIAL STUDY CHECKLIST QUESTION	THRESHOLDS GUIDE SECTION
II. AGRICULTURE RESOURCES: *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and famland. Would the project:*	(Agriculture Not Addressed)
III. AIR QUALITY: *Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:*	
a) Conflict with or obstruct implementation of the applicable air quality plan?	B.1 Construction Emissions B.2 Operational Emissions B.3 Toxic Air Contaminants
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	B.1 Construction Emissions B.2 Operational Emissions B.3 Toxic Air Contaminants

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

INITIAL STUDY CHECKLIST QUESTION	THRESHOLDS GUIDE SECTION
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	B.1 Construction Emissions B.2 Operational Emissions
d) Expose sensitive receptors to substantial pollutant concentrations?	B.1 Construction Emissions B.2 Operational Emissions B.3 Toxic Air Contaminants
e) Create objectionable odors affecting a substantial number of people?	B.2 Operational Emissions
IV. BIOLOGICAL RESOURCES: *Would the project:*	
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by California Department of Fish and Game or U.S. Fish and Wildlife Service?	C. Biological Resources

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

INITIAL STUDY CHECKLIST QUESTION	THRESHOLDS GUIDE SECTION
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	C. Biological Resources
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal	C. Biological Resources
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	C. Biological Resources
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	C. Biological Resources
f) Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan?	C. Biological Resources

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

V. CULTURAL RESOURCES: *Would the project:*		
a) Cause a substantial adverse change in the significance of a historical resource as defined in'15064.5?	D.3	Historical Resources
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	D.2	Archaeological Resources
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	D.1	Paleontological Resources
	E.3	Landform Alterations
d) Disturb any human remains, including those interred outside of formal cemeteries?	D.2	Archaeological Resources

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

VI.	**GEOLOGIC PROBLEMS:** *Would the project:*		
a)	Expose people to potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i)	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publications 42.	E.1	Geologic Hazards
ii)	Strong seismic ground shaking?	E.1	Geologic Hazards
iii)	Seismic-related ground failure, including liquefaction?	E.1	Geologic Hazards
iv)	Landslides?	E.1	Geologic Hazards
b)	Result in substantial soil erosion or the loss of topsoil?	E.2	Sedimentation and Erosion
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	E.1	Geologic Hazards

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks of life or property?	Not Addressed
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	E.3 Landform Alteration
VII. HAZARDS AND HAZARDOUS MATERIALS:	*Would the project:*	
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	F.1 Risk of Upset/Emergency Preparedness F.2 Human Health Hazards
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	F.1 Risk of Upset/Emergency Preparedness F.2 Human Health Hazards
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	F.2 Human Health Hazards

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and as a result, would it create a significant hazard to the public or the environment?	F.2	Human Health Hazards
e)	For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	F.1 K.2	Risk of Upset/Emergency Preparedness Fire Protection & Emergency Medical Services
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area?	F.1 K.2	Risk of Upset/Emergency Preparedness Fire Protection & Emergency Medical Services
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	F.1 K.2	Risk of Upset/Emergency Preparedness Fire Protection & Emergency Medical Services
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	K.2	Fire Protection & Emergency Medical Services

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

VIII. HYDROLOGY AND WATER QUALITY: *Would the project:*			
a)	Violate any water quality standards or waste discharge requirements?	G.2	Surface Water Quality
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	G.2 G.3	Surface Water Quality Groundwater Level
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	G.1 G.2	Surface Water Hydrology Surface Water Quality
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	G.1	Surface Water Hydrology

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	G.1	Surface Water Hydrology
f)	Otherwise substantially degrade water quality?	G.3	Groundwater Level
g)	Place housing within a 100-year flood hazard area as mapped on a federal flood hazard Boundary or flood Insurance Rate Map or other flood hazard delineation map?	G.1 G.2 G.3 G.4	Surface Water Hydrology Surface Water Quality Groundwater Level Groundwater Quality
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	G.4	Groundwater Quality
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	G.1 G.3	Surface Water Hydrology Groundwater Level
j)	Inundation by seiche, tsunami, or mudflow?	E.1 G.3	Geologic Hazards Groundwater Level

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

IX.	**LAND USE AND PLANNING:** *Would the project:*		
a)	Physically divide an established community?	H.2	Land Use Compatibility
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding mitigating an environmental effect?	H.1 H.2	Land Use Consistency Land Use Compatibility
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	H.1 H.2	Land Use Consistency Land Use Compatibility
X.	**MINERAL RESOURCES:** *Would the project:*		
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	E.4	Mineral Resources
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, general plan, or other land use plan?	E.4	Mineral Resources

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

XI. NOISE: *Would the project result in:*		
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	I.1 I.2 I.3 I.4	Construction Noise Operational Noise Railroad Noise Airport Noise
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	I.1 I.2 I.3 I.4	Construction Noise Operational Noise Railroad Noise Airport Noise
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	I.2 I.3 I.4	Operational Noise Railroad Noise Airport Noise
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above the existing without the project?	I.1 I.2 I.3 I.4	Construction Noise Operational Noise Railroad Noise Airport Noise

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	I.1 I.2 I.4	Construction Noise Operational Noise Airport Noise
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	I.1 I.2 I.4	Construction Noise Operational Noise Airport Noise
XII.	**POPULATION AND HOUSING:** *Would the project:*		
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	J.1	Population and Housing Growth
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	J.1 J.2	Population and Housing Growth Population and Housing Displacement
c)	Displace substantial numbers of existing people, necessitating the construction of replacement housing elsewhere	J.2	Population and Housing Displacement

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

XIII. PUBLIC SERVICES: *Would the project:*			
a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the above public services:	K.1	Police Protection
i)	Fire protection?	K.2	Fire Protection & Emergency Medical Services
ii)	Police protection	K.1	Police Protection
iii)	Schools?	K.3	Public Schools
iv)	Parks?	K.4	Recreation and Parks
v)	Other public facilities?	K.5	Libraries

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

XIV. RECREATION:			
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the family would occur or be accelerated?	K.4	Recreation and Parks
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	K.4	Recreation and Parks
XV. TRANSPORTATION/TRAFFIC: *Would the project:*			
a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections?	L.1 L.2 L.3 L.4 L.8	Intersection Capacity Street Segment Capacity Freeway Capacity Neighborhood Intrusion Impacts In-Street Construction Impacts
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	L.1 L.2 L.3	Intersection Capacity Street Segment Capacity Freeway Capacity

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	Not Addressed	
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Not Addressed	
e)	Result in inadequate emergency access?	L.5	Project Access
f)	Result in inadequate parking capacity?	L.7	Parking
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	L.6	Transit System Capacity
XVI. UTILITIES AND SERVICE SYSTEMS: *Would the project:*			
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	M.2	Wastewater
b)	Require or result in the construction of new water or wastewater treatment facilities, the construction of which could cause significant environmental effects?	G.1 M.1 M.2	Surface Water Hydrology Water Wastewater

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	G.1 M.2	Surface Water Hydrology Wastewater
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	M.1	Water
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	K.2	Wastewater
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	K.3	Solid Waste
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	M.3	Solid Waste

INITIAL STUDY CHECKLIST QUESTIONS AND RELATED SECTIONS IN L.A. CEQA THRESHOLDS GUIDE, continued

XVII. MANDATORY FINDINGS OF SIGNIFICANCE: *Does the project:*		
a)	Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	All sections, particularly: C. Biological Resources D.1 Paleontological Resources D.2 Archaeological Resources D.3 Historical Resources
b)	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	All Sections
c)	Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Not addressed specifically, each section addresses indirectly

LIST OF ABBREVIATIONS/ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACEC	Areas of Critical Concern
ACM	asbestos-containing material
ACOE	United States Army Corps of Engineers
ADT	average daily traffic
AEM	Area Equivalent Method
AEP	Association of Environmental Professionals
AF	acre feet
AQMP	Air Quality Management Plan
AQ-TAN	Air Quality Technical Analysis Note
ARMR	Archaeological Resource Management Reports
ASTM	American Society of Testing Methods
ATSAC	Automated Traffic Surveillance and Control
AVORS	Additional Valley Outfall Relief Sewer
AVR	average vehicle ridership
BACM	Best Available Control Measures
BACT	Best Available Control Technologies
Basin	South Coast Air Basin
BLM	Bureau of Land Management
BMP	best management practices
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAC	California Administrative Code
CAL3QHC	air quality model
California Register	California Register of Historical Resources
CALINE/4	air quality model
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Clean Air Program
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBD	Central Business District
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCSCE	Center for the Continuing Study of the California Economy
CDD	Community Development Department
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQ	Council of Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGC	California Government Code
CHAS	Comprehensive Housing Affordability Study
CHC	Cultural Heritage Commission
CIP	Capital Improvement Program
CIS	Coastal Interceptor Sewer

List of Abbreviations/Acronyms, continued

CiSWMPP	City Solid Waste Management Policy Plan
CIWMB	California Integrated Waste Management Board
CMA	Critical Movement Analysis
CMP	Congestion Management Program
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
COS	Central Outfall Sewer
CRA	Community Redevelopment Agency
CRV	California Redemption Value
cu.yd.	cubic yards
CWA	Clean Water Act
CWC	California Water Code
D/C	demand to capacity
dB	decibel
dBA	A-weighted decibel scale
DFO	Designated Federal Official
DHS	Department of Health Services
DMV	California Department of Motor Vehicles
DOF	Department of Finance
DOT	United States Department of Transportation
DWP	Department of Water and Power
DWR	Department of Water Resources
EAD	Environmental Affairs Department
EDI	City of Los Angeles Environmental Data Index
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMFAC	emission factors
EPA	U.S. Environmental Protection Agency
ERCs	Emission Reduction Credits
EVIS	East Valley Interceptor Sewer
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FLMPA	Federal Land Management and Policy Act of 1976
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
Gr.sq.ft.	gross square feet
gsf	gross square feet
HABS	Historic American Building Survey
HAPs	Hazardous Air Pollutants
HI	hazard index

List of Abbreviations/Acronyms, continued

HNM	Helicopter Noise Model
HOV	high occupancy vehicles
HPOZ	Historic Preservation Overlay Zone
HRA	health risk assessment
HSC	Health and Safety Code
HTP	Hyperion Treatment Plant
HUD	Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
ICO	interim control ordinance
INM	Integrated Noise Model
ISWM	Integrated Solid Waste Management
ISWMO	Integrated Solid Waste Management Office
ITE	Institute of Transportation Engineers
IWG	Interagency Working Group
L.A.	Los Angeles
LACMTA	Los Angeles County Metropolitan Transportation Authority
LADOT	Los Angeles Department of Transportation
LAFD	Los Angeles Fire Department
LAGWRP	Los Angeles-Glendale Water Reclamation Plant
LAMC	Los Angeles Municipal Code
LAPD	Los Angeles Police Department
LAPL	Los Angeles Public Library
LARWQCB	Los Angeles Regional Water Quality Control Board
LAUSD	Los Angeles Unified School District
LAX	Los Angeles International Airport
Ldn	Day-Night Sound Level
LEQV2	noise model
LGC	Local Government Commission
LOS	level of service
LUPAMS	Land Use Planning and Mapping System
LUST	leaking underground storage tank
MAAQI	Mobile Assessment for Air Quality Impacts
MACT	Maximum Achievable Control Technology
MFI	Median Family Income
mgd	million gallons per day
MOU	Memorandum of Understanding
mph	miles per hour
MPO	Metropolitan Planning Organization
MRZ	Mineral Resource Zone
MUTCD	Manual on Uniform Traffic Control Devices
MWD	Metropolitan Water District of Southern California
NAAQS	National Ambient Air Quality Standard
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
National Register	National Register of Historic Places
NCHRP	National Cooperative Highway Research Program
NCOS-NOS	North Central Outfall Sewer-North Outfall Sewer

List of Abbreviations/Acronyms, continued

NEJAC	National Environmental Justice Advisory Council
NEPA	National Environmental Policy Act
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NORS	North Outfall Replacement Sewer
NOS	North Outfall Sewer
NOS-LCSFVRS	North Outfall Sewer-La Cienega, San Fernando Valley Relief Sewer
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NSPS	New Source Performance Standard
NSR	New Source Review
OEJ	Office of Environmental Justice
OHP	California Office of Historic Preservation
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	lead
PM	particulate matter
PM_{10}	coarse particulates
$PM_{2.5}$	fine particulates
POD	Pedestrian Oriented District
PRC	Public Resources Code
RACM	Reasonably Available Control Measures
RCP&G	Regional Comprehensive Plan and Guide
RD	Reporting District
RECLAIM	Regional Clean Air Incentives Market
ROG	Reactive Organic Gas
ROW	right-of-way
RTCs	RECLAIM Trading Credits
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SEA	Significant Ecological Area
sf	square feet
SIP	State Implementation Plan
SMGB	State Mining and Geology Board
SO_2	sulfur dioxide
SOCAB	South Coast Air Basin
SOUND32	noise model
SOV	single occupant vehicle
SO_x	sulfur oxides
sq.ft.	square feet

List of Abbreviations/Acronyms, continued

SRRE	Source Reduction and Recycling Element
TDM	Transportation Demand Management
The Gas Company	Southern California Gas Company
TIA	Transportation Impact Assessment
TITP	Terminal Island Treatment Plant
TOD	Transit Oriented District
TRB	Transportation Research Board
TSM	Transportation System Management
TSP	Transportation Specific Plan
TWRP	Donald C. Tillman Water Reclamation Plant
U.S.	United States
UCLA	University of California at Los Angeles
ULARA	Upper Los Angeles River Area
ULI	Urban Land Institute
USAF	United States Air Force
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
V/C	Volume to Capacity
VOC	Volatile Organic Compound
WDR	Waste Discharge Requirements
ZI	Zoning Information

GLOSSARY

Alternatives - A range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain the project's objectives but would avoid or substantially lessen any of the significant effects of the project. The comparative merits of the alternatives are evaluated in an EIR or EIS.

Applicant - A legal entity or person who proposes to carry out a project and needs a lease, permit, license, certificate, or other entitlement for use, or who is requesting financial assistance from one or more public agencies to carry out a project.

Approval - The action by a decision-making body, which commits the City to a definite course of action with regard to a project, intended to be carried out by any person.

California Environmental Quality Act (CEQA) - Statute enacted by the California legislature contained in the California Public Resources Code, Section 21000 et seq. The *Thresholds Guide* provides guidance on the determination of significant impacts, one provision of CEQA.

California Law – California Law consists of 29 codes, covering various subject areas, the State Constitution and Statutes. Codes included the following: Business and Professions Code, Civil Code, Code of Civil Procedure, Commercial Code, Corporations Code, Education code, Election Code, Evidence Code, Family Code, Financial Code, Fish and Game Code, Food and Agricultural Code, Government Code, Harbors and Navigation Code, Health and Safety Code, Insurance Code, Labor Code, Military and Veterans Code, Penal Code, Probate Code, Public Contract Code, Public Resources Code, Public Utilities Code, Revenue and Taxation Code, Streets and Highways Code, Unemployment Insurance Code, Vehicle Code, Water Code, and Welfare and Institutions Code.

Categorical Exemption - An exemption from the requirements of CEQA based on a finding by the Secretary For Resources and the Los Angeles City Council that certain types of projects do not have a significant effect on the environment.

CEQA Guidelines - The CEQA Guidelines provide agencies with criteria and procedures for the evaluation of projects and the preparation of environmental documents. The State CEQA Guidelines are contained in Title 14, Division 6 of the California Administrative Code. The Los Angeles City CEQA Guidelines are adopted by ordinance of the City Council.

Code of Federal Regulations (CFR) - is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. The CFR is divided into 50 titles, which represent broad areas subject to Federal regulation. Each title is divided into chapters, which usually bear the name of the issuing agency. Each chapter is further subdivided into parts covering specific regulatory areas. Large parts may be subdivided into subparts.

Community Plan – A portion of the General Plan that focuses on the setting and

needs of a particular area. It supports the policies of the General Plan. Los Angeles has 35 Community Planning Areas. The 35 Community Plans make up the City's Land Use Element.

Decision-Making Body - A group or individual having project approval authority.

Discretionary Project - An activity defined as a project which requires the exercise of judgment, deliberation, or a decision on the part of the public agency or body in the process of approving or disapproving a particular activity, as distinguished from activities where the public agency or body merely has to determine whether there has been compliance with applicable statutes, ordinances, or regulations.

Entitlement - Used to describe discretionary land use approval granted by the Planning Department. Includes Zone Variances, Zone Changes, Conditional Use Permits, General Plan Amendments, Specific Plan Exceptions, Subdivisions, Parcel Maps, and Site Plan Review.

Environment - Environment, for the purposes of implementing CEQA, is the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

Environmental and Public Facilities Maps - Show the location of and describe various environmental features and public facilities. The City Planning Department Citywide Division prepared the 42 maps in 1996.

Environmental Assessment Form (EAF) - An environmental form submitted to the Environmental Review Section of the City Planning Department which provides the necessary information to determine the recommended environmental clearance for projects requiring any discretionary action.

Environmental Data Index (EDI) – The EDI is a citywide tabular report describing the geographical distribution of a wide array of environmental characteristics on a census tract basis. Data for 30 environmental elements are included. The City Planning Department prepared the EDI in 1978.

Environmental Documents- Environmental documents, according to CEQA, include Initial Study, Negative Declaration, draft and final EIR, Joint EIR/EIS, Notice of Preparation and General Exemption, Notice of Completion, Notice of Determination, and Notice of Exemption.

Environmental Impact Report (EIR) - An Environmental Impact Report is a concise statement setting forth the environmental effects and considerations pertaining to a project as specified in Section 21100 of CEQA.

Environmental Impact Statement (EIS) - An Environmental Impact Statement may be required pursuant to the National Environmental Policy Act (NEPA) if a federal agency or funding is involved. Like an EIR, an EIS describes the environmental impacts of a proposed project and its alternatives.

Feasible - Feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

Federal Register – The Federal Register is the official daily publication for Rules, Proposed rules, and Notices of Federal agencies and organizations, as well as Executive Orders and other Presidential Documents.

Framework Element – This strategy for long-term growth sets a citywide context to guide the update of the Community Plans and citywide elements of the General Plan. The Framework Element refines adopted City policy and updates and supersedes Concept Los Angeles, a strategy to preserve residential neighborhoods by focusing growth into centers. Approved by City Council in December 1996.

General Exemption - An exemption from the requirements of CEQA is granted if it can be seen with reasonable certainty that the project in question could not possibly have a significant effect on the environment.

General Plan – A "blueprint" for future development with a long-term outlook. Required by State law to be prepared by each county and city and include seven elements: land use, circulation, housing, conservation, open space, noise, and safety. May also include optional elements. Includes policies, goals, objectives, and programs. Development must not only meet specific zoning requirements, but also the broader policies, goals and objectives set forth in the General Plan. The City's General Plan is organized into the following Elements: Framework; Land Use; Air Quality; Transportation; Housing; Infrastructure Systems; Open Space and Conservation; Noise; Public Facilities and Services; Historic Preservation and Cultural Resources; Safety; and Urban Form and Neighborhood Design.

Initial Study - A comprehensive analysis of those aspects of the environment, which could potentially affect a project or be affected by a project conducted to determine whether a project may have a significant effect on the environment.

Lead Agency - The public agency which has the principal responsibility for carrying out or approving a project. The Lead Agency will prepare the environmental documents for the project either directly or by contract.

Lead City Agency - A Lead City Agency is the City department, bureau, division, section, office, or agency which has the principal responsibility of carrying out a project which is subject to the provisions of CEQA, or has the principal responsibility for processing the application for a lease, permit, license, or other entitlement for use for a project which is subject to the provisions of CEQA. If more than one City Agency meets the Lead City Agency criteria, the Lead City Agency shall be the City Agency that normally acts first on such projects.

Ministerial Project - Activities undertaken by public agencies pursuant to a statute, ordinance, or regulation that sets forth the conditions upon which the undertaking must or must not be granted. A ministerial decision involves only the use of fixed standards or objective measurements without professional judgment.

Mitigated Negative Declaration (MND) - When significant impacts may occur as a result of the implementation of a project, but mitigation and/or project modification reduce impacts to a less than significant level, then a Mitigated Negative Declaration

is issued with discussion and conditions attached.

Mitigation - Mitigation includes avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments.

National Environmental Policy Act (NEPA) - The National Environmental Policy Act is the federal law requiring an environmental assessment for federal actions that involve impacts on the environment. NEPA is set forth in 42 U.S.C.A. 4321 et seq.

Negative Declaration (ND) - A statement by the Lead Agency briefly setting forth the reasons why the project, although not otherwise exempt, will not have a significant effect on the environment and therefore does not require the preparation of an EIR.

Notice of Completion (NOC) - A brief notice filed with the State Clearinghouse in the Governor's Office of Planning and Research by a Lead Agency as soon as it has completed a draft EIR and is prepared to send out copies for review.

Notice of Determination (NOD) - A public notice filed with the City and County Clerk by the Lead City Agency after a project subject to the provisions of CEQA and involving a Negative Declaration, Mitigated Negative Declaration or an EIR has been approved.

Notice of Exemption (NOE) - A public notice which may be filed with the City and County Clerk by a Lead City Agency after the decision-making body has approved a project and has determined that it is a ministerial, categorically exempt, or emergency project, or is otherwise exempted pursuant to the provisions of Section 21080 (b) of the California Public Resources Code.

Notice of Preparation (NOP) - A brief notice sent by a Lead City Agency to notify Responsible Agencies and interested parties that the Lead City Agency plans to prepare an EIR for a proposed project.

Office of Planning and Research (OPR) - Assists in the understanding and implementation of CEQA by (1) preparing and updating the State CEQA Guidelines; (2) evaluating Categorical Exemptions; (3) distributing documents to state agencies through the State Clearinghouse; (4) coordinating between other public agencies; and (5) preparing and distributing publications related to the understanding and use of CEQA.

Participating City Agency - A City department, bureau, division, section, office, officer, or agency, which is required by Charter or action of the City Council to review a particular class of projects and make comments or recommendations to the Lead City Agency.

Responsible Agency - A public agency, such as a city or county, which proposes to carry out or has approval power over a project, but is not the Lead Agency for the project.

Significant Effect - A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed activity including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. This *Thresholds Guide* is intended to assist in the determination of significant effects.

Specific Plan – describes the allowable land uses, identifies open space, and details infrastructure availability and financing for a portion of a community. Specific plans implement, but are not technically a part of the General Plan. Los Angeles has various specific plans throughout the City, such as West Los Angeles, Warner Center, etc.

State Clearinghouse - In the Governor's Office of Planning and Research. Responsible for distributing environmental documents to state agencies, departments, boards, and commissions for review and comment. Coordinates the responses to ensure accurate and consistent responses from the state.

Statement of Overriding Considerations - A statement with findings identifying public objectives that, in the opinion of the decision-making body, warrant approval of a project notwithstanding its significant adverse impact(s) on the environment.

Statutory Exemption - Exemption from the requirements of CEQA based on the determination by the California Legislature that a specific type of project should be exempt from CEQA.

Zoning – The purpose of zoning regulations is to implement the policies of the General Plan. Zoning lists the kinds of uses allowed on a parcel and sets standards such as minimum lot size, maximum building height, and minimum front yard depth. Zoning must comply with the general plan, is adopted by ordinance, and carries the weight of local law. The City's Zoning is found in Chapter 1 of the Los Angeles Municipal Code (LAMC).

A. AESTHETICS AND VISUAL RESOURCES

A. AESTHETICS AND VISUAL RESOURCES

INTRODUCTION

Aesthetics, views, shading, and nighttime illumination issues are related elements in the visual environment. Aesthetics generally refer to the identification of visual resources and the quality of what can be seen, or overall visual perception of the environment. Views refer to visual access and obstruction, or whether it is possible to see a focal point or panoramic view from an area. Shading issues are concerned with effects of shadows cast by existing or proposed structures on adjacent land uses. Nighttime illumination addresses the effects of a proposed project's exterior lighting upon adjoining uses.

A.1. AESTHETICS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

I.a): Would the project have a substantial adverse effect on a scenic vista?
I.b): Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
I.c): Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

B. Introduction

Aesthetic impact assessment generally deals with the issue of contrast, or the degree to which elements of the environment differ visually.[1] Aesthetic features occur in a diverse array of environments, ranging in character from urban centers to rural regions and wildlands. Adverse visual effects can include the loss of natural features or areas, the removal of urban features with aesthetic value, or the introduction of contrasting urban features into natural areas or urban settings.[2]

Natural features may include, but are not limited to: open space; native or ornamental vegetation/landscaping; topographic or geologic features; and natural water sources. The loss of natural aesthetic features or the introduction of contrasting urban features may have a local impact, or, if part of a larger landscape, may contribute to a cumulative decline in overall visual character.

Urban features that may contribute to a valued aesthetic character or image include: structures of architectural or historic significance or visual prominence; public plazas, art or gardens; heritage oaks or other trees or plants protected by the City; consistent design elements (such as setbacks, massing, height, and signage) along a street or district; pedestrian amenities; landscaped medians or

[1] *Visual contrast has four components: form, line, color and texture. Differences in these elements generate visual contrast. The Bureau of Land Management (BLM) (Contrast Rating System), Soil Conservation Service (Visual Absorption Capability), and Federal Highway Administration (FHWA) (Visual Absorption Capacity) all utilize established qualitative and quantitative methods to measure potential visual impacts and the ability of natural areas to absorb visual impacts.*

park areas; etc. Aesthetic character may be purposely generated, nurtured or preserved, as is the case with City-designated scenic corridors and historical districts, or may exist without such cause or purpose, such as may be the case with certain retail districts or residential neighborhoods.

The introduction of contrasting features or development into aesthetically valued urban areas can overpower familiar features, eliminate context or associations with history, or create visual discord where there have been apparent efforts to maintain or promote a thematic or consistent character.

There is an extraordinary range of aesthetic characteristics and contrasts within the City of Los Angeles, including suburban neighborhoods, dense urban areas, the Port, airports, and hillside residential areas. Given the size and diversity of the City, there are no aesthetic standards that apply to all areas. However, the Community Plan and any applicable specific plan, local coastal plan, or redevelopment plan may contain specific guidelines and requirements related to aesthetics. General aesthetic requirements that apply to individual zoning districts or to types of land uses are provided in the Los Angeles Municipal Code (LAMC). Selected requirements, including the Landscape Ordinance, are included in Exhibit A.1-1. While certain screening and significance thresholds can be identified for this issue, a degree of discretionary judgment may be required to determine the "value" of the aesthetic resource and potential project impacts.

C. Screening Criteria

- Does the project include a proposed zone change or variance that would increase density, height, and bulk in areas where there is a consistent theme, style, or building height and setbacks?

- Does the project include a proposal to develop or allow development in an existing natural open space area (not including previously developed or infill lots)?

- Would the project result in the removal of one or more features that contribute to the valued aesthetic character or image of the neighborhood, community, or localized area?

- Would the project introduce features that would detract from the existing valued aesthetic quality of a neighborhood, community, or localized area by conflicting with important aesthetic elements or the quality of the area (such as theme, style, setbacks, density, massing, etc.) or by being inconsistent with applicable design guidelines?

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[2] *See C. BIOLOGICAL RESOURCES, as appropriate.*

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Aesthetics, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Aesthetics from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, including drawings or renderings. Features that contribute to a valued aesthetic image may include, but are not limited to: structures of architectural or historical significance or visual prominence; public plazas, art, or gardens; heritage oaks or other trees protected by the City; or other features of recognized value to the aesthetic or visual character of an area. Projects that detract from the existing aesthetic quality of an area may include, but are not limited to, major contrasts in building height and bulk (e.g., buildings "too big" for a street), excessive vegetation loss or grading of slopes in natural areas, introduction of high rise structures in low density areas, etc. Compare the project features with the existing characteristics of the project site and the surrounding area. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The amount or relative proportion of existing features or elements that substantially contribute to the valued visual character or image of a neighborhood, community, or localized area, which would be removed, altered, or demolished;

- The amount of natural open space to be graded or developed;

- The degree to which proposed structures in natural open space areas would be effectively integrated into the aesthetics of the site, through appropriate design, etc;

- The degree of contrast between proposed features and existing features that represent the area's valued aesthetic image;

- The degree to which a proposed zone change would result in buildings that would detract from the existing style or image of the area due to density, height, bulk, setbacks, signage, or other physical elements;

- The degree to which the project would contribute to the area's aesthetic value; and

- Applicable guidelines and regulations.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification and description of the natural or built feature(s) that gives the existing neighborhood/local area its valued aesthetic character or image;

- Summary of adopted plans or policies that relate to the aesthetics of the project area, such as those found in a specific plan, Redevelopment Plan, local coastal plan, the Community Plan, or the Planning and Zoning Code, including the Landscape Ordinance; and

- Description of any feature on the project site or in the surrounding area that is listed, designated or otherwise recognized by the City (e.g., a scenic corridor, historic district, heritage oak trees).

Project Impacts

Based on the project description, and a review of the project site and surrounding area, identify the degree to which the proposed project would result in the loss, removal, alteration, or destruction of any existing natural or urban aesthetic feature(s) that contributes to the valued aesthetic character of the area. In addition, identify the major features of the proposed project that would be added to the site, including building heights, bulk, setbacks, architectural style, or any proposed zone changes or variances. Evaluate the degree to which the introduction of new features or the loss of existing aesthetic elements would alter, degrade, or contrast with the existing valued aesthetic character of the area.

Examples of contrast in areas where there is a consistent architectural theme, style or other aesthetic character could include, but are not limited to, the following:

- The project's architectural style, building materials, massing, or size would contrast with adjacent development, such that the value or quality of the area is diminished;

- The project would cause or contribute to a change in the overall character of the area (e.g., from residential to commercial, single-family to multi-family, etc.) and/or new development would contrast with existing architectural styles or themes; and

- The project would grade or remove open space or natural lands and introduce contrasting built features.

Cumulative Impacts

Review the list of related projects and identify those projects that would result in the removal, alteration, or destruction of similar aesthetic features as the proposed project, and/or would add structural or other features that would contrast conspicuously with the valued aesthetic character of the same area as the project. Consider both natural and built features that give the area its image or character. Determine whether the impact of the related projects, in combination with the proposed project, would result in a significant aesthetic impact, using the methodology described above.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Replace existing natural aesthetic features proposed for removal;

- Minimize grading of natural and semi-natural open space;

- Modify structure design to eliminate or screen contrasting/detracting features;

- Consider adaptive reuse of important existing structures;
- Place new utilities underground, where appropriate;

- Incorporate policies and/or design which effectively integrates natural aesthetics into the project (i.e., cluster development, greenbelts, landscaping, etc.);

- Utilize architectural styles, materials, scale, massing, setbacks, signage, circulation patterns, pedestrian orientation, streetscape amenities, and landscaping common to and/or consistent with the character of existing surrounding uses;

- Continue the existing aesthetic treatments along the frontage of new structures (such as street furniture, landscaping, street trees, parks, or pedestrian-oriented walks);

- Screen roof and mechanical equipment, garbage dumpsters, and equipment from public view; and

- Use building styles and finishes that integrate effectively with the natural terrain.

See also the Landscape Ordinance for additional suggestions.

3. DATA, RESOURCES, AND REFERENCES

City of Los Angeles General Plan, including Framework Element, Draft Open Space and Conservation Element, Scenic Highways Plan of the Circulation Element, District Plans, Community Plans, and Local Coastal Program. Plans are available from the City Planning Department's Central Maps and Publications office at 200 N. Spring St., 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255.

LAMC, Chapter 1, Planning and Zoning Code. Available from the Central Maps and Publications Office (see above), on http://www.lacity.org/PLN/

Landscape Ordinance, No. 170,978 as amended, and Guidelines to Implement the Landscape Ordinance. Available from the Central Maps and Publications Office (see above).

See also C. BIOLOGICAL RESOURCES; and D.3. HISTORICAL RESOURCES

Exhibit A.1-1

SELECTED AESTHETIC-RELATED REGULATIONS IN THE LOS ANGELES MUNICIPAL CODE

Chapter 1, Article 2, Sec. 12.21.1. Building heights and setbacks shall not exceed the maximum heights identified per zoning district in this section.

Chapter 4, Article 6. Oak trees meeting certain requirements shall be relocated or replaced. Oak tree reports shall be prepared for tentative map approval.

Chapter 1, Article 7, Sec. 17.05 S, and T. The Mulholland Scenic Parkway and Valley Circle Boulevard - Plummer Street Scenic Corridor shall have trails along the roadways, which meander within a landscaped parkway. Signs and road related fixtures in the corridor areas to be of a design to blend with the scenic environment. Attractive masonry walls or landscaping shall provide screening of adjacent developments.

Chapter 1, Article 7, Sec. 17.08 F. Subdividers shall either plant street trees or make cash payments for such plantings.

Chapter 1, Article 2, Sec. 12.22 A 23. Mini-shopping centers shall construct a six-foot masonry wall along residential zones and trash storage areas. Three-foot high decorative screening walls or hedges shall be constructed between parking areas and sidewalks/parkways. All center street frontages will include a landscaped setback. At least 5 percent of surface parking areas shall be landscaped. Street frontages and parking areas shall be planted with shade trees. Off-site commercial signs, flashing signs, pole signs or roof signs are prohibited.

Chapter 1, Article 2, Sec. 12.21 A 6(d) and (e), and (i). Public and private parking areas shall be enclosed by a wall, except in the "M2" and "M3" Zones, along an alley, public parking area, or a "P", PB", "C" or "M" Zone. Unimproved or non-parking portions of parking lots shall be landscaped.

Chapter 1, Article 2, Sec. 12.21.1 A 3 (See also Division 62). Restrictions on the number, size and location of parking area signs within "P" and "CR" Zones. Sign plans shall be submitted with applications for signs. Prohibited signs shall include posters, pennants, or banners, flashing signs or signs.

Chapter 1, Article 2, Sec. 12.14 A, and Sec. 12.17 A 3(b), and Sec. 12.17.1 A 2(b)(4). The display/storage of merchandise within the "C2", "C5" and "CM" Zones shall be confined to the rear of the lot as measured from street frontages.
Chapter 1, Article 2, Sec. 12.13.5 A 3, and Sec. 12.14 A, and 12.14A, and Sec. 12.18 B 5(b) and (d). All activities, including storage, in the "C1.5" Zone, and certain activities in the "C2" Zone, shall be conducted wholly within an enclosed building. Auto stations in the "C2" Zone shall have a six-foot

high wall along lot lines, which abut "A" or "R" Zones. Open storage areas in the "MR2" Zone shall be enclosed on all sides with a solid wall not less than eight feet in height sufficient to screen the use from public view.

Chapter 1, Article 2, Sec. 12.19 A 1(4)(2), and 12.20 A 1(e). Automobile dismantling yards, junkyards and certain types of storage in the "M2" or "M3" Zones shall be enclosed within a building or an eight-foot solid masonry wall.

City of Los Angeles Landscape Ordinance, No. 170,978, as amended, and Guidelines. Updates the City's requirements for landscaping at new buildings, based on a point system.

A.2. OBSTRUCTION OF VIEWS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

I.a): Would the project have a substantial adverse effect on a scenic vista?

B. Introduction

The term "views" generally refers to visual access to, or the visibility of, a particular sight from a given vantage point or corridor. "Focal views" focus on a particular object, scene, setting, or feature of visual interest; "panoramic views" or vistas provide visual access to a large geographic area, for which the field of view can be wide and extend into the distance. Examples of focal views include natural landforms, public art/signs, individual buildings, and specific, important trees. Panoramic views are usually associated with vantage points looking out over a section of urban or natural areas that provide a geographic orientation not commonly available. Examples of panoramic views might include an urban skyline, valley, mountain range, the ocean, or other water bodies.

The State of California and the City of Los Angeles have recognized the value of access to visual resources through planning and zoning regulations, which designate, preserve, and enhance public views.[1] Through the General Plan, Community Plans, and the designation of scenic resources, the City specifies development standards, which help prevent the obstruction of views. These standards include the regulation of building height, mass, and floor to area ratio, as well as landscaping and grading, which are the principal issues in view obstruction. Individual specific or master plans may include additional standards such as view-sensitive site planning, structure design and grading requirements, transfer of development rights to avoid development in sensitive viewsheds, and preservation of mountain ridges and other visual resources to minimize obstruction of views.

Structures and other elements (e.g., towers, buildings, walls, signs, manufactured slopes, and landscaping) constructed or added as part of a project may obstruct focal or panoramic views. (To

[1] *See California Government Code Section (CGC) 65302, which permits the Land Use Element of a General Plan to make provision for protection of aesthetic resources and views; Nollan v. California Coastal Commission, 483 U.S. 825 (1987) where view protection was identified as a legitimate government interest; and the 1979 Scenic Highway Plan where views of aesthetic resources are identified as meriting protection and enhancement.*

evaluate the aesthetic impact of a particular element, see A.1. AESTHETICS.)

C. Screening Criteria

- Would the project occur within or adjacent to a valued focal or panoramic vista or within view of any designated scenic highway, corridor, or parkway?

- Would the project obstruct, interrupt, or diminish a valued focal and/or panoramic view?

- Does the project propose standards for height and bulk of structures and other elements that inadequately protect existing visual resources and/or views?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Thresholds for Obstruction of Views, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the above questions indicates that there would normally be no significant impact on Views from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. Review the Scenic Highways Plan, the applicable Community Plan, and the Los Angeles Municipal Code (LAMC), if necessary, to determine whether the project site is located in or near a designated scenic area or contains any identified scenic vistas. Also, review applicable zoning ordinances, interim control ordinances (ICOs), specific plans, or other plans applicable to the project site to determine potential viewsheds or vistas, specific criteria concerning viewshed impact mitigation, as well as height and bulk requirements. Assess whether existing views would be obstructed, interrupted, or diminished by structures or other vertical elements constructed as part of the proposed project. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The nature and quality of recognized or valued views (such as natural topography, settings, man-

made or natural features of visual interest, and resources such as mountains or the ocean);

- Whether the project affects views from a designated scenic highway, corridor, or parkway;
- The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment); and
- The extent to which the project affects recognized views available from a length of a public roadway, bike path, or trail, as opposed to a single, fixed vantage point.

B. Methodology to Determine Significance

Environmental Setting

Characterize the existing view environment of the project site and surrounding vicinity (e.g., cityscape or open space, undeveloped or urbanized, existence of any water elements, etc.). Describe the site and surrounding area with respect to existing land uses, topography, landforms, location within or proximity to scenic highways or corridors and natural or built areas of scenic value. Identify and characterize existing views of the project site and valued views from the site. Note whether views are limited or unique, and identify the visual elements associated with the view. Use photographs and/or drawings, as appropriate (see Exhibits A.2-1 and A.2-2).

Project Impacts

Using the information from the Evaluation of Screening Criteria and Environmental Setting, determine the nature and quality of any key visual components identified. Identify project elements that would obstruct or interrupt existing views and the probable extent to which views would be impacted. Obstructing or interrupting views from a designated scenic highway, corridor, or parkway would likely be viewed as an adverse impact.

To determine the extent to which a project would affect views available from along a public roadway, bike path, trail, or other view corridor, and from single, fixed vantage points, identify the areas from which the project is visible. Consider whether and to what degree the project could impact views from these locations.

View obstruction may be determined with view sections, field of view analysis, line-of-sight analysis, or other appropriate method (see Exhibits A.2-3 and A.2-4, and 3. Data, Resources, and References).

For long-range programs or projects that propose policy changes, where specific structure

designs (i.e., elevations and/or building footprints) have not been identified, use the maximum development envelope (i.e., maximum heights, minimum setbacks, maximum lot coverage, and maximum contiguous floorplate) permitted according to the applicable zoning.

Cumulative Impacts

Review the list of related projects and identify those that would affect the same view opportunities as the project. Using the same methodology as described above for Project Impacts, discuss the combined visual impact of the project plus related projects on the identified view opportunities.

Sample Mitigation Measures

Projects are required to comply with the view preservation requirements (i.e., limits on structure location, height and massing, controls on landscaping and grading) of the Scenic Highway Plan. Compliance with the siting and development standards of the General Plan, Community Plans, specific plans, other applicable plans, zoning ordinances and ICOs is also required. Potential mitigation measures include the following:

- Design structures to conform to the existing natural terrain (e.g. multi-level structures on hillsides which are "stepped" in line with the slopes);

- Reduce the width and/or height of new structures to reduce the extent of obstruction;

- Design street networks to minimize view obstruction and/or enhance existing views;

- Locate new structures on portions of the site that do not interfere with existing views;

- Use open space areas to minimize view obstruction and/or enhance existing views; and

- Transfer buildable floor area from a view impacted area to a non-view impacted area on the same or different site. Requires preparation and City approval of a transfer of floor area plan in accordance with Ordinance 163,617; or apply for density transfer to floor area averaging in accordance with City procedures.

3. DATA, RESOURCES, AND REFERENCES

City Planning Department, 201 North Figueroa Street, 3rd Floor, Los Angeles, California 90012; Telephone: (213) 977-6083. Plan check services are available at the Construction Services Center, at 201 North Figueroa Street, 3rd Floor, Los Angeles, CA. 90012. Start at Building and Safety Department Counter and staff will refer visitors to the Planning Dept. as appropriate. Additional information is available from the City Planning Department, Community Planning Bureau, 200 N. Spring, 6th Floor, Los Angeles, California 90012; Telephone: Eastside (213) 978-1183, Metro/Central (213) 978-1179, South LA (213) 978-1168, West/Coastal (213-978-1177 and Valley 6262 Van Nuys Blvd., Van Nuys, CA 91401, (818) 374-5050.

Scenic Highways Plan, 1979.

See also A.1. AESTHETICS.

Line of Sight/View Analysis

Potential view obstruction may be determined through the following analysis:

After the scenic features or view opportunities have been identified, identify the locations (view points) from which these scenic features are visible. Graphics should be prepared that clearly convey the view line (line-of-sight from the view point to the scenic view - either to a focal point or several representative lines-of-sight along a panoramic view), as shown in Exhibits A.2-1 and A.2-2.

Next, for each view line, a view section (cross-section) may also be prepared. View sections, (see Exhibit A.2-3), depict locations and elevations of the view point, view resources and project elements. These sections should identify the extent to which the view is clear or obstructed by existing and proposed structures.

Where a view line is obstructed by a proposed structure or vertical element, prepare a field of view graphic, as shown in Exhibit A.2-4, to portray the extent of the obstruction. The field of view graphic should show where the view is interrupted, and allow for the measurement of potential obstruction by project elements, through representation of the intersection of view lines and proposed structures. This methodology may be adapted to different circumstances, including where the scenic view is either panoramic or a focal point and where the view location is either a single point or a segment.

Sample of Policies in the Scenic Highway Plan

- Policies. Scenic resources, including natural and man-made features, should be identified, preserved, and enhanced.
- Scenic Highway Selection Criteria. Scenic highways should include either a public right-of-way (ROW) which traverses an undeveloped area of scenic quality or which traverses an urban area which contains cultural, historical, or aesthetic values.
- Corridor Development Criteria. Grading should be minimized. Landscaping should be utilized to preserve and enhance the natural setting. Existing vegetation and views should be preserved.
- Programs. Corridor plans shall be developed for each scenic highway. Federal and State funds should be sought for acquisition, access, development, preservation and enhancement of scenic corridors. Scenic corridor projects should be included in the Capital Improvement Program (CIP). Property and scenic easements should be acquired.
- Policies. Corridor Plans for each scenic highway should include development controls for landscaping, contour grading, screening, hiking, biking and equestrian trails, view protection, provisions for scenic turnouts, vista points, rest stops, and other complementary facilities.
- Corridor Development Criteria. Development should be controlled adjacent to scenic highways and land adjacent to the ROW required to insure perpetuation of the corridor's scenic qualities. The scenic highway should be developed with construction materials compatible with the setting. Existing vegetation and views should be preserved. Only traffic, identification and informational signs should be permitted. Building height, setbacks, spacing, location and design should be regulated. In urban scenic corridors, screening/buffering, sign control, street lighting, landscaping, mini-parks, green median strips, street furniture, walkway design, murals, and fountains should be utilized.

Exhibit A.2-1
VIEW ANALYSIS METHODOLOGY

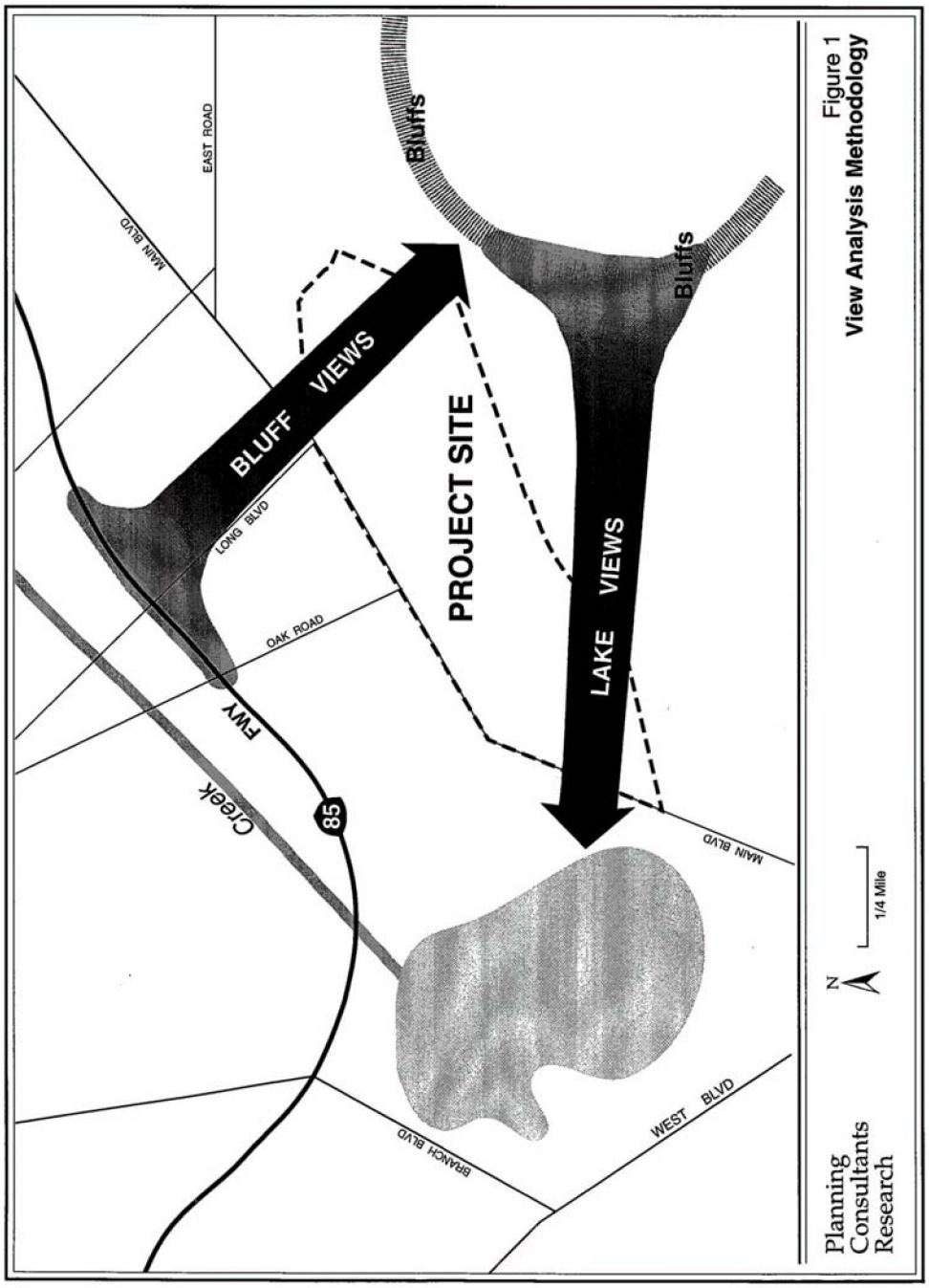


Exhibit A.2-2
VIEW LINES

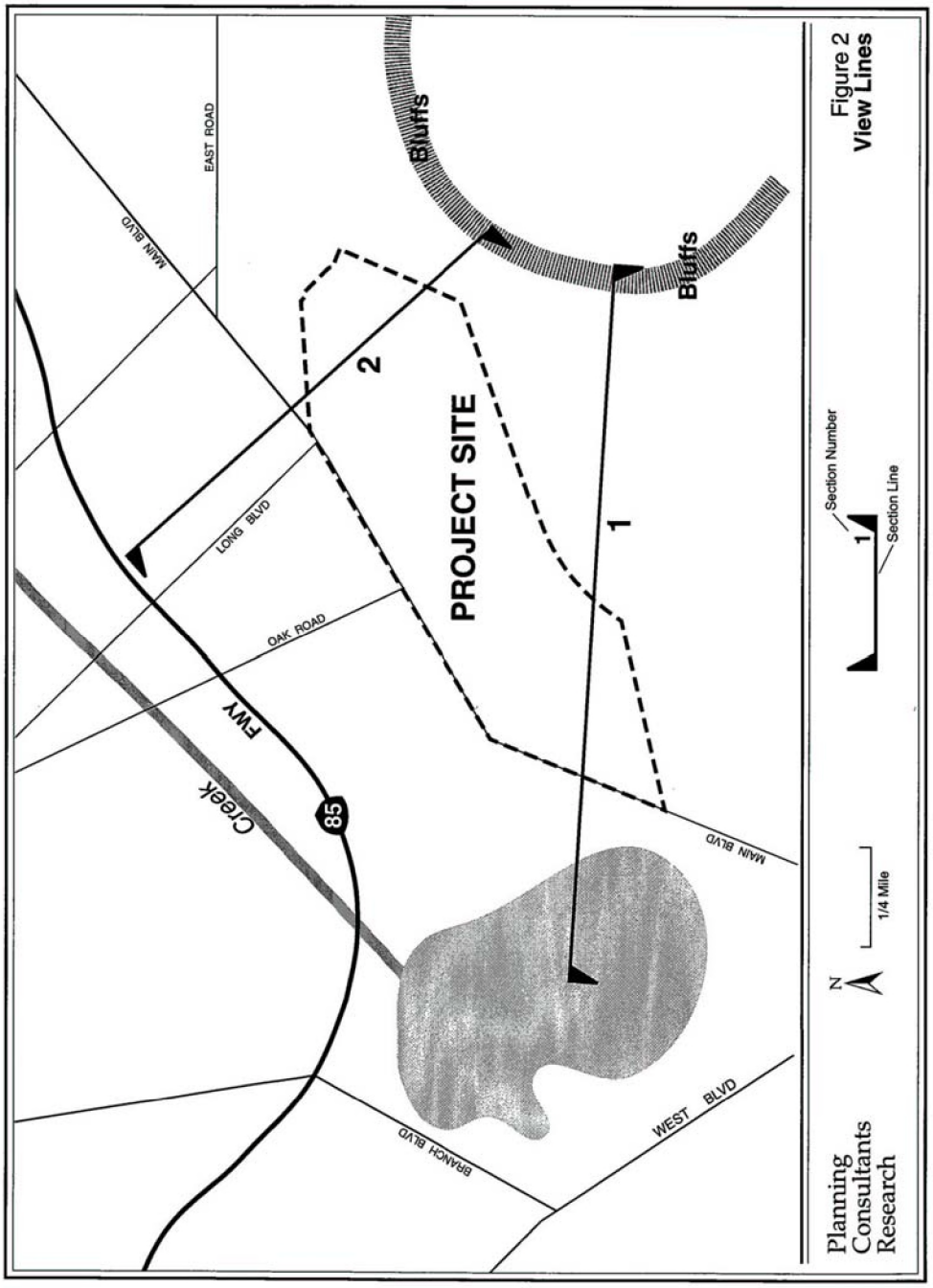


Exhibit A.2-3
VIEW SECTIONS

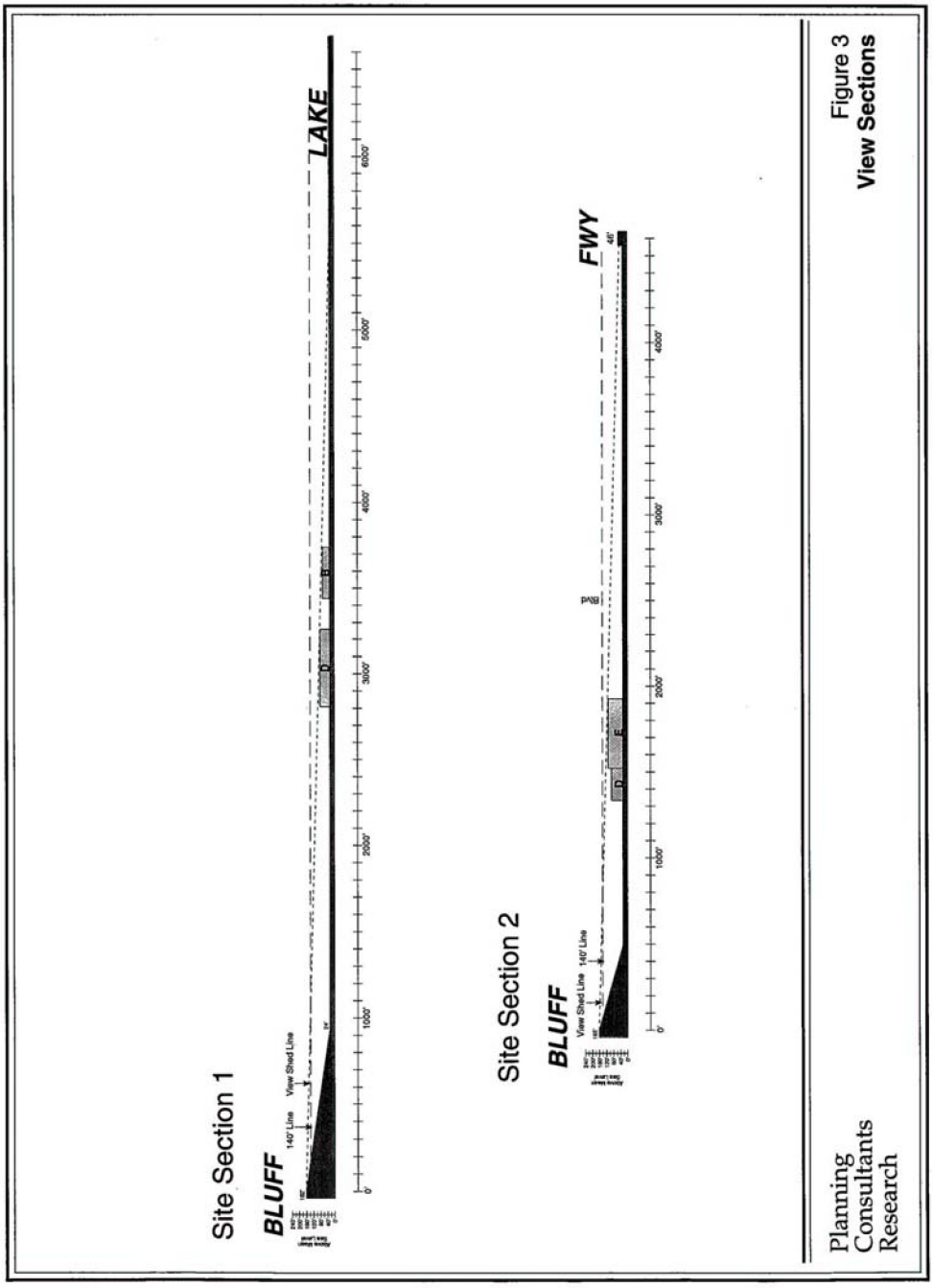
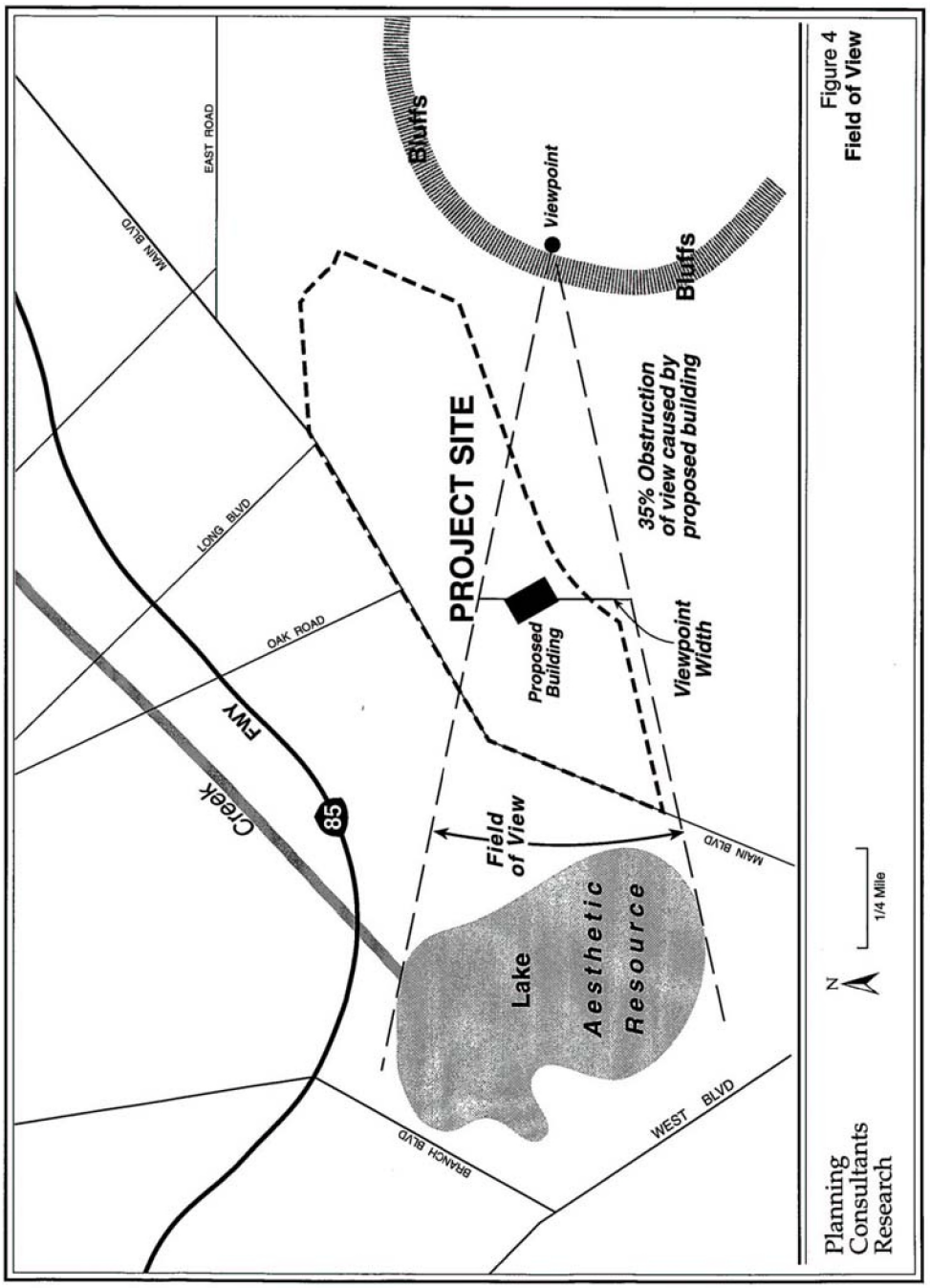


Exhibit A.2-4
FIELD OF VIEW



A.3. SHADING

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

I.c): Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

B. Introduction

Shading refers to the effect of shadows cast upon adjacent areas by proposed structures. Consequences of shadows upon land uses may be positive, including cooling effects during warm weather, or negative, such as the loss of natural light necessary for solar energy purposes or the loss of warming influences during cool weather. Shadow effects are dependent upon several factors, including the local topography, the height and bulk of the project's structural elements, sensitivity of adjacent land uses, season, and duration of shadow projection. Facilities and operations sensitive to the effects of shading include: routinely useable outdoor spaces associated with residential, recreational, or institutional (e.g., schools, convalescent homes) land uses; commercial uses such as pedestrian-oriented outdoor spaces or restaurants with outdoor eating areas; nurseries; and existing solar collectors. These uses are considered sensitive because sunlight is important to function, physical comfort, or commerce.

Shading of existing sensitive uses can occur with the development of new structures located to the south of these uses. The relative effects of shading from structures are site-specific.

C. Screening Criteria

- Would the project include light-blocking structures in excess of 60 feet in height above the ground elevation that would be located within a distance of three times the height of the proposed structure to a shadow-sensitive use on the north, northwest or northeast[1]?

[1] *Depending upon the position of the sun relative to the earth's rotation, shadows cast by a structure are projected east or west of true north according to the time of day and the season. For an explanation of the variation in shadow bearings specific to the latitude of Los Angeles, see Project Impacts.*

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Shading, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Shading from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site and surrounding area. Locate shadow-sensitive uses in the area, including, but not limited to residential, commercial, institutional or other land use types where sunlight is important to function, physical comfort, or commerce. First, calculate the distance and direction between the project and each shadow-sensitive use and determine whether the project would include light-blocking structures in excess of 60 feet in height or the equivalent. For example, structures or structural elements in excess of 30 feet in height, and located at an elevation 30 feet higher than surrounding land uses, would be equivalent to a structure in excess of 60 feet at the same elevation as the surrounding land uses. Next, determine whether shade-sensitive uses exist to the north, northeast, or northwest within a distance of three times the height of the proposed structure(s). For example, identify shade-sensitive uses located within 270 feet and north of a proposed 90-foot tall structure. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project impact would normally be considered significant if shadow-sensitive uses would be shaded by project-related structures for more than three hours between the hours of 9:00 a.m. and 3:00 p.m. Pacific Standard Time (between late October and early April), or for more than four hours between the hours of 9:00 a.m. and 5:00 p.m. Pacific Daylight Time (between early April and late October).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include a description of shade-sensitive uses in the surrounding area located to the north of the project site. Identify the distance from the project to each use and describe any elevation differences between the sensitive use(s) and the project site.

Facilities and operations that are sensitive to the effects of shading generally include, but are not limited to, routinely useable outdoor spaces associated with residential, recreational or institutional land uses; commercial uses such as pedestrian-oriented outdoor spaces or restaurants with outdoor eating areas; nurseries; and existing solar collectors.

Project Impacts

Review the project description and identify any proposed light-blocking structures or structural elements that would exceed 60 feet in height relative to nearby shade-sensitive uses. Determine the number of hours shadow-sensitive uses would be shaded by project-related structures.

As appropriate, diagram the footprint of the proposed structure(s) and nearby shade sensitive uses. Calculate and diagram the length of shadows that would be cast by proposed buildings during extreme conditions, as represented by the Winter Solstice (December 22) and Summer Solstice (June 21). The Spring and Fall Equinox represent intermediate conditions.

Exhibit A.3-1 identifies shadow length values and shadow bearings in the Los Angeles area for the solstices and equinox for morning, noon, and afternoon hours. The shadow length multiplier values represent the length of a shadow proportional to the height of a given building, at specific times of day. Hence, a building of 100 feet in height would cast a shadow 303 feet long at 9:00 a.m. during the Winter Solstice.

Exhibit A.3-2 provides morning and afternoon maximum shadow lengths generated for given structure heights during the Winter Solstice. Exhibit A.3-3 provides the same information calculated for the Summer Solstice. Use these tables, together with the shadow bearings provided in Exhibit A.3-1, to determine shadow patterns from the proposed project.

Exhibit A.3-4 shows how to plot shadows generated by individual buildings for a specific season and time of day. For buildings located on topography elevated above surrounding

shadow-sensitive uses, the differences in ground elevation between the building and a shadow-sensitive use is added to the shadow length to account for the elevation difference.

Based on the shadow patterns, determine the number of hours a project structure would shade an adjacent sensitive use. For programs or long range projects where specific structure design (i.e., building footprints and/or dimensions) have not been determined, use the maximum development envelope (i.e., maximum heights, minimum setbacks, and maximum lot coverage permitted according to the zoning) and determine shadow patterns as described above.

Cumulative Impacts

Review the list of related projects and identify those, which would affect the same shadow-sensitive uses as the proposed project. Calculate the project shadows of the related projects and determine the combined effect of these shadows, along with those of the proposed project, using the methodology described above.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Limit the width/size of structural elements above 60 feet in height; and

- Move proposed structures further from shadow-sensitive uses.

3. DATA, RESOURCES, AND REFERENCES

City of Los Angeles specific plans, particularly West Los Angeles and Warner Center. Available from the City Planning Department's Central Maps and Publications Office at 200 N. Spring Street, 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255 or http://www.lacity.org/PLN/.

Exhibit A.3-1
SHADOW LENGTH MULTIPLIERS AND BEARINGS FOR 34° LATITUDE - LOS ANGELES

Time		Shadow Length Multiplier[a]		Shadow Bearing[b,c]
Winter Solstice (December 22)				
9 a.m.		3.03		45/West
NOON		1.60		0/North
3 p.m.		3.03		45/East
Spring/Fall Equinox (March 22/September 22)				
8 a.m.		2.18		73/West
NOON		0.72		0/North
4 p.m.		2.18		73/East
Summer Solstice (June 22)				
9 a.m.		2.18		85/West
1 p.m. (solar noon)		0.16		0/North
5 p.m.		2.18		85/East

[a] Shadow length is identified per unit of height; the height of the structure is multiplied by the shadow length multiplier. Therefore, a 100-foot building would cast a shadow 303 feet long during the Winter Solstice at 9 a.m. (e.g., 100 x 3.03).

[b] Shadow bearing is identified in degrees from north. 45/West means 45 degrees west of north; 73/East means 73 degrees east of north, etc.

[c] Shadow sensitive uses located greater than 45° west or east of due north would not be affected by winter shadows, regardless of the distance between the proposed building and the shadow-sensitive use. Similarly, shadow sensitive uses located greater than 85° west or east of due north would not be affected by summer shadows.

Source: Planning Consultants Research, 1995.

Exhibit A.3-2
MAXIMUM SHADOW LENGTH GENERATED FOR GIVEN SOURCE HEIGHTS DURING WINTER SOLSTICE

Source Height (in feet)[a]	Maximum Shadow Length (in feet)[b]		Source Height (in feet)[a]	Maximum Shadow Length (in feet)[b]
60	182		310	939
70	212		320	970
80	242		330	1,000
90	273		340	1,030
100	300		350	1,061
110	333		360	1,091
120	364		370	1,121
130	394		380	1,151
140	424		390	1,182
150	455		400	1,212
160	485		410	1,242
170	515		420	1,273
180	545		430	1,303
190	576		440	1,333
200	606		450	1,364
210	636		460	1,394
220	667		470	1,424
230	697		480	1,454
240	727		490	1,485
250	758		500	1,515

[a] Height increments could include either of the following: (1) the height of a proposed building; or (2) in cases of varying topography, the height of a proposed building together with the differential in finished ground elevations between the proposed building and an adjacent shadow-sensitive use.

[b] Shadow length at 9:00 a.m. or 3:00 p.m. during the Winter Solstice.

Source: Planning Consultants Research, 1995.

Exhibit A.3-3
MAXIMUM SHADOW LENGTH GENERATED FOR GIVEN SOURCE HEIGHTS DURING SUMMER SOLSTICE

Source Height (in feet)[a]	Maximum Shadow Length (in feet)[b]		Source Height (in feet)[a]	Maximum Shadow Length (in feet)[b]
60	80		310	412
70	93		320	426
80	106		330	439
90	120		340	452
100	133		350	466
110	146		360	479
120	160		370	492
130	173		380	505
140	186		390	519
150	200		400	532
160	213		410	545
170	226		420	559
180	239		430	572
190	253		440	585
200	266		450	599
210	279		460	612
220	293		470	625
230	306		480	638
240	319		490	652
250	333		500	665

[a] Height increments could include either of the following: (1) the height of a proposed building; or (2) in cases of varying topography, the height of a proposed building together with the differential in finished ground elevations between the proposed building and an adjacent shadow-sensitive use.

[b] Shadow length at 9:00 a.m. or 5:00 p.m. during the Summer Solstice (June 22).

Source: Planning Consultants Research, 1995.

Exhibit A.3-4
SHADOW PLOTTING METHODOLOGY

To plot potential shadows, use the following steps:

- Draw the building footprint. Measure the shadow lengths for the structure along the shadow bearings identified for the Winter Solstice in Exhibit A.3-1. Project the shadows the distance indicated in Exhibit A.3-2, from each corner of the structure. Connect the end points of the shadows cast, at the times of day for which shadow projections were made, by drawing an arc which incorporates the end points of the morning, noon and afternoon shadows, as projected from a single corner of the structure (see Exhibit A.3-5). This represents the coverage of the shadow cast by the structure throughout the day.

- Undertake the above on a separate footprint for each season identified in Exhibit A.3-1.

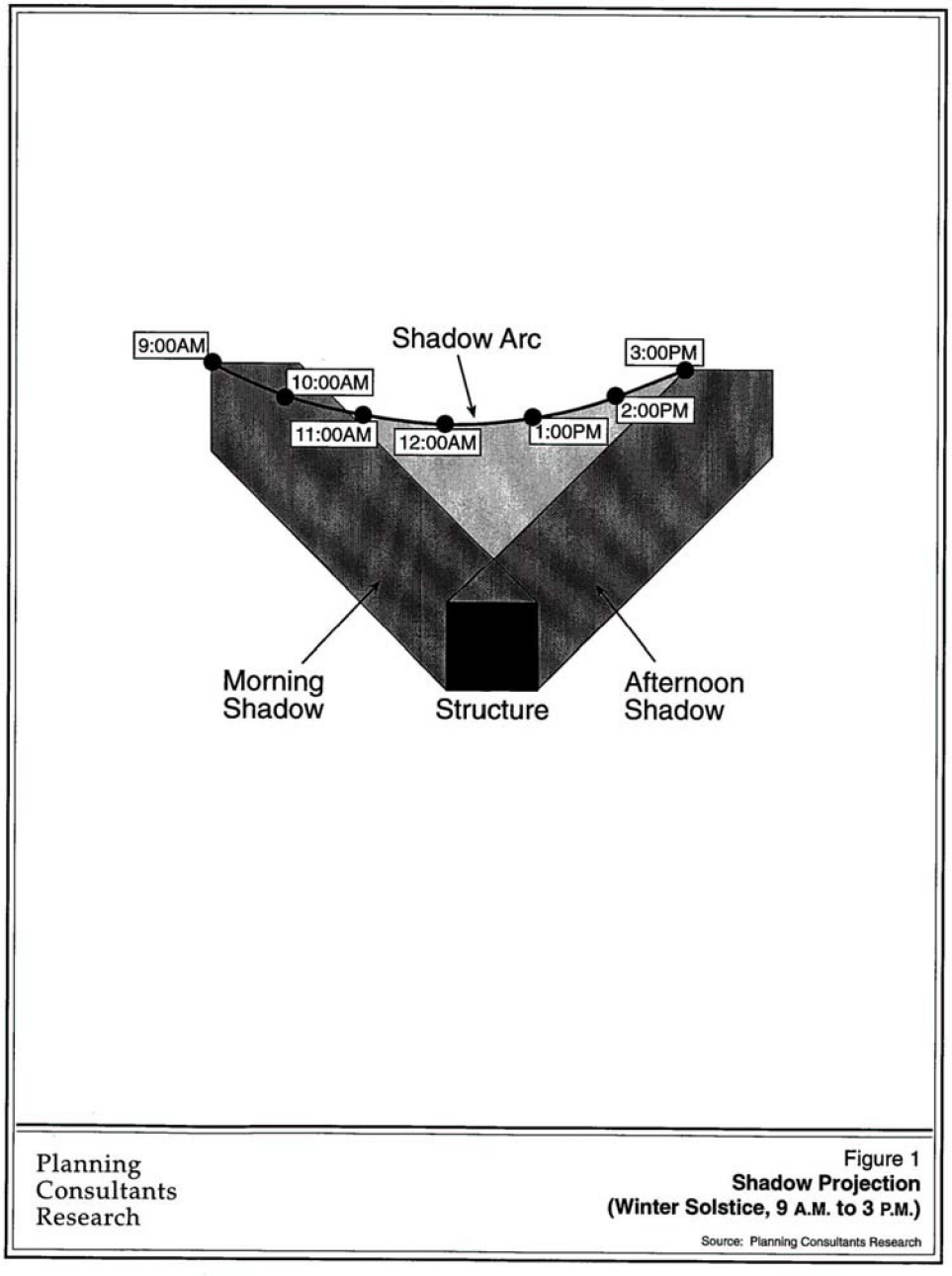
- At 9:00 a.m. on the Winter Solstice, shadows project at 45° west of true north. As time approaches noon, shadows both move closer to true north (at a rate of 15° per hour) and also shorten in length. After the noon hour, shadows begin to move east and elongate until 3:00 p.m., at which time they project at 45° east of true north. Summer shadows move, shorten and then lengthen in the same way throughout the day, except that they project further southward (i.e., 85° from true north during the Summer Solstice and progressing at a rate of 21.25° per hour) and reach maximum lengths shorter than those of winter shadows.

- Subdivide the shadow into equal sections which represent where the end point of the shadow will be located during each hour of the day (i.e., six equal sections to represent the six hours between 9:00 a.m. and 3:00 p.m. during the winter and eight equal sections to represent the eight hours between 9:00 a.m. and 5:00 p.m. during the summer).

- Place the sun shadow layout generated above onto a base map, which shows adjacent lot lines and the approximate location of shadow-sensitive uses (see Exhibit A.3-6).

- Determine the length of time during the day that a land use receives a shadow cast by the structure. The shadow projected by a structure, moves at a constant rate from west to east, corresponding to the movement of the sun throughout the day, and thus allowing a general determination of shadow movement, onto and away from a shade-sensitive use.

Exhibit A.3-5
Shadow Projection

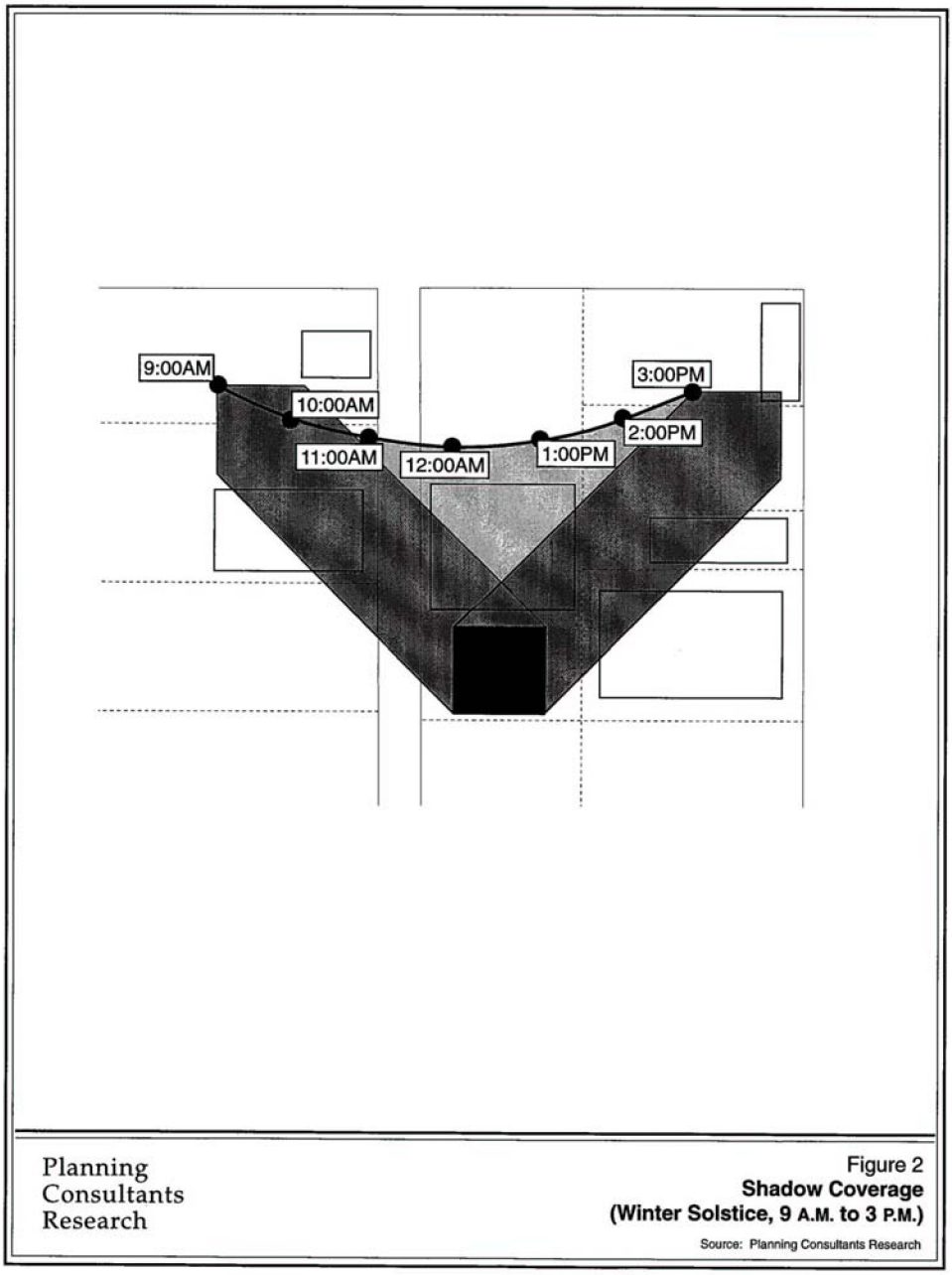


Planning
Consultants
Research

Figure 1
Shadow Projection
(Winter Solstice, 9 A.M. to 3 P.M.)

Source: Planning Consultants Research

Exhibit A.3-6
Shadow Coverage



A.4. NIGHTTIME ILLUMINATION

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

I.d): Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

B. Introduction

This section involves the extent to which a proposed project's artificial lighting affects the visual environment. Nighttime illumination of varying intensities is characteristic of most urban and suburban land uses including those in the City of Los Angeles. Artificial lighting has become more widely utilized in recent years to address security concerns and aesthetics.

New light sources introduced by a project may increase ambient nighttime illumination levels. Additionally, nighttime spillover of light onto adjacent properties has the potential to interfere with certain functions, including vision, sleep, privacy, and general enjoyment of the natural nighttime condition. The significance of the impact depends on the type of use affected, proximity to the affected use, the intensity of the light source, and the existing ambient light environment. Uses considered sensitive to nighttime light include, but are not limited to, residential, some commercial and institutional uses, and natural areas.[1] The City regulates a number of light sources (see Exhibit A.4-1).

C Screening Criteria

- Would the proposed project introduce light likely to increase ambient nighttime illumination levels beyond the property line of the project site?

- Does the project include lighting that would routinely spillover onto a light-sensitive land use?

A "yes" response to both of the preceding questions indicates further study in an expanded

[1] *The effect of artificial lighting on biological resources is addressed in C. BIOLOGICAL RESOURCES.*

Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Nighttime Illumination, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to either of the preceding questions indicates that there would be no significant Nighttime Illumination impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project for the types of lighting included. Review surrounding land use information to determine the location of light-sensitive land uses. Light-sensitive land uses may include, but are not limited to, residences, including board and care facilities; commercial or institutional uses that require minimal nighttime illumination for proper function, physical comfort, or commerce; and natural areas. Determine the potential for routine spillover of light or an increase in ambient light levels by considering the project's proximity to light-sensitive uses, the intensity of project light sources, and the existing ambient light environment.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The change in ambient illumination levels as a result of project sources; and
- The extent to which project lighting would spill off the project site and effect adjacent light-sensitive areas.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of existing ambient light conditions on-site and in the surrounding vicinity, including background lighting conditions, and existing light spill-over from the project site; and

- Identification and description of the light-sensitive land uses in the area.

Project Impacts

Using the information from the Evaluation of Screening Criteria and Environmental Setting, determine the change in illumination resulting from project light sources. Describe the proposed light sources, including a locational graphic, as appropriate. Note whether existing light sources on site will remain or be removed. Assess the extent to which project lighting (including illuminated signage) would spill off the project site onto adjacent light-sensitive areas, considering the direction in which the light would be focused, whether shielding techniques would be used, and the extent to which project lighting would illuminate such sensitive land uses.

For projects involving a change in policies or long-range programs where proposed land uses are known, but specific structure designs (i.e., building or use footprints) have not been determined, identify general locations where high-intensity lighting or signage would likely occur, and evaluate the potential impacts on light-sensitive uses.

Cumulative Impacts

Review the list of related projects and identify any projects that may cause routine spill-over of light onto the same light-sensitive land uses as the project. Evaluate the impact from these projects, combined with the impact of the proposed project, using the methodology described above.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Use high pressure sodium and/or cut-off fixtures instead of typical mercury-vapor fixtures for outdoor lighting;

- Prohibit or limit signs with flashing, mechanical, strobe, or blinking lights; moving parts; or lighted monument signs;

- Provide structural and/or vegetative screening from sensitive uses;

- Design exterior lighting to confine illumination to the project site, and/or to areas which do not include light-sensitive uses; and

- Restrict the operation of outdoor lighting for recreational activities to the hours of 7:00 a.m. to 10:00 p.m.

3. DATA, RESOURCES, AND REFERENCES

Los Angeles Municipal Code (LAMC), available from the City Clerk or http://lacity.org/lacity102.htm.

Illumination Engineering Society of North America. American National Standard Practice for Roadway Lighting.

Illumination Engineering Society of North America. Lighting Handbook, Reference and Application.

Exhibit A.4-1
SELECTED CITY MUNICIPAL CODE LIGHTING REGULATIONS

Chapter 1, Article 2, Sec. 12.21 A 5(k). All lights used to illuminate a parking area shall be designed, located and arranged so as to reflect the light away from any streets and adjacent premises.

Chapter 1, Article 2, Sec. 12.12.1 A 3(b). All signs permitted in the "P" Zone may be illuminated, but shall comply with the requirements set forth in Section 62.200 of this Code, and shall not contain any flashing, moving or animated parts or features.

Chapter 1, Article 2, Sec. 12.12.1.5 A 2(a). Parking buildings in the "PB" Zone shall be constructed with a continuous, enclosing wall at least three and one-half feet in height at each floor level. Said wall need not be solid but shall be constructed of materials so as to block light emitted from the building.

Chapter 1, Article 2, Sec. 12.14 A (6g). Lights used to illuminate service stations shall be arranged so as to reflect the light away from the adjacent premises in an "A" or "R" Zone, and the light standard for such lights shall not exceed 20 feet in height.

Chapter 1, Article 2, Sec. 12.22 A 23(b)(1). Mini-Shopping Centers shall have low-level security type lighting. All exterior lighting shall be directed onto the mini-shopping center site, and all flood lighting shall be designed to eliminate glare to adjoining properties.

Chapter 1, Article 2, Sec. 12.50 E. No illuminated or flashing signs shall be installed or maintained within an Airport Hazard Area which would either make it difficult for flyers to distinguish between said lights and aeronautical lights, or which would result in glare in the eyes of flyers.

Chapter 1, Article 7, Sec. 17.08 C. Plans for street lighting shall be submitted to and approved by the Bureau of Street Lighting for subdivision maps.

Division 62, Sec. 91.6205 M. No sign shall be illuminated in such a manner as to produce a light intensity of greater than three foot-candles above ambient lighting, as measured at the property line of the nearest residentially zoned property.

Chapter 9, Article 3, Section 93.0117. No exterior light source may cause more than two foot-candles of lighting intensity or generate direct glare onto exterior glazed windows or glass doors; elevated habitable porch, deck, or balcony; or any ground surface intended for uses such as recreation, barbecue or lawn areas or any other property containing a residential unit or units.

Note: A project may be subject to additional requirements of a specific plan, if it is located within a specific plan area.

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B. AIR QUALITY

B. AIR QUALITY

INTRODUCTION

This section addresses the air quality impacts of projects. Air quality impacts may occur during the construction or operation phase of a project, and may come from stationary, mobile, or area sources. The topic of air quality has been divided into the following sections:

- Construction emissions
- Operational emissions
- Toxic air contaminants

The California Health and Safety Code (HSC) defines air pollution as any discharge, release, or other propagation into the atmosphere, and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof. Sources of air pollution can be classified as either stationary sources (e.g., industrial processes, generators), mobile sources (e.g., automobiles, trucks), or area sources (e.g., residential water heaters).

As described below, the South Coast Air Quality Management District (SCAQMD) is the main regulatory authority in the region (the South Coast Air Basin (Basin), which includes the City of Los Angeles) with regard to air quality issues. In April 1993, the SCAQMD adopted a CEQA Air Quality Handbook that provides guidance for the CEQA analysis of potential air quality impacts of new projects. The CEQA Air Quality Handbook addresses screening criteria for stationary and mobile source emissions; the effects of certain pollutants (e.g., toxics, carbon monoxide) on sensitive receptors; and area sources (e.g., landfills, construction sites, etc.). It also provides recommended thresholds to assist in determining the significance of potential project impacts from these sources. The SCAQMD is the responsible agency for air quality permits. Compliance with SCAQMD rules and permit conditions is a component of the region's efforts to achieve and maintain air quality standards.

The City of Los Angeles has not adopted specific Citywide significance thresholds for air quality impacts. However, because of the SCAQMD's regulatory role in the air basin, this *Thresholds Guide* references the screening criteria, significance thresholds and analysis methodologies in the CEQA Air Quality Handbook to assist in evaluating projects proposed within the City. Because the CEQA Air Quality Handbook may not be appropriate for every project, it is the responsibility of the lead City department to determine the appropriate standards for a particular

project.

Regulatory Framework

The Federal and California Clean Air Acts require that federal, state, and local authorities adopt air pollution reduction measures to meet health-based air quality standards (ambient air quality standards) for six specific (known as "criteria") pollutants within certain timelines. The state standards are stricter than the federal standards. The current air quality planning efforts, and the responsibilities of agencies involved in these efforts, are described below.

Federal Clean Air Act (CAA)

Title I of the CAA identifies attainment, nonattainment, and unclassifiable areas with regard to the criteria pollutants, and sets deadlines for all areas to reach attainment for the following criteria pollutants: ozone; nitrogen dioxide (NO_2); sulfur dioxide (SO_2); particulates (PM10); carbon monoxide (CO); and lead (Pb). The CAA required each state with one or more non-attainment areas to prepare a State Implementation Plan (SIP) to describe how and when each area of the state will meet attainment for all criteria pollutants. The South Coast Air Basin was identified as the only "extreme" nonattainment area for ozone and a "serious" nonattainment area for PM10 and CO. Compliance with these standards must be demonstrated in the Basin as follows: ozone by the year 2010; PM10 by the year 2006; and CO by the year 2000.

Title II of the CAA contains a number of provisions with regard to mobile sources, including requirements for reformulated gasoline, new tailpipe emission standards for cars and trucks, nitrogen oxides (NOx) standards for heavy-duty vehicles, and a program for cleaner fleet vehicles. Identification and regulation of hazardous air pollutants are addressed in Title III. Under Title V, conditions for operating permits are specified. In 1997, EPA promulgated new ambient air quality standards for fine particulates (PM2.5) and ozone. The implementation guidelines, including deadlines, are under development.

California Clean Air Act (CCAA)

The CCAA designates air basins as either in attainment or nonattainment for each state air quality standard. The South Coast Air Basin is designated as a "severe" nonattainment area for ozone, CO, NO_2, and PM10. The CCAA set specific targets for achieving clean air, including an annual five-percent reduction in pollutants (averaged every five consecutive three-year periods) until attainment is reached. It also incorporates the permit programs of the CAA, including New Source Review (NSR) of stationary sources, and requires a mandatory vehicle inspection program for vehicles registered in nonattinment areas (smog check).

Air Quality Management Plan (AQMP)

The 2003 AQMP describes a comprehensive air pollution control program focused on attaining the state and federal ambient air quality standards and planning requirements in the Basin and those portions of the Southeast Desert Air Basin that are under the SCAQMD's jurisdiction, (the Antelope and Cochella Valleys). It calls for the implementation of all-feasible control measures, and the advancement and use of technologies for which breakthroughs are on the horizon. The AQMP is updated every 3 years. Revisions to the Plan are considered amendments to the SIP.

Regional Comprehensive Plan and Guide (RCP&G)

The RCP&G, developed by the Southern California Association of Governments (SCAG), was adopted in May 1995. It provides a framework for regional goals, and assists local jurisdictions in meeting state and federal requirements and devising appropriate land use strategies. The components of the RCP&G, which include air quality, transportation and land use, among others, each contain goals and strategies for identifying and reducing cumulative impacts from new projects and plans, as required by CEQA and other state and federal regulations.

Framework and Air Quality Elements

The City approved a comprehensive update to the long-term growth strategy in its General Plan. The Framework Element sets policy direction for the City's 35 Community Plan areas, in which detailed land use plans are described, and 12 citywide Elements (e.g., Transportation and Housing). The Framework Element supports land use and transportation policies and patterns that will assist the region in meeting air quality goals, for example, by encouraging the location of residential and commercial uses near transit centers and continuing the City's "centers" development concept.

The Air Quality Element was adopted in November 1992. The objectives are to aid the region in attaining state and federal air quality standards, while continuing to allow economic growth and improvement in the quality of life for City residents. This Element also discusses how the City plans to implement local programs contained in the SCAQMD's AQMP.

Los Angeles County Congestion Management Program

The Congestion Management Program (CMP) for Los Angeles County was developed to meet the requirements of Section 65089 of the California Government Code and addresses regional congestion by linking transportation, land use, and air quality decisions. The goals of the CMP

include the following:

- To link land use, transportation, and air quality decisions;
- To develop a partnership among transportation decision-makers on devising appropriate transportation solutions that include all modes of travel; and
- To propose transportation projects that are eligible for state gas tax funds.

Responsibilities of Regulatory Agencies

Environmental Protection Agency (EPA)

The EPA administers the CAA and other air quality legislation. As a regulatory agency, EPA's principal functions include the following: (1) setting federal ambient air quality standards; (2) preparing guidance for and approval of SIPs to meet or maintain these ambient air quality standards; (3) establishing national emission limits for major sources of air pollution; (4) inspecting and monitoring emission sources; (5) enforcing federal air quality laws and promulgating new regulations; and, (6) providing financial and technical support for air quality research and development programs.

California Air Resources Board (CARB)

The CARB is the state agency responsible for the coordination and administration of both state and federal air pollution control programs in California. The CARB prepares and submits a SIP to EPA, undertakes research, sets state ambient air quality standards, provides technical assistance to local air districts, compiles emission inventories, develops suggested control measures, establishes emission standards for motor vehicles, and provides oversight of air district control programs.

SCAQMD

SCAQMD shares responsibility with the CARB for ensuring that all state and federal ambient air quality standards are achieved and maintained throughout the Basin. Local air districts, including the SCAQMD, are responsible for the preparation of AQMPs, inspection of stationary sources, monitoring of ambient air quality, and planning activities such as modeling and maintenance of the emission inventory. State law assigns to local air districts the primary responsibility for the control of air pollution from stationary sources, while reserving an oversight role for the CARB. Local air districts are also responsible for developing mobile source strategies necessary to achieve the ambient air quality standards, while CARB regulates tailpipe emissions

from mobile sources.

SCAG

SCAG is a joint powers agency encompassing the counties of Los Angeles, Orange, Imperial, Riverside, San Bernardino, and Ventura and is the Metropolitan Planning Organization (MPO) for this region. SCAG's responsibility with respect to air quality planning is primarily in developing transportation, land use and energy conservation measures as part of the RCP&G, Regional Transportation Improvement Program (RTIP), and Regional Transportation Plan (RTP). SCAG also has statutory authority in conjunction with the SCAQMD for the implementation and monitoring of land use strategies and transportation control measures contained in the AQMP. SCAG prepares the required air quality conformity analyses for transportation plans, programs, and projects to comply with the federal Transportation Conformity Rule. As part of the CEQA process for regionally significant projects, SCAG evaluates the consistency of such projects with the goals and policies of the RCP&G.

B.1. CONSTRUCTION EMISSIONS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

III.a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

III.b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

III.c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

III.d) Would the project expose sensitive receptors to substantial pollutant concentrations?

B. Introduction

Construction of new projects has the potential to create air quality impacts through earth moving operations and the use of heavy-duty equipment. Fugitive dust emissions result from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads at construction sites. Mobile source emissions, primarily nitrogen oxides (NOx), result from the use of construction equipment such as bulldozers, trucks, and scrapers. These emissions are most significant when using heavy-duty, diesel-fueled equipment. Mobile source emissions also result from vehicle trips by construction workers to and from the project site. Emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources individually, as well as collectively.

As described in B. AIR QUALITY (the Introduction to the Air Quality sections), a number of plans, policies and regulations have been adopted by agencies at the local, state and federal levels to address air quality concerns. Each of these plans contains regulations, control

strategies, or policies and programs designed to reduce the air pollutant emissions of new, and in some cases existing, development projects. The primary strategy related to construction emissions implemented and enforced by the South Coast Air Quality Management District (SCAQMD) is Rule 403, Fugitive Dust. Exhibits B.1-1 and B.1-2 reproduce a list of dust control strategies allowed by Rule 403. Compliance with SCAQMD rules and permit conditions is a component of the region's efforts to achieve and maintain air quality standards.

Refer to B.2. OPERATIONAL EMISSIONS for a discussion of carbon monoxide (CO) hotspots and F.2. HUMAN HEALTH HAZARDS for removal of asbestos containing material.

C. Screening Criteria

- Would site preparation or construction activities for the proposed project result in substantial emissions that would not be controlled on site by existing regulations?

A "yes" response to the preceding question indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR, may be required. Refer to the Significance Threshold for Construction Emissions, and review the associated Methodology to Determine Significance as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact from Construction Emissions from the proposed project.

D. Evaluation of Screening Criteria

Although the City of Los Angeles has not adopted specific guidance with regard to construction emissions, a number of sources are available to assist in this evaluation. SCAQMD's CEQA Air Quality Handbook contains a Screening Table for Construction based on construction emissions occurring over a three-month (quarterly) period (CEQA Air Quality Handbook pages 6-12). The table lists the sizes and amounts of various types of development projects and construction activities, over which a potentially significant air quality impact could occur, considering both dust generation and exhaust from construction equipment. In addition, the Environmental Protection Agency (EPA) publication, Compilation of Air Pollutant Emission Factors (AP-42), contains emission factors and methodologies for calculating emissions from off-highway mobile construction equipment and non-vehicular equipment. AP-42 also contains factors to estimate the dust generation per acre of graded land.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

Although the City has not adopted a Citywide significance threshold for construction emissions, SCAQMD's CEQA Air Quality Handbook and/or EPA's AP-42 contain emission factors and assessment methodologies. It is the responsibility of the lead City department to determine the appropriate standards. This *Thresholds Guide* reprints guidance from the CEQA Air Quality Handbook to assist in the evaluation of project impacts, as determined appropriate by each lead City agency.

Project-related factors to be used in a case-by-case evaluation of significance include the following:

Combustion Emissions from Construction Equipment

Type, number of pieces and usage for each type of construction equipment;
Estimated fuel usage and type of fuel (diesel, natural gas) for each type of equipment; and
Emission factors for each type of equipment.

Fugitive Dust

Grading, Excavation and Hauling:

Amount of soil to be disturbed on-site or moved off-site;
Emission factors for disturbed soil;
Duration of grading, excavation and hauling activities;
Type and number of pieces of equipment to be used; and
Projected haul route.

Heavy-Duty Equipment Travel on Unpaved Roads:

Length and type of road;
Type, number of pieces, weight and usage of equipment; and
Type of soil.

Other Mobile Source Emissions
Number and average length of construction worker trips to project site, per day; and
Duration of construction activities.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, provide the regulatory framework and discuss regional and local air quality, including ambient air monitoring data from the monitoring station closest to or most representative of the project site. Monitoring data may be obtained from the SCAQMD Air Quality Evaluation Staff or the CEQA Air Quality Handbook. Identify the location of sensitive receptors, such as residences, schools, childcare centers, hospitals, parks, or similar uses, in relation to the project site.

Project Impacts

Using the information described in the significance factors listed above, and guidance from the appropriate source, calculate the emissions from all construction-related activities, including equipment, earth moving, and worker travel, using the worst-case day. Identify measures that will be taken as part of the construction activity to reduce air emissions, including measures to comply with Rule 403. Determine the impact from all project-related construction emissions.

Cumulative Impacts

Review the related projects list and identify those projects with construction schedules that would coincide with the schedule of the proposed project. Estimate the potential emissions from the related projects that would occur during construction of the proposed project, based on available information and using the methodology above. Determine the combined emissions for the proposed and related projects and the resulting cumulative impact.

Sample Mitigation Measures

All construction projects must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources, and the Air Quality Management Plan (AQMP), which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively.

Potential mitigation measures beyond current requirements include the following:

Establish an on-site construction equipment staging area and construction worker parking lot, located on either paved surfaces or unpaved surfaces subjected to soil stabilization treatments, as close as possible to a public highway. Control access to public roadways by limiting curb cuts/driveways to minimize project construction impacts upon roadway traffic operations;

Properly maintain non-vehicular equipment engines to minimize the volume of exhaust emissions;

Use electricity from power poles, rather than temporary diesel or gasoline powered generators;

Use on-site mobile equipment powered by alternative fuel sources (i.e., methanol, natural gas, propane or butane);

Pave construction roads;

Inspect construction equipment prior to leaving the site and wash off loose dirt with wheel washers, as necessary; and

Provide ridesharing or shuttle service for construction workers.

3. DATA, RESOURCES, AND REFERENCES

Air Quality Element, 1992. Available from the City Planning Department's Central Publications Unit at 200 N. Spring St., 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255.

EPA, Compilation of Air Pollutant Emission Factors, AP-42.

SCAQMD, CEQA Air Quality Handbook, 1993. AQMP and Appendices, adopted August 2003.

SCAQMD, Rules and Regulations. Volumes I, II and III. Information regarding a particular rule or regulation may be obtained by calling the SCAQMD at (909) 396-3600 or 1-(800)-CUT-SMOG.

See also B. AIR QUALITY for description of regulatory framework, including the regulations and agencies involved.

Exhibit B.1-1

REPRINT OF SCAQMD RULE 403 (Amended December 1998), PAGE 14

REASONABLY AVAILABLE CONTROL MEASURES FOR HIGH WIND CONDITIONS

FUGITIVE DUST
SOURCE CATEGORY CONTROL MEASURES

Earth-moving

(1A) Cease all active operations, OR

(2A) Apply water to soil not more than 15 minutes prior to moving such soil. **Disturbed surface areas**

(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR

(1B) Apply chemical stabilizers prior to wind event; OR

(2B) Apply water to all unstabilized disturbed areas 3 times per day, if there is any evidence of wind-driven fugitive dust, watering frequency is increased to a minimum of 4 times per day; OR

(3B) Take the actions specified in Table 2, Item (3C); OR

(4B) Utilize any combination of control actions (1B), (2B) and (3B) such that, in total, these actions apply to all disturbed surface areas.

Unpaved roads

(1C) Apply chemical stabilizers prior to wind event; OR

(2C) Apply water twice [once] per hour during active operation; OR

(3C) Stop all vehicular traffic.

Open storage piles

(1D) Apply water twice [once] per hour; OR

(2D) Install temporary coverings.

Paved road track-out

(1E) Cover all haul vehicles; OR

(2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.

All Categories

(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 1 may be used.

*Measures in [brackets] are reasonably control measures and only apply to sources not within the South Coast Air Basin.

Exhibit B.1-2
REPRINT OF SCAQMD RULE 403 (Amended December 1998), PAGES 15 AND 16

DUST CONTROL FOR EXEMPTION FROM PARAGRAPH (d)(4)

FUGITIVE DUST
SOURCE CATEGORY CONTROL ACTIONS

Earth-moving (except construction cutting and filling areas, and mining operations)

(1a) Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR

(1a-1) For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.

Earth-moving: Construction fill areas:

(1b) Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board, and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Earth-moving: Construction cut areas and mining operations

(1c) Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.

Exhibit B.1-2, continued

REPRINT OF SCAQMD RULE 403 (Amended December 1998), PAGES 15 AND 16

DUST CONTROL FOR EXEMPTION FROM PARAGRAPH (d)(3)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS
Disturbed surface areas (except completed grading areas)	
	(2a/b) Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 [70] percent of the unstabilized areas.
Disturbed surface area: Completed grading areas	
	(2c) Apply chemical stabilizers within five working days of grading completion; OR
	(2d) Take actions (3a) or (3c) specified for inactive disturbed surface areas
Inactive disturbed surface areas	
	(3a) Apply water to at least 80 [70] percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c) Establish a vegetative ground cover within 21 [30] days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d) Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.
Unpaved Roads	
	(4a) Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b) Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR

*Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

Exhibit B.1-2, continued
REPRINT OF SCAQMD RULE 403 (Amended December 1998), PAGES 15 AND 16

DUST CONTROL FOR EXEMPTION FROM PARAGRAPH (d)(3)

FUGITIVE DUST
SOURCE CATEGORY CONTROL ACTIONS

Unpaved Roads (cont'd.)

(4c) Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.

Open storage piles

(5a) Apply chemical stabilizers; OR

(5b) Apply water to at least 80 [70] percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR

(5c) Install temporary coverings, OR

(5d) Install a three-sided enclosure with walls with no more than 50 percent porosity, which extend, at a minimum, to the top of the pile.

All Categories

(6a) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

*Measures in [brackets] are reasonably available control measures and only apply to sources not within the South Coast Air Basin.

B.2. OPERATIONAL EMISSIONS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

III.a): Would the project conflict with or obstruct implementation of the applicable air quality plans?

III.b): Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

III.c): Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including exceeding emissions which exceed quantitative thresholds for ozone precursors)?

III.d): Would the project expose sensitive receptors to substantial pollutant concentrations?

III.e): Would the project create objectionable odors affecting a substantial number of people?

B. Introduction

Operational emissions are defined as those, which occur after project construction activities have been completed, and the project becomes operational. Operational emissions are produced by the occupants of a facility or development and by both mobile and stationary sources connected to the facility or development. Depending on the characteristics of the individual project, operational activities have the potential to generate emissions of criteria and/or toxic air contaminants. This section focuses on emissions of criteria pollutants by point, mobile, and area sources. Toxic air emissions, which may occur during operational activities, are discussed separately in B.3. TOXIC AIR CONTAMINANTS.

Stationary source emissions include point source emissions that have an identifiable location, such as a smokestack, as well as area source emissions, such as fumes or minor sources of exhaust, which are emitted by multiple, small sources. Stationary point sources include project equipment and processes such as power plants and refinery boilers, while area sources originate from diverse sources such as generators and residential water heaters. Certain industrial and commercial operations, such as dairies and wastewater treatment plants, may

result in odors that impact sensitive receptors in the surrounding area.

Mobile source emissions occur as a result of motor vehicle, train, ship, and airplane travel. Motor vehicle emissions result from passenger vehicles and truck travel throughout the South Coast Air Basin (Basin) and are generally analyzed on a regional basis. Projects can be either direct sources of vehicle trips, such as a bus or shipping service, or indirectly generate or attract trips from or to the project site, such as a regional shopping center or employee work site.

Motor vehicle emissions can influence local air quality through changes in carbon monoxide (CO) concentrations, which are usually highest at busy intersections, parking garages, or other focused areas of vehicle activity. Because CO dissipates quickly, and based on methodologies established by the South Coast Air Quality Management District (SCAQMD) and California Air Resources Board (CARB), changes in CO concentrations are generally analyzed only where they would be in proximity to sensitive receptors.

Regulatory Framework

As described in B. AIR QUALITY, a number of plans, policies, and regulations have been adopted by local, state and federal agencies to address air quality concerns. Each of these plans and regulations are designed to reduce criteria pollutants for which state and federal health-based standards have been set.

Emissions from new, expanded and/or relocated stationary sources are regulated extensively by the SCAQMD through Regulation XIII, New Source Review (NSR); the permitting process for specific equipment and industrial processes; and compliance with source-specific regulations. NSR requires that any net increase in air pollutants from new or modified sources is offset by a reduction in emissions from another source. If the potential to emit is small (less than four tons/year) for any given criteria pollutant, a facility is exempt from providing emission offsets. However, if potential annual emissions are equal to or greater than four tons of reactive organic gases (ROG), nitrogen oxides (NOx), sulfur oxides (SOx), or particulate matter (PM10), they must be offset by Emission Reduction Credits (ERCs). The rule also requires that new sources install Best Available Control Technology (BACT) as a means of limiting air emissions.

In October 1993, the SCAQMD adopted the Regional Clean Air Incentives Market (RECLAIM) program to provide certain stationary source facilities added flexibility in meeting emission reduction requirements and to lower the cost of compliance. RECLAIM facilities are those that generate four or more tons of NOx and SOx per year. Each facility is assigned an emissions cap that decreases over time, and is allowed to select appropriate and cost-effective strategies to meet the emissions cap. Facilities are allowed "RECLAIM Trading Credits"

(RTCs) to account for excess reduction of emissions, which can be traded (sold) to other facilities that are not able to reduce emissions as effectively.

Title V of the Clean Air Act Amendments (CAAA) requires certain facilities to obtain a single, facility-wide air permit, which consolidates and replaces all previously issued air permits for individual pieces of equipment. Locally, Title V is implemented through SCAQMD's Regulation XXX and is applicable to a facility if it is a Major stationary source or subject to Title IV, solid waste incineration requirements, a New Source Performance Standard (NSPS), or a National Emission Standard for Hazardous Air Pollutants (NESHAP). Major sources are facilities with actual emissions of 8 tons per year of volatile organic compounds (VOC), NOx, or any single Hazardous Air Pollutant (HAP) or with yearly emissions in excess of 80 tons of SOx, 40 tons of CO, or 56 tons of PM10.

The SCAQMD's Rule 2202, On-Road Motor Vehicle Mitigation Options (required for employers of more than 250 people), provides a menu of strategies to reduce or otherwise mitigate the mobile source emissions resulting from employee commute trips. In addition, land use strategies and improvements to public transit that result in fewer single occupant vehicle (SOV) trips are being implemented by various agencies in the region, including the City. Other mobile source emission reduction strategies, such as market incentives and intercredit trading programs, are currently under study. Tailpipe emissions are regulated by CARB.

In air quality nonattainment and maintenance areas, transportation plans, programs, and projects must contribute to reducing motor vehicle emissions and be drawn from a conforming air quality plan. Conformity is a determination made by the Metropolitan Planning Organization (MPO) and United States Department of Transportation (DOT) that the transportation plans and programs meet the "purpose" of the State Implementation Plan (SIP), namely, reducing pollutant emissions to meet the National Ambient Air Quality Standards (NAAQS). All federally assisted and regionally significant projects, including non-federally assisted projects, are subject to the federal Transportation Conformity Rule. The Southern California Association of Governments (SCAG) is the MPO for the 5-county southern California region, including Los Angeles County and its member cities.

Because the City of Los Angeles has not established or adopted Citywide screening criteria or significance thresholds for operational emissions, the *Thresholds Guide* reprints guidance from the SCAQMD's CEQA Air Quality Handbook to assist in the evaluation of project impacts. The Screening Criteria, Evaluation of Screening Criteria, Significance Threshold and Project Impact sections that appear in this document are all reprinted from, or summaries of, the guidance in the CEQA Air Quality Handbook. For further information, please refer to the CEQA Air Quality Handbook, available from the SCAQMD. It is the responsibility of the lead City department to determine the appropriate significance criteria.

C. Screening Criteria

Would the proposed project:

Result in a development and/or activity level equal to or greater than the thresholds provided in the CEQA Air Quality Handbook's Screening Table for Operation – Daily Thresholds of Potential Significance for Air Quality[1] (see Exhibit B.2-1)?

Conflict with the regional population forecast and distribution in the most recent Air Quality Management Plan (AQMP)?

Have the potential to create or be subjected to an objectionable odor or localized CO hot spot that could impact sensitive receptors?

A "yes" response to any of the preceding questions indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Operational Emissions, and review the associated Methodology to Determine Significance as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact from Operational Emissions from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, and identify all new or modified sources of stationary and mobile source emissions. Use Exhibit B.2-1 to assess the potential to exceed the daily emissions thresholds for criteria pollutants. Consider the population likely to result from project implementation and identify conflicts with the regional population forecast and distribution in the most recent AQMP. Determine the potential for objectionable odors to impact sensitive receptors. Sensitive land uses include residences, board and care facilities, schools, playgrounds, hospitals, parks, childcare centers, and outdoor athletic facilities.

Compare this information to the Screening Criteria.

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[1] *This table is based on potential mobile source emissions for specified land uses and is not intended to screen for stationary sources. Stationary sources are screened on an individual basis by SCAQMD permit staff. (J. Nadler, SCAQMD, personal communication, October 1997.)*

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A proposed project would normally have a significant impact on air quality from project operations if any of the following would occur:

Operational emissions exceed 10 tons per year of volatile organic gases or any of the daily thresholds presented below (as reprinted from the CEQA Air Quality Handbook):

Pollutant	Significance Threshold (lbs./day)
ROG	55
NOx	55
CO	550
PM10	150
SOx	150

Either of the following conditions would occur at an intersection or roadway within one-quarter mile of a sensitive receptor:

The proposed project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 parts per million (ppm), respectively; or

The incremental increase due to the project is equal to or greater than 1.0 ppm for the California 1-hour CO standard, or 0.45 ppm for the 8-hour CO standard.

The project creates an objectionable odor at the nearest sensitive receptor.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

The air quality regulatory framework;
Description of existing ambient air quality conditions as indicated by data from the SCAQMD monitoring station closest to, or most representative of, the project site;

Summary of regional climate and air quality conditions, including a wind rose (which diagrams the frequency of occurrence for each wind direction), if odors are anticipated;

Description of the project site and surrounding area, including the location of sensitive receptors; and

Summary of the existing transportation system and traffic conditions, such as traffic volumes, Level of Service (LOS), transit facilities, etc.

Project Impacts

Project-related factors to be used in evaluating significance include the following:

Type, number of pieces, and usage of equipment;

Rate, quantity, and type of fuel consumption;

Emission factors, assuming implementation of applicable rules and regulations;

Type(s) and size(s) of land uses, including location of vehicle driveways and parking facilities;

The location and usage of equipment or processes that may emit odors;

Modes of transportation, fleet mix, length, number, and type (e.g., work, non-work) of trips, main routes;

Number of employees per land use category; and

Vehicle speeds and ambient temperature.

Pollutant emission rates for known pieces of equipment or processes, as well as energy consumption, are generally available from the manufacturer or from the SCAQMD. If information regarding the number and type of equipment proposed is not available, stationary source emissions may be estimated by using other indicators, such as emission rates per square foot of development. Standardized default values are provided in the CEQA Air Quality Handbook, or consult CARB source classification codes and Environmental Protection Agency (EPA) emission factors.

There are three main methods of determining mobile source and energy consumption emissions as identified by the SCAQMD, depending on the level of detail needed. These include the use of:

Screening Tables 9-7 and 9-8 in the CEQA Air Quality Handbook;

Computer modeling, using the most recent version of Mobile Assessment for Air Quality Impacts (MAAQI); and

Methodology and emission factors in Appendix 9 of the CEQA Air Quality Handbook.

The MAAQI model, and the methodology in Appendix 9 of the CEQA Air Quality Handbook, allow estimation of emissions of criteria pollutants from vehicle trips associated with new or modified development, incorporating the most recent vehicle emission factors (EMFAC) from CARB. User-defined inputs to the models include project type, average vehicle miles traveled, year, season, trip speed, and other parameters. This information would be identified in the project traffic study. (See Appendix 9 of the CEQA Air Quality Handbook for more information.) Determine project-related mobile source emissions and compare to the daily emissions threshold reprinted from the CEQA Air Quality Handbook in the significance threshold.

Localized Mobile Sources (CO Hotspots)

Calculate future CO levels and the incremental increase in CO levels resulting from the proposed project at an intersection, driveway, parking facility, or roadway within one-quarter mile of a sensitive receptor. Assess whether there is an exceedance of the California standards.

Where more detailed or site specific analysis is desired, the CEQA Handbook recommends a dispersion model to estimate potential CO "hotspots," such as CALINE and CAL3QHC. For a detailed explanation of the CALINE4 model, refer to the California Air Resources Board publication *Air Quality Technical Analysis Note (AQ-TAN):* Microscale CO Procedures for California Users. Caltrans has also prepared a "CO Protocol" which is available for use within California and was developed based on information specific to California roads and driving conditions. Project-specific information from the traffic study or SCAQMD default values may be used.

Ambient CO concentrations through the year 2010 are presented in the CEQA Handbook and in the SCAQMD's *Draft Technical Report V-I: Assessment of Nitrogen Dioxide and Carbon Monoxide in the South Coast Air Basin.*

Based on the project's operational components, including activities and measures designed to reduce odors, determine whether the project would create an objectionable odor at the nearest sensitive receptor. Consider patterns of air flow/prevailing winds as applicable.

Using the information from the Evaluation of Screening Criteria, the project evaluation described above, and guidance from the appropriate source, calculate the emissions from operational activities, using the worst-case conditions. Identify measures that will be taken as part of the project to reduce air emissions. Determine the impact from all project sources.

Cumulative Impacts

Review the list of related projects and identify those that would have pollutant or odor emissions. Determine the potential impacts of all such projects, together with the proposed project, using the methodology above.

Sample Mitigation Measures

Potential mitigation measures include the following:

Install on-site pollution control equipment;

Modify industrial processes to reduce emissions;

Provide telecommunications centers near residential areas;

Establish shuttle service from residential areas to transit centers or commercial core areas;

Construct off-site pedestrian facility improvements, such as overpasses and wider sidewalks;

Contribute to regional transit systems (e.g., right-of-way, capital improvements, etc.);

Construct, contribute, or dedicate land for the provision of off-site bicycle trails linking the facility to designated bicycle commuting routes;

Provide video-conferencing facilities;

Implement home dispatching system where employees receive routing schedule by phone instead of driving to work;

Use low-emission fleet vehicles;

Provide on-site child care facilities;

Provide services, facilities, or incentives to reduce employee work trips. Consider ride share programs or shuttle service for employees;

Include adequate ventilation systems in parking structures to dissipate CO emissions;

Contribute to signal synchronization at congested areas;

Locate sensitive receptors away from potential "hotspots;" and

Provide barriers, such as wall or vegetative screen, between hotspots and sensitive receptors.

See L.1 INTERSECTION CAPACITY for Transportation Demand Management (TDM) measures.

See M.4 ENERGY for energy conservation mitigation measures.

3. DATA, RESOURCES, AND REFERENCES

SCAQMD, CEQA Staff (909-396-3109) and www.aqmd.gov\ceqa.

CARB. AQ-TAN. Microscale CO Procedures for California Users. June 1988.

CARB. CALINE4 - A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways. Revised June 1989. www.dot.ca.gov/hq/env/air/calinesw.htm.

California Department of Transportation (Caltrans). CO Transportation Project Protocol, 1997.

Local Government Commission (LGC), Land Use Strategies for More Livable Places, June 1992. (This publication may be obtained by writing to LGC, 909 12th Street, Suite 205, Sacramento, CA 95814.)

SCAQMD, Draft Technical Report V-I: Assessment of NO_2 and CO in the SCAB. December 1990.

See also B. AIR QUALITY and B.1. CONSTRUCTION EMISSIONS.

Urbemis 2002 (version 7.4.2) A Model that Estimates Air Pollution from a Wide Variety of Land Use Projects. www.aqmd.gov/ceqa/urbemis.htm.

Exhibit B.2-1
REPRINT OF SCAQMD CEQA AIR QUALITY HANDBOOK, PAGES 6-10 TO 6-12
SCREENING TABLE FOR OPERATION
DAILY THRESHOLDS OF POTENTIAL SIGNIFICANCE FOR AIR QUALITY

Primary Land Use	Potentially Significant Air Quality Impact
Residential	
Single Family Housing	166 units
Apartments	261 units
Condominiums	297 units
Mobile Homes	340 units
Retirement Community	612 units
Education	
Elementary School	220,000 sq.ft.
High School	177,000 sq.ft.
Community College	150,000 sq.ft.
University [a]	813 students
Commercial	
Airport [a]	15 Daily Commercial Flights
Business Park	136,000 sq.ft.
Day Care	26,000 sq.ft.
Discount Store [a]	32,000 sq.ft.
Fast Food w/o Drive-Thru	3,500 sq.ft.
Fast Food with Drive-Thru	2,800 sq.ft.
Hardware Store [a]	28,000 sq.ft.
Hotel	213 rooms
Medical Office	61,000 sq.ft.
Motel	220 rooms
Movie Theater [a]	30,000 sq.ft.
Car Sales [a]	43,000 sq.ft.
Office (small, 10-100)	96,221 sq.ft.
Office (medium, 100-200)	139,222 sq.ft.
Office (large, 200->)	201,000 sq.ft.
Office Park	171,000 sq.ft.
Racquet Club	98,000 sq.ft.
Research Center	245,000 sq.ft.
Resort Hotel	199 rooms
Restaurant	23,000 sq.ft.
Restaurant (high-turnover) [a]	9,000 sq.ft.

Exhibit B.2-1, continued
REPRINT OF SCAQMD CEQA AIR QUALITY HANDBOOK, PAGES 6-10 TO 6-12
SCREENING TABLE FOR OPERATION
DAILY THRESHOLDS OF POTENTIAL SIGNIFICANCE FOR AIR QUALITY

Primary Land Use	Potentially Significant Air Quality Impact
Commercial (cont'd.)	
Shopping Center (small, 10-500)	22,000 sq.ft.
Shopping Center (medium, 500-1,000)	50,000 sq.ft.
Shopping Center (large, 1,000-1,600)	64,000 sq.ft.
Special Activity Center [a] (Stadiums and Amusement Parks)	87 employees
Supermarket	12,500 sq.ft.
Industrial/Mining	
Light Industrial	276,000 sq.ft.
Heavy Industrial [a]	1,284,000 sq.ft.
Industrial Park	276,000 sq.ft.
Aircraft Manufacturing & Repairs	[b]
Bulk Terminals	[b]
Cement Plant	[b]
Chemical Plant	[b]
Hazardous Waste Treatment & Storage	[b]
Manufacturing	500,000 sq.ft.
Mining	[b]
Pulp/Paper Mills	[b]
Refinery	[b]
Institutional/Governmental	
Clinic [a]	94,000 sq.ft.
Government Center [a]	83,000 sq.ft.
Hospital [a]	176 Beds
Library	51,000 sq.ft.
Nursing Home	741 Beds
U.S. Post Office	26,000 sq.ft.
Freeway Lane Addition	All
Designation of a New Transportation Corridor	All
New Freeway/Highway	All
Auxiliary Lanes	Beyond One Ramp

Exhibit B.2-1, continued
REPRINT OF SCAQMD CEQA AIR QUALITY HANDBOOK, PAGES 6-10 TO 6-12
SCREENING TABLE FOR OPERATION
DAILY THRESHOLDS OF POTENTIAL SIGNIFICANCE FOR AIR QUALITY

Primary Land Use	Potentially Significant Air Quality Impact
Institutional/Governmental (cont'd.)	
Waterport	[b]
Sewage Treatment Plant	[b]
Rail	All
Cogeneration Project	[b]
Landfill	[b]
Incineration	Hazardous, Medical or Municipal Waste
Power Generating Facility	[b]
Waste-To-Energy Plant	[b]

[a] *Trip generation rates from the 5th Edition ITE Manual were based upon small sample sizes.*

[b] *New facilities, expansions or other changes that could result in emissions exceeding the significance thresholds.*

These size construction projects have the potential to exceed the daily emissions significance thresholds. Local governments should use these thresholds as screening tools when a project proponent first approaches the lead agency for a permit, to determine whether or not the proposed project will be significant. Moreover, using these thresholds, a project proponent should be advised to include feasible mitigation measures at the project design level rather than in later stages of the project.

Definitions:

"Manufacturing" means to make goods and articles by hand or machinery, often on a large scale and with division of labor.

"Industry" means any large-scale business activity or manufacturing productive enterprises collectively, especially as distinguished from agriculture.

B.3. TOXIC AIR CONTAMINANTS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

III.a): Would the project conflict with or obstruct implementation of the applicable air quality plan?

III.b): Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

III.d): Would the project expose sensitive receptors to substantial pollutant concentrations?

B. Introduction

The California Health and Safety Code (HSC) Section 39655 defines a toxic air contaminant as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." Toxic air contaminants are further classified as carcinogenic or non-carcinogenic substances.

Due to the adverse potential health effects of exposure to toxic air contaminants, both the federal and state governments have established lists of pollutants, which are either regulated at the state level through AB 1807, or at the federal level through the National Emissions Standards for Hazardous Air Pollutants (NESHAPs). The state regulations governing toxic air contaminants are more stringent than federal regulations. The primary responsibility for the implementation of these regulations within the City resides with the South Coast Air Quality Management District (SCAQMD) through its permitting authority. SCAQMD Rules 1401 (New Source Review (NSR) of Carcinogenic Air Contaminants) and 212 (Standards for Approving Permits) implement HSC Section 41700 that requires efforts to be undertaken to prevent new emissions that endanger public health.[1] The California Air Pollution Control Officers Association (CAPCOA) has set forth specific guidelines for the assessment of non-carcinogenic air contaminants from stationary point sources.

[1] *SCAQMD Rule 1402 regulates toxic emissions from existing facilities.*

SCAQMD's CEQA Air Quality Handbook (pages 3-6 to 3-7) lists the federal and state legislation that governs the regulation of toxic air contaminants. In addition to AB 1807 (Tanner Air Toxics Act), AB 2588 addresses toxic "hot spots," AB 3205 regulates toxic releases within 1,000 feet of schools, and AB 3374 involves monitoring of disposal sites.

Under Title III of the 1990 Clean Air Act Amendments (CAAA), the Environmental Protection Agency (EPA) was required to publish a list of categories of major sources of the Hazardous Air Pollutants (Toxics or HAPs) listed in Section 112 by November 1991. That list was then divided into a 10-year regulatory schedule for developing Maximum Achievable Control Technology (MACT) standards for every category or subcategory with specific accomplishments required in 2, 4, 7, and 10 year periods after enactment.

A carcinogenic air contaminant is a substance that has been shown to cause cancer in animals or humans. There is no specific concentration of carcinogenic air contaminants that can be considered completely safe. Thus, the amount of increased risk a person has of getting cancer from exposure to carcinogenic air toxics is used as an indicator of potential significant health effects.

Non-carcinogenic toxic air contaminants are defined as those which cause health effects other than cancer, such as lung, kidney, or liver diseases; respiratory or eye irritation; and nervous, reproductive or immune system disorders. By using health studies and adding safety margins, health experts have set reference exposure levels for these toxic chemicals. The risk of non-cancer health effects is described as a ratio, or hazard index. It compares an individual's highest exposure levels at a given site to the reference exposure level for that toxic.

Impacts from toxic air contaminants can occur during either the construction or operational phases of a project. During certain construction activities, potential releases of toxic air contaminants could occur during site remediation activities, or during building demolition. Toxic air contaminants may also be released during industrial or manufacturing processes, or other activities that involve the use, storage, processing, or disposal of toxic materials.

For a discussion of accidental chemical releases, please refer to F.1. RISK OF UPSET/EMERGENCY PREPAREDNESS. Exposure to asbestos is discussed in F.2. HUMAN HEALTH HAZARDS.

C. Screening Criteria

- Would the project use, store, or process carcinogenic or non-carcinogenic toxic air contaminants which could result in airborne emissions?

A "yes" response to the preceding question indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the significance threshold for Toxic Air Contaminants, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact from Toxic Air Contaminants from the proposed project.

D. Evaluation of Screening Criteria

Review the proposed project and its associated components, including demolition, site preparation, construction, and operation. Determine the potential for toxic airborne emissions. Professional assistance may be required. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The regulatory framework for the toxic material(s) and process (es) involved;
- The proximity of the toxic air contaminants to sensitive receptors;
- The quantity, volume and toxicity of the contaminants expected to be emitted;
- The likelihood and potential level of exposure; and
- The degree to which project design will reduce the risk of exposure.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include a discussion of the applicable regulatory setting and existing facilities or operations in the area, which may release toxic air

emissions. Identify the location and type of all sensitive uses, which could be impacted by project emissions.

Project Impacts

Review the proposed project including construction and operation activities. Identify and evaluate project features or components that would reduce the risk of exposure. The CEQA Air Quality Handbook defines the following land uses as sensitive receptors: residences, schools, playgrounds, child care facilities, long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, and outdoor athletic facilities. Consider the regulatory framework and determine the resulting risk of exposure. Additional information to assist with project evaluation is provided in the CEQA Air Quality Handbook.

Cumulative Impacts

Review the related projects and identify those that would involve the potential release of toxic air contaminants and could contribute to a concentration of toxic air contaminants. Evaluate the potential cumulative impacts as described above for Project Impacts. Information to assist with cumulative evaluation is provided in the CEQA Air Quality Handbook.

Sample Mitigation Measures

New sources of toxic air contaminants are regulated in the South Coast Air Basin (Basin) by the SCAQMD. Permit requirements generally result in emissions that are considered to be less than significant by the SCAQMD. Consult the CEQA Air Quality Handbook for additional information.

Potential mitigation measures include the following:

- Provide barriers that reduce emissions (e.g., screens, vents, closed systems);
- Use non-toxic or less toxic substances in project construction or operation; and
- Investigate opportunities and implement programs to improve efficiency and/or reduce the amount of waste emissions generated.

3. DATA, RESOURCES, AND REFERENCES

SCAQMD, Toxics Division. Information on health risk assessments, toxics permits and compliance may be obtained by calling the SCAQMD Toxics and Waste Management Branch at (909) 396-2388.

CAPCOA, Air Toxics Assessment Manual, 1987 and Air Toxics "Hot Spots" Program Risk Assessment Guidelines. (updated yearly). Available by calling CAPCOA at (916) 676-4323.

California Air Resources Board (CARB). Documents available for each AB 1807 toxic air contaminant which is identified. Contact the CARB's Public Information Office at (916) 322-2990 or call ARB Air Quality Measures Branch (916) 445-6318. California Air Toxics Program web page http://www.arb.ca.gov/toxics/toxics.htm.

HSC Section 44300 et sec. Air Toxics "Hot Spots" Information and Assessment Act of 1987 and Section 39650 et sec. Toxic Air Contaminants (Chapter 3.5).

SCAQMD, Procedures for Preparing Risk Assessments to Comply with Air Toxics Rules of the SCAQMD.

Environmental Protection Agency (EPA), Guideline on Air Quality Models (revised). EPA-450/2-78-027R. Available at http://www.epa.gov/

See also B. AIR QUALITY, B.1. CONSTRUCTION EMISSIONS, and B.2. OPERATIONAL EMISSIONS.

C. BIOLOGICAL RESOURCES

C. BIOLOGICAL RESOURCES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

IV.a): Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

IV.b): Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

IV.c): Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

IV.d): Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

IV.e): Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

IV.f): Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

B. Introduction

A wide variety of sensitive biological resources, including both plant and animal species, reside in or use resources within the City of Los Angeles. The City encompasses a variety of open space and natural areas that serve as habitat for sensitive species. Much of this natural open space is found in or is adjacent to the foothill regions of the San Gabriel, Santa Susana, Santa Monica and Verdugo Mountains, the Simi Hills, and along the coastline between Malibu and the Palos Verdes Peninsula.

Many of the outlying areas are contiguous with larger natural areas, and may be part of significant wildlife habitats or movement corridors. In contrast, the central and valley portions of the City contain fewer natural areas.

Various-sized remnants of native habitats, such as hillside and canyon areas, wetland habitats, dunes, beaches and marine habitats exist in many areas of the City. Although these areas may have been modified from their natural conditions, they are still important habitats for wildlife. Habitat values are generally highest in areas of relatively large acreage adjacent to other similar habitat systems. Some sensitive biotic resources may persist even in urbanized settings, such as oak trees, rare plants, peregrine falcons, Monarch butterflies and bats.

Federal and state agencies, including the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (DFG), maintain listings of sensitive species and habitat (i.e., federal or state listed endangered, federal or state listed threatened, Species of Special Concern, federal or state candidate species; and federally listed critical habitat).

A project may impact biological resources through the loss or destruction of individuals of a sensitive species or through degradation of sensitive habitat. Habitat degradation may occur through grading or excavation, increases in water or air pollutants, increased noise, light, or vibration, interruption of fresh or salt water supplies, reduction in food supplies or foraging areas, or interference with established wildlife movement patterns on or between habitat areas. Projects, which create long-term or episodic impacts to natural areas -- such as by generating toxic fumes or fugitive dust -- could also result in degradation or destruction of a natural habitat. New development, construction, roadways, and agricultural use all have the potential to lower or remove natural resource values of natural open space systems.

Exhibit C-1 divides the City into five geographic zones for the purpose of identifying potential sensitive biological resources. Natural open space areas within the City's 11 Planning Subregions that may contain habitat for sensitive species are shown on Exhibits C-2 through C-5. These maps are based upon interpretation of aerial photography of the City dated November 1992[1]. The maps include open space areas, as well as several areas that appear to be devoted to agriculture and mineral extraction. The latter areas are mapped because they are of substantial size and presently or potentially meet habitat needs for plants and animals. Urban parks, golf courses, and small reservoirs are excluded from this mapping unless they are physically contiguous with other habitats, such as at the Sepulveda and Hansen flood control basins. A few vacant lots within the City are also indicated on these maps by virtue of their size and present or future potential to support biological

[1] *Areas that have been developed since November 1992 may be shown as open space habitat on these maps.*

resources. Additionally, Significant Ecological Areas (SEAs), established by the County of Los Angeles through its General Plan, are shown. Exhibit C-6, describes the SEAs, open space habitats, and other potential/known sensitive resources in each planning subregion.

Both federal and state legislation calls for the protection of sensitive species, and the habitat that supports them, to reduce the chance that existing and future development will seriously endanger the continued existence of native biological resources. The presence of adequate habitat, including food and water, shelter, and nesting sites, is critical to a species' long-term survival. Exhibit C-7 provides a summary of existing known sensitive biological resources and classifications within the City of Los Angeles and vicinity, along with their federal and state listed status, habitat requirements, and the biological assessment zone (from Exhibit C-1) in which the species may exist. This exhibit also provides applicable classifications from the California Native Plant Society (CNPS).

The habitat types in the remaining natural open space areas are quite diverse. Chaparral, which supports a wide variety of wildlife, is most prevalent on the north slopes and higher-elevation south slopes of the Santa Monica and Verdugo Mountains. Open-structured coastal scrub and grassland are prevalent on the lower-elevation south slopes of these ranges, and also in the Simi Hills, Santa Susana and San Gabriel Mountains. Grasslands also occur in flood control basins and near reservoirs in various parts of the City. Along the coast, sandy beaches, rocky cliffs, headlands and promontories support marine invertebrates, fishes, mammals, birds and plants. In addition, coastal habitats, including the dunes, marshes and bluffs, support a number of unique, threatened and endangered plants and animals.

For the purposes of the *Thresholds Guide*, a sensitive biological resource is defined as follows:

- A plant or animal that is currently listed by a state or federal agency(ies) as endangered, threatened, rare, protected, sensitive or a Species of Special Concern or federally listed critical habitat;

- A plant or animal that is currently listed by a state or federal agency(ies) as a candidate species or proposed for state or federal listing; or

- A locally designated or recognized species or habitat.

C. Screening Criteria

For projects proposed on sites within the City of Los Angeles that are located in Area 5 of Exhibit C-1, or **in the unshaded portions** of Exhibits C-2 through C-5:

- Do known individuals or populations of a sensitive species use or inhabit the site during one or more seasons of the year, according to readily available published accounts, the project proponent and/or property owner?

- Is the project site immediately adjacent to undeveloped natural open space containing native vegetation (such as the shaded areas on Exhibits C-2 through C-5) or does the site appear to serve as a buffer between existing development and more natural habitat areas? Could it be part of a movement corridor or habitat linkage system?

- Is a natural water source, such as a lake, river, vernal pool, ephemeral stream, marsh or the ocean present on or adjacent to the site?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Biological Resources and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Biological Resources from the proposed project.

For projects proposed on sites within the City of Los Angeles that are located **within a shaded open space area** as identified on Exhibits C-2 through C-5:

- Do known individuals or populations of a sensitive species use or inhabit the site during one or more seasons of the year, according to readily available published accounts, the project proponent and/or property owner?

- Does the project site contain natural open space and/or known native vegetation?

- Does the site serve as a buffer between existing development and more natural habitat areas?

- Does the site serve as a known wildlife movement corridor between habitat areas?

- Is a natural water source, such as a lake, river, vernal pool, ephemeral stream, marsh or the ocean present on, or immediately adjacent to, the project site?

- Is the project site relatively undisturbed or undeveloped, that is, free of structures, agricultural fields, pavement, etc.? Is it free of regular maintenance activities such as disking or clearing, maintenance and repair of linear utilities, maintenance or repair of roads, or maintenance and repair of municipal reservoirs and associated infrastructure?[2]

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Biological Resources and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to each of the previous questions indicates that there would normally be no significant impact on Biological Resources from the proposed project.

D. Evaluation of Screening Criteria

Locate the proposed project site on the appropriate map presented in Exhibits C-1 through C-5. Determine the existing conditions on the project site and surrounding area, including whether existing vegetation is native, urbanized, or ruderal (i.e, weedy or introduced plants where native vegetation has been disturbed).

If the site is located in an unshaded portion of Exhibits C-2 through C-5, review the first set of screening questions. Look for evidence that a sensitive species outside of the normal range, or an urban migratory species, uses or inhabits the site during one or more seasons. Look for unmanaged vegetation, cave-like areas, evidence of nesting, hunting, tracks or droppings, and review readily available published accounts of such sightings. Also, confer with the property owner and project proponent. Check for natural sources of water on or adjacent to the site as well as proximity of the site to areas of undeveloped open space to determine whether the site could serve as a buffer or wildlife movement corridor.

If the site is located within a shaded portion of Exhibits C-2 through C-5, review the second set of questions. Review Exhibits C-1 and C-7 to assist in identifying which species may potentially be located on the project site. If the project site has been developed or substantially disturbed since these maps were prepared in November 1992, use the questions for sites within the unshaded

[2] *Natural surface disturbances, such as fire or flood, are not considered to be resource-degrading.*

portions of the maps. The federal and state species lists change periodically; always compare with the most recent edition.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on biological resources if it could result in:

- The loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, or candidate species, or a Species of Special Concern or federally listed critical habitat;

- The loss of individuals or the reduction of existing habitat of a locally designated species or a reduction in a locally designated natural habitat or plant community;

- Interference with wildlife movement/migration corridors that may diminish the chances for long-term survival of a sensitive species;

- The alteration of an existing wetland habitat; or

- Interference with habitat such that normal species behaviors are disturbed (e.g., from the introduction of noise, light) to a degree that may diminish the chances for long-term survival of a sensitive species.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- A physical description of the project site, including acreage, topography, presence of sensitive features (e.g., wetlands, flowing, standing or ephemeral water sources, rock outcroppings, caves, etc.), major habitats and vegetation communities present, potential presence of wildlife populations, sensitive resources, migration corridors, and relationship to the surrounding land;

- In marine environments, describe the presence or absence of tidal wetlands, the bottom topography and depth, access to open ocean systems, information on existing biota, and the existence of movement or migration corridors of marine mammals; and

- A statement of the potential for existing sensitive resources, based upon review of Exhibit C-7, and other biological reference documents, including the California Natural Diversity Database (CNDDB), federal and state agency lists, regulatory statutes, and applicable City documents.

- A review of local, state, and federal regulations that apply to the project site.

Prepare or reference baseline assessments of potential occurrence of sensitive resources (from literature and existing resource data bases) and conduct a field reconnaissance survey, as needed. Surveys should be performed during appropriate seasons, and should include all significant biotic elements, including corridor and habitat linkages, with an assessment of the nature of their occurrence (e.g., resident, transient, migratory, etc.). Species inventories should include organisms observed during surveys, along with those reasonably expected to occur over time, with a listing of sensitive biological elements and their agency status. See Exhibit C-7 for a list of sensitive resources potentially present within the City, and Exhibits C-1 through C-5 for habitat maps for various areas of the City.

Project Impacts

Prepare a biological assessment of the site, based on the known and potential biological resources on and adjacent to the site. Determine the actual presence or absence within project boundaries or on adjacent lands of sensitive plants, animals or habitats listed as "potentially present" in resource databases. Also, note the quality of existing vegetation.

Review the project description, including site preparation, construction and operational plans, to identify which biological resources could be lost or degraded by project implementation, if any, including habitats, shelter, movement corridors, foraging grounds, and nesting areas. Professional assistance may be required. Compare the results to the Significance Threshold. Incremental loss of areas used seasonally may be significant depending upon the value of the habitat that remains.

Cumulative Impacts

Review the list of related projects and identify those that, in combination with the proposed project, could impact sensitive biological resources. Consider especially impacts to the same species, habitat, or open space area as those affected by the proposed project. Include site preparation and construction activities as well as operational activities. Note whether the projects could combine to obstruct wildlife movement corridors, contribute to habitat fragmentation, or affect sensitive plants or animals. Assess the incremental losses to habitat, foraging areas, wintering grounds, nesting sites, etc., and any potential takings of sensitive species.

Also, evaluate the impact of cumulative project operational activities on sensitive species and habitats. Consider effects such as increased traffic, noise, fumes, general human activity, ambient lighting, fencing, fugitive dust pollution, infiltration of herbicides or industrial waste chemicals, and harassment of wildlife by domestic pets.

Sample Mitigation Measures

Specific project mitigation measures should be based on recommendations in the biological assessment and involve consultation with appropriate resource protection agencies. Potential mitigation measures include the following:

- Revise project construction plans to avoid grading or excavation during sensitive seasons (e.g., rain, nesting, etc.);

- Design the project such that the most biologically-sensitive portions of the site are preserved for natural habitat;

- Block human and domestic animal access to sensitive habitats adjacent to the project site;

- Provide for revegetation/restoration after project construction; and

- Mitigation banking: Compensate (to the satisfaction of resource agencies) for the loss of habitat values in one area by purchasing or deed-restricting similar or better habitat systems on other sites. These areas would be high value ecosystems, preferably containing viable populations of sensitive resources.

3. DATA, RESOURCES, AND REFERENCES

Los Angeles County Department of Regional Planning; Telephone: (213) 974-6411. SEA information. http://planning.co.la.ca.us.

Exhibit C-8 contains general references regarding biological resources in the Los Angeles area.

USFWS, Ecological Services, Carlsbad Field Office, 6010 Hidden Valley Road, Carlsbad, California, 92009; Telephone: (760) 431-9440. The USFWS can provide information regarding the Endangered Species Act, federally listed species, and federal wildlife resources and their protection.

Selected Legislation

Federal

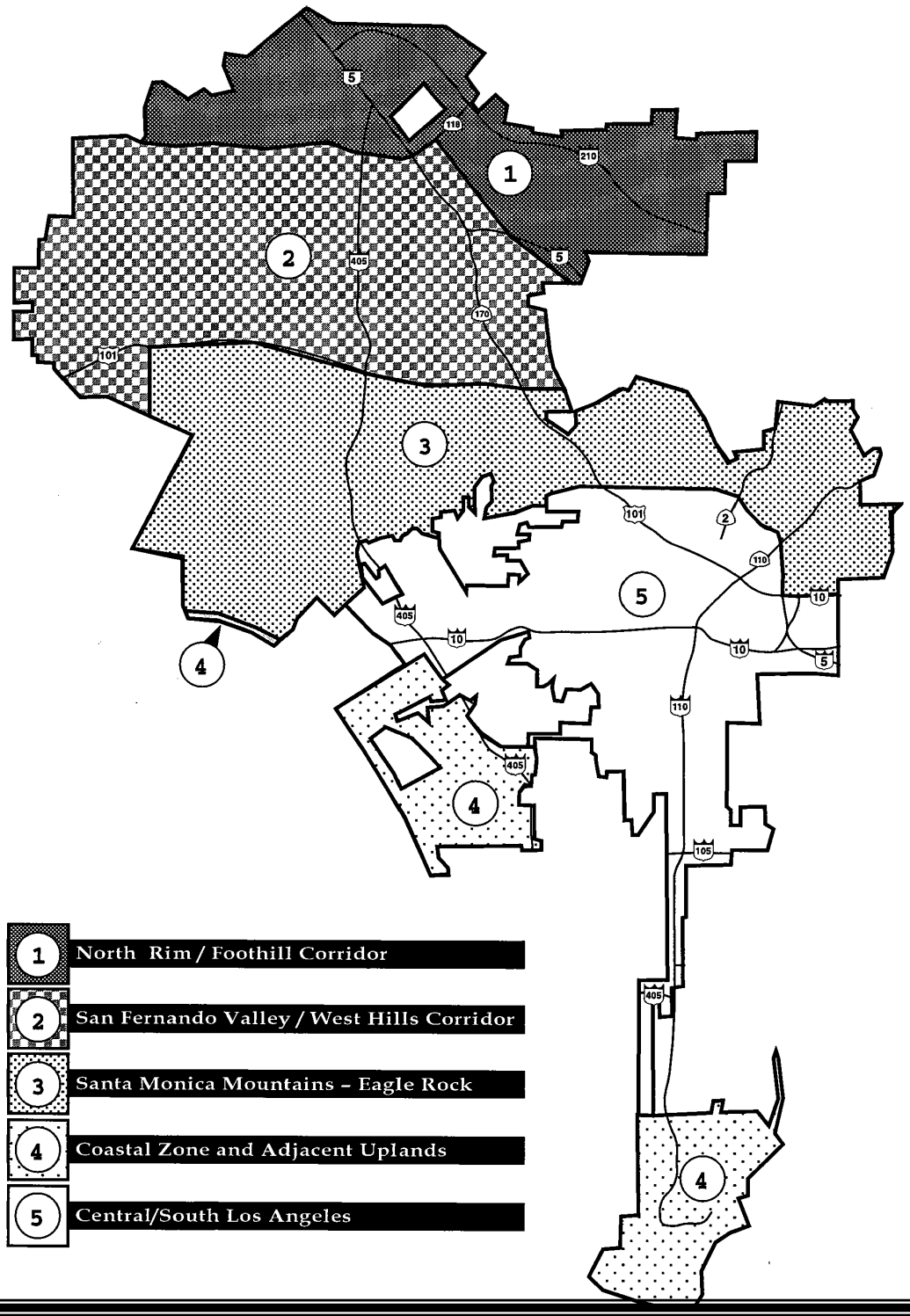
Endangered Species Act of 1973, PL 93-205 (16 U.S.C. 1531)

Purpose is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth.

State

California Endangered Species Act, Fish and Game Code, Division 3, Chapter 1.5.

Declares that these species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern. Provides for a state list of endangered and threatened species by the Fish and Game Commission and restricts activities that may impact these species.



Planning
Consultants
Research

Exhibit C-1
Habitat-Oriented Biological Assessment Planning Zones

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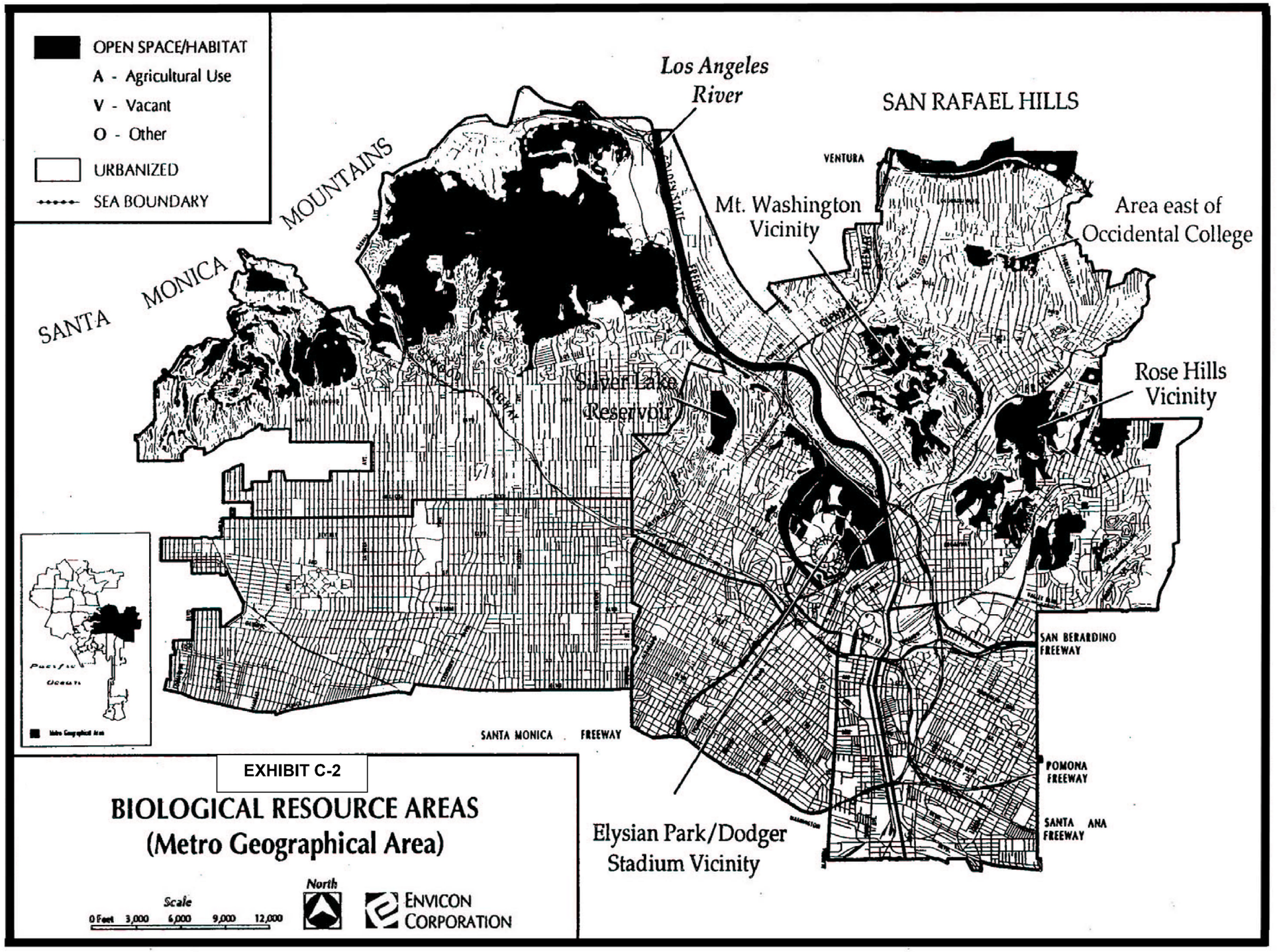
OPEN SPACE/HABITAT
A - Agricultural Use
V - Vacant
O - Other
URBANIZED
SEA BOUNDARY
Los Angeles River
SAN RAFAEL HILLS
MOUNTAINS
SANTA MONICA
VENTURA
Mt. Washington Vicinity
Area east of Occidental College
Silver Lake Reservoir
Rose Hills Vicinity
SAN BERARDINO FREEWAY
SANTA MONICA FREEWAY
POMONA FREEWAY
SANTA ANA FREEWAY
Elysian Park/Dodger Stadium Vicinity
Pacific Ocean
Metro Geographical Area
EXHIBIT C-2
BIOLOGICAL RESOURCE AREAS
(Metro Geographical Area)
North
Scale
0 Feet 3,000 6,000 9,000 12,000
ENVICON CORPORATION

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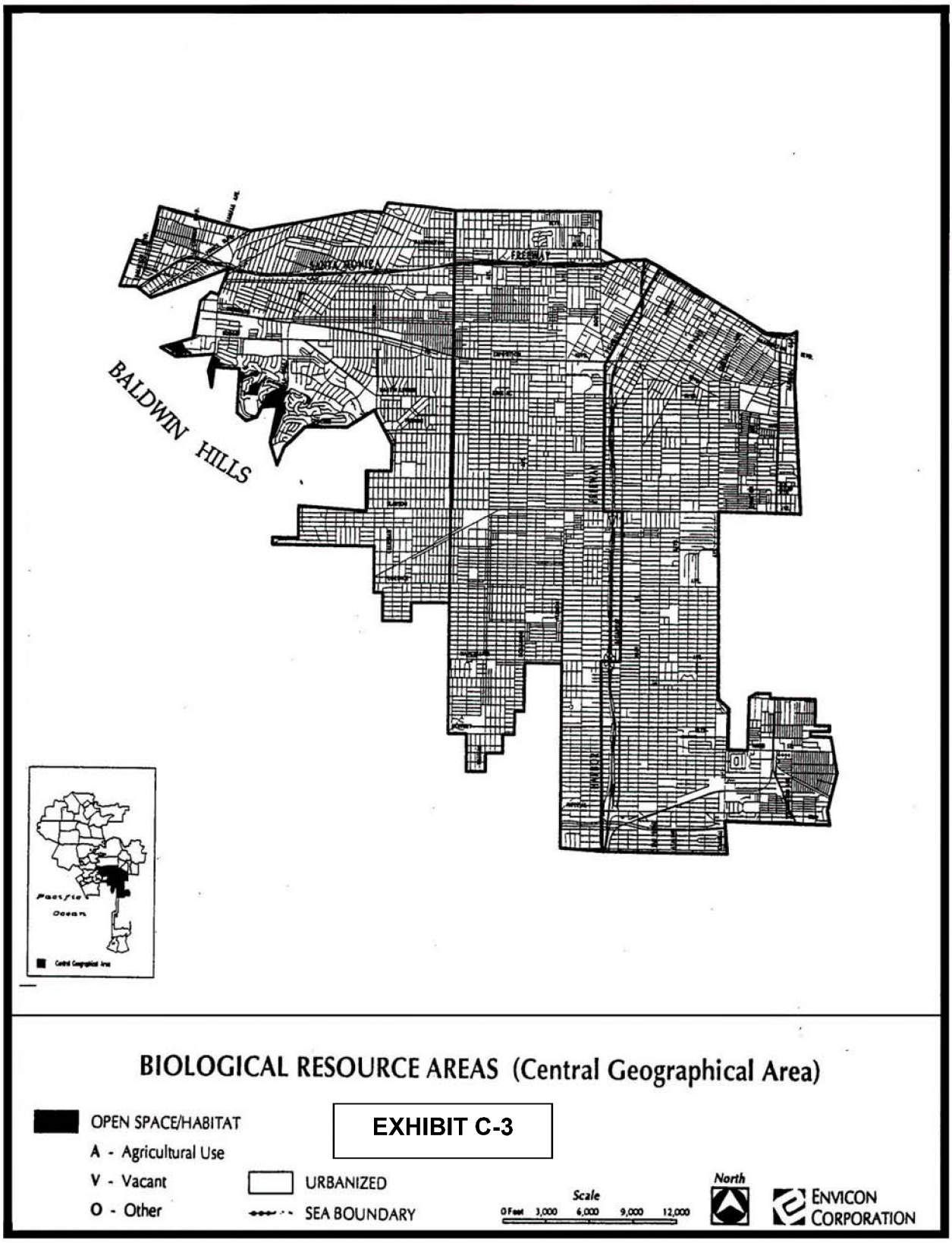
BALDWIN HILLS
Pacific Ocean
BIOLOGICAL RESOURCE AREAS (Central Geographical Area)
OPEN SPACE/HABITAT
A - Agricultural Use
V - Vacant
O - Other
URBANIZED
SEA BOUNDARY
EXHIBIT C-3
Scale
0 Feet 3,000 6,000 9,000 12,000
North
ENVICON CORPORATION

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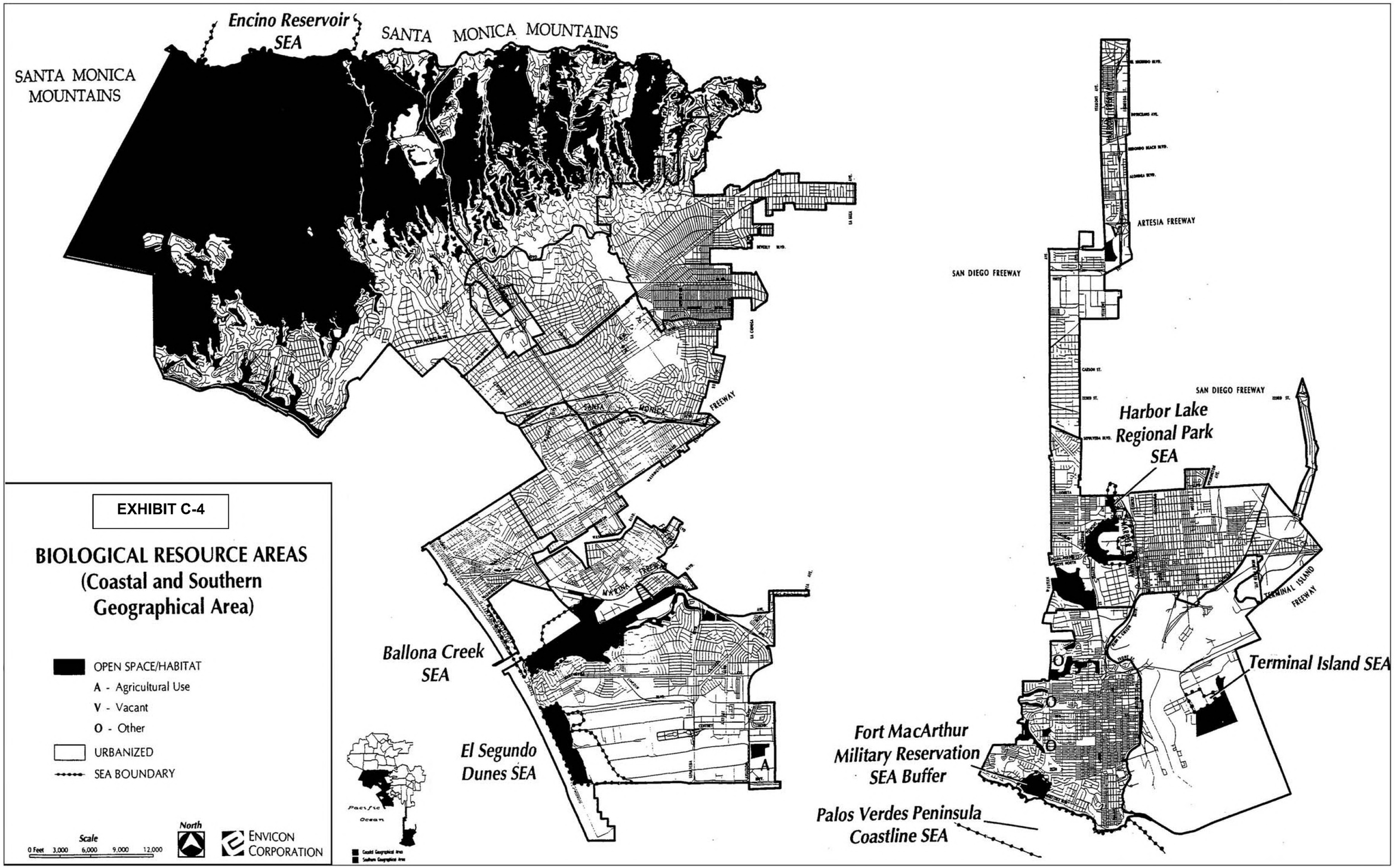
Encino Reservoir SEA
SANTA MONICA MOUNTAINS
SANTA MONICA MOUNTAINS
SANTA MONICA FREEWAY
ARTESIA FREEWAY
SAN DIEGO FREEWAY
SAN DIEGO FREEWAY
Harbor Lake Regional Park SEA
TERMINAL ISLAND FREEWAY
Terminal Island SEA
Ballona Creek SEA
El Segundo Dunes SEA
Fort MacArthur Military Reservation SEA Buffer
Palos Verdes Peninsula Coastline SEA
Pacific Ocean
Coastal Geographical Area
Southern Geographical Area
EXHIBIT C-4
BIOLOGICAL RESOURCE AREAS
(Coastal and Southern Geographical Area)
OPEN SPACE/HABITAT
A - Agricultural Use
V - Vacant
O - Other
URBANIZED
SEA BOUNDARY
Scale
0 Feet 3,000 6,000 9,000 12,000
North
ENVICON CORPORATION

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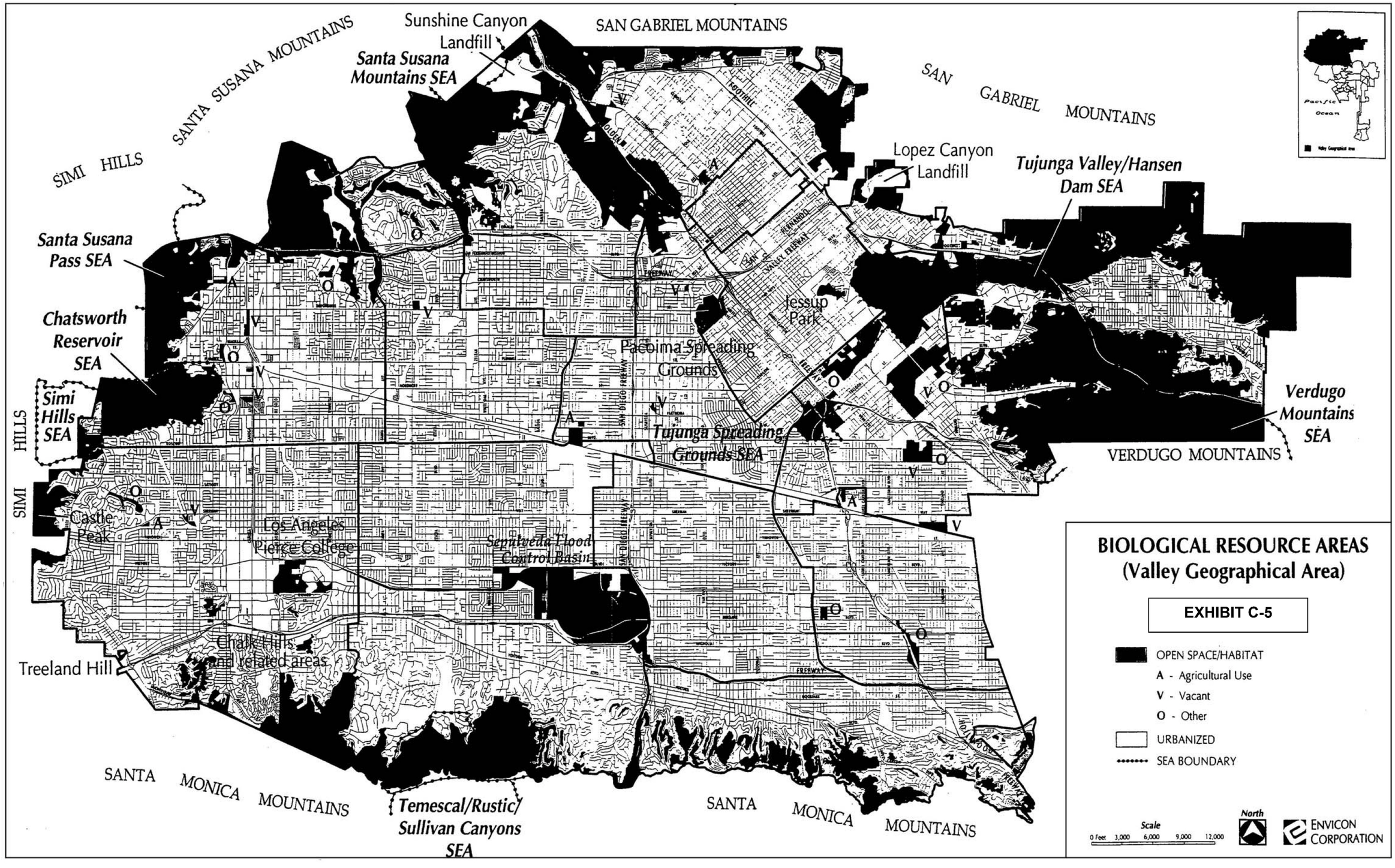
SANTA SUSANA MOUNTAINS
SIMI HILLS
Sunshine Canyon Landfill
SAN GABRIEL MOUNTAINS
Santa Susana Mountains SEA
SAN GABRIEL MOUNTAINS
Lopez Canyon Landfill
Tujunga Valley/Hansen Dam SEA
Santa Susana Pass SEA
Chatsworth Reservoir SEA
Jessup Park
Pacoima Spreading Grounds
Simi Hills SEA
Tujunga Spreading Grounds SEA
Verdugo Mountains SEA
VERDUGO MOUNTAINS
SIMI HILLS
Castle Peak
Los Angeles Pierce College
Sepulveda Flood Control Basin
Chalk Hills and related areas
Treeland Hill
SANTA MONICA MOUNTAINS
Temescal/Rustic/ Sullivan Canyons SEA
SANTA MONICA MOUNTAINS
Pacific Ocean
Valley Geographical Area
BIOLOGICAL RESOURCE AREAS
(Valley Geographical Area)
EXHIBIT C-5
OPEN SPACE/HABITAT
A - Agricultural Use
V - Vacant
O - Other
URBANIZED
SEA BOUNDARY
Scale
0 Feet 3,000 6,000 9,000 12,000
North
ENVICON CORPORATION

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Exhibit C-6
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

The following discusses the open space resources and SEAs in each of the eleven Planning Subregions of the City, starting in the north and proceeding generally south. Within each subregion, the mapped open spaces and habitats they contain are briefly discussed, and the reader is referred to those general and site-specific accounts of biological resources that were found applicable to each subregion. Often, an open space area occurs in more than one subregion (e.g. Santa Monica Mountains). Such occurrences are discussed separately in each case, but in greatest detail when first encountered in the discussion. Therefore, the reader may find reference in the discussion to a prior description of an open space area in an earlier subregion. There is additional information about SEAs at the end of this section.[2]

Northwest Valley Planning Subregion

Chatsworth Reservoir SEA. The Chatsworth Reservoir is owned by the Los Angeles Department of Water and Power, and abuts the foot of the Simi Hills in the Western San Fernando Valley. A variety of habitats are present here, including grassland, oak woodland and savannah, freshwater marsh and open water, which offer important wintering and breeding grounds for songbirds and waterfowl (England and Nelson, 1976). The Chatsworth reservoir is one of five areas in the San Fernando Valley that is used regularly by wintering Canada Geese (*Branta canadensis*). Many-stemmed dudleya (*Dudleya multicaulis*) is reported in rocky areas on the south side of the reservoir (NDDB, 1994).

Simi Hills and Simi Hills SEA, and Santa Susana Pass SEA. The Simi Hills are generally located north of the Ventura Freeway (US 101), south of the Simi Valley Freeway (SR 118), and west of the San Fernando Valley. As such, they lie largely outside of the City boundary, and are mostly within Ventura County. However, portions of its eastern flank bordering the western San Fernando Valley from the vicinity of Castle Peak to Santa Susana Pass lie within the City. Wieslander (1934) mapped the vegetation of this region between 1927 and 1933. Wiekel (1983) has prepared a biological inventory and mapping for this area, although additional specific biological resource inventories of the Simi Hills within the City and County of Los Angeles are generally lacking. A survey over the areas of Dayton and Woolsey Canyons (Envicom Corp., 1990) in the Simi Hills just east of the Chatsworth Reservoir is the best representative inventory available for the eastern Simi Hills. Habitats present include grassland, coastal scrub, chaparral, riparian and oak woodland, and limited areas of walnut woodland. The state-listed Rare Santa Susana tarplant

[1] *Reprinted from the EIR for the Framework Element.*

[2] *SEA boundaries are established by Los Angeles County. The current legal boundaries and status should be verified.*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

(*Hemizonia mint Jionii*) is prevalent in the sandstone outcrops, and Humboldt lily (*Lilium humboldtii ocellatum*) occurs in the under story of riparian woodland in upper Dayton Canyon.

The Simi Hills SEA is almost entirely within the unincorporated area of Los Angeles County, with only a small fraction extending into the City. The remaining portions of this SEA are located west of Chatsworth Reservoir and Valley Circle Boulevard, and north and south of Lakeside Park (a residential community). Santa Susana tarplant occurs adjacent to Valley Circle Boulevard in the northern area (Wishner, personal observation, 1990). The Simi Hills SEA contains representative examples of chaparral, coastal scrub, southern oak woodland and riparian woodland, and the area also serves as a wildlife corridor for movement between the Chatsworth Reservoir SEA and the large, undeveloped portions of the Simi Hills in Ventura County to the west (England and Nelson, 1976).

The southern portion of the Santa Susana Pass SEA that is located south of the Simi Valley Freeway (SR 118) is actually located in the Simi Hills, within the City of Los Angeles (the remainder of the SEA north of the freeway is in the Santa Susana Mountains, and outside the City boundary). The Santa Susana Pass SEA is an important wildlife movement zone between the Santa Susana Mountains and the Simi Hills (England and Nelson 1976), which is referred to as the "primary Simi Valley Freeway habitat linkage" by Edelman (1991). Intact crossings for large mammals include the Rocky Peak Road freeway overpass (just outside City/County line). Habitats encompassed by the Santa Susana Pass SEA (within the City) include chaparral, coastal scrub, grassland, oak woodland, and riparian woodland. The SEA also contains concentrations of Santa Susana tarplant, which is associated with sandstone outcrops in chaparral and coastal scrub habitats.

Discrepancies between the original boundaries recommended (England and Nelson, 1976) and adopted by the County of Los Angeles and the extent of open space habitat for plants and animals shown on Exhibits C-2 through C-5, are the result of "deletions" of areas from the SEA as they have become developed.

Santa Susana Mountains and Santa Susana Mountains SEA. The Santa Susana Mountains form an open-space link between the San Gabriel Mountains (northeast) and the Simi Hills and Santa Monica Mountains (southwest). With the exception of a resource inventory and mapping prepared by Wiekel (1983) and bird lists for O'Melveny Park (Martin, 1992), specific biological resource accounts of the Santa Susana Mountains are generally lacking. The range does support grassland, chaparral, oak woodland and savanna, riparian woodland, and big-cone spruce woodland (latter on the north slope only).

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

A small, eastern extension of the Santa Susana Mountains SEA is located within the City boundary, although much of the former SEA here is occupied by the Sunshine Canyon Sanitary Landfill.[3] Habitats of the Santa Susana Mountains SEA include grassland, coastal sage scrub, chaparral, oak woodland and savannah, and riparian woodlands (England and Nelson, 1976). Porter Ranch is also included in this geographic region.

Van Norman Reservoir and vicinity. This large open space area in the northern San Fernando Valley receives water via aqueduct over the San Fernando Pass--the divide between the Santa Susana and San Gabriel Mountains. The size of the reservoir containing open water was substantially reduced following the Sylmar earthquake in 1971, when the lower dam was drained. As a result, portions of that area have recovered to form willow forest habitat. Upland portions of the reservoir area support grassland and coastal scrub vegetation. The area is one of five, which are regularly used by wintering Canada geese. To the south and adjacent to the reservoir are agricultural lands, a cemetery, a parcel containing remnant grassland, coastal scrub and oak woodland, and several vacant lots. These form a cohesive unit, which offers resources for plants and animals as an adjunct to the reservoir site. Across the Golden State Freeway (I-5) from the Van Norman Reservoir (in the Northeast Valley subregion) is a substantial area of grassland, coastal scrub, and small open water habitat, which adds to the effective size and resource value of the reservoir site.

Pacoima Spreading Grounds. This area of storm water runoff collection located southwest of the junction of the Golden State Freeway (I-5) and the Simi Valley Freeway (SR 118) is divided approximately in half between the Northwest and Northeast Valley Planning Subregions. It supports marsh-like habitat when ponding occurs (City of Los Angeles, 1989), and offers opportunities for migrating waterfowl and shorebirds.

Northeast Valley Planning Subregion

San Gabriel Mountains. This subregion contains portions of the foothills of the San Gabriel Mountains bordering the San Fernando Valley and extending from the western end of the range eastward to Pacoima Canyon, Lopez Canyon, Little Tujunga Canyon and Big Tujunga Canyon. From there, the City includes the foothills of the range bordering on the San Gabriel Valley eastward to approximately Hines Canyon, and extending upward into the mountains to the vicinity of Mount Lukens. Biological resources of the San Gabriel Mountains are discussed generally (Hanes, 1976; Schoenherr, 1976 and 1992; USDA:FS, 1987; Long, 1994), but specific biological accounts of areas

[3] *The footprint of the landfill shown in Exhibit C-2 is as of November 1992, and does not reflect the expansion which has occurred since that date.*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

within the City [with the exception of detailed vegetation maps prepared by Wieslander (1934)] are limited to project-related environmental impact reports and sensitive species records in the Natural Diversity Data Base. Habitats evident in the City boundary on aerial photographs include primarily coastal scrub and chaparral, and limited areas of oak and riparian woodlands, and grasslands.

Verdugo Mountains and Verdugo Mountains SEA. The City includes the entire northwestern end of this mountain range bordering the San Fernando Valley and the San Gabriel Valley. This geographic location makes the Verdugo Mountains an important habitat linkage between the San Gabriel Mountains to the north, and the Santa Monica Mountains to the south (England and Nelson, 1976). Both general and specific accounts of biological resources therein are lacking or limited to project-related environmental impact reports or accounts of sensitive species, and the detailed vegetation maps of the area prepared by Wieslander in 1934. As shown on aerial photographs, habitats present in these mountains include grassland, coastal scrub, chaparral, riparian and oak woodlands.

A substantial portion of the Verdugo Mountains SEA lies within the City, while the remainder is within the corporate boundaries of Burbank and Glendale. Although England and Nelson (1976) indicate "considerable information exists on the area," this information was not available for preparation of the General Plan Framework EIR.

Tujunga Valley/Hansen Dam Park SEA. The Tujunga Valley occupies the floodplain of Big Tujunga Canyon. Hansen Dam is a flood control basin receiving stream discharge from Lopez, Kagel, Little Tujunga, and Big Tujunga Canyons. The floodplain behind Hansen Dam (Hansen Dam Park) supports one of the last examples of alluvial scrub vegetation in the freshwater marsh, willow forest and scrub. Alluvial scrub is habitat for the state-listed Endangered Nevin's barberry (*Berberis nevinii*) and the state- and federally-listed Endangered slender-horned spineflower (*Dodecahema leptoceras*), which have been found here (England and Nelson, 1976; City of Los Angeles, 1989a). Long (1994) has prepared a list of plants and birds occurring at the Tujunga Ponds. The park reportedly (City of Los Angeles 1989) supports a south coast minnow/sucker stream which sustains native populations of arroyo chub (*Gila orcutti*) and Santa Ana sucker (*Catostomus santaanae*). Swift et al. (1993) report that arroyo chub remains common in Big Tujunga, whereas Pacific speckled dace (*Rhinichthys oscrilus*) and Santa Ana sucker have become scarce and perhaps extirpated. Areas to the southwest (below the dam) are used as a spreading ground for groundwater

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

recharge, which has created several freshwater marsh areas used by marsh birds, migratory waterfowl, and shorebirds (England and Nelson, 1976).[4]

Jessup Park. A small area of chaparral, coastal scrub and grassland habitats (as evident on aerial photographs) occurs just west of Hansen Dam Park--No specific details of biological resources present could be found in the available literature.

Tujunga Spreading Grounds SEA. This SEA is located in the Tujunga Wash downstream from Hansen Dam, at the juncture of the Golden State Freeway (I-5) and the Hollywood Freeway (SR 170). Although it contains little natural vegetation, it is an area of ponded water serving as an important nesting, feeding and resting ground for many migrating, resident and wintering bird species (England and Nelson, 1976).

Pacoima Spreading Grounds. This area of storm water runoff collection located southwest of the junction of the Golden State Freeway (I-5) and the Simi Valley Freeway (SR 118) is divided approximately in half between the Northwest and Northeast Valley Planning Subregions. It supports "marsh-like habitat" when ponding occurs (City of Los Angeles, 1989), and offers opportunities for migrating waterfowl and shorebirds

Van Norman Reservoir vicinity. Across the Golden State Freeway (I-5) from the Van Norman Reservoir (in the adjacent Northeast Valley subregion) is a substantial area of grassland, coastal scrub, and small open water habitat, which adds to the effective size and resource value of the reservoir site.

Southwest Valley Planning Subregion

Santa Monica Mountains and Encino Reservoir SEA. The biological resources of the Santa Monica Mountains are considered in general (Raven et al., 1986; Othmer, 1980; USDI:NPS, 1982; De Lisle et al., 1986). Wielander (1934) mapped the vegetation in detail between 1927 and 1933. Aside from project-related environmental impact reports and accounts of sensitive species, specific details are generally lacking. The subregion includes portions of the north slope of the range from the vicinity of Topanga Canyon Boulevard (south of US 101) eastward to the Sepulveda Pass (San Diego Freeway; I-405). As evidenced on aerial photographs, habitats in the area include mostly chaparral, but also oak and riparian woodland, and small amounts of grassland, coastal scrub and

[4] *The SEA boundary shown on Exhibit C-2 is as originally proposed by England and Nelson (1976). A portion of the area was "redesignated to open space," therefore, not adopted as SEA under the Los Angeles County General Plan.*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

walnut woodland. A small portion of Topanga State Park is included in upper Caballero (Reseda) Canyon, with the bulk occurring in the West Los Angeles subregion.

The Encino Reservoir SEA contains "the best stand of inland chaparral, coastal scrub and streamside vegetation remaining on the inland slope of the Santa Monica Mountains" (England and Nelson, 1976). In addition, the reservoir itself is an open, fresh water habitat. Along with Chatsworth Reservoir, the Sepulveda Basin, Van Norman Reservoir, and Los Angeles Pierce College, the Encino Reservoir is an important wintering ground for Canada geese.

Simi Hills and Simi Hills SEA. The Simi Hills are represented in this subregion by small areas at the western end of the San Fernando Valley, with the majority occurring in the Northwest Valley subregion. As discussed for that subregion, with the exception of an inventory and mapping by Weikel (1983), general and specific accounts of biological resources of the range are lacking. As evidenced by aerial photographs, the area within the City and subregion support grassland, chaparral, coastal scrub, oak and riparian woodland, and walnut woodland. Castle Peak[5] is a prominent rocky peak that is a major roosting site for great horned (*Bubo virginianus*) and barn owls (*Tyto alba*), and probably a hibernaculum for one or more species of bats (Wishner, personal observation, 1987). None of the Simi Hills SEA occurs in the Southwest Valley subregion.

Los Angeles Pierce College. The campus of the former Clarence W. Pierce School of Agriculture retains a substantial amount of agricultural open space that is attractive to wintering Canada geese. As such, it is one of only five areas in the San Fernando Valley where Canada geese can forage. The recently-graded (fall 1993) Warner Ridge property adjacent to the west side of the Campus was also used by geese in the winter of 1994, since the area supported a dense growth of young grasses following the grading (Wishner, personal observation, 1994). In addition to the agricultural lands at Pierce College, the campus also contains an outdoor Nature Center with a pond and surrounding hillsides supporting grassland, and an arboretum. A number of sensitive or unusual bird species occur on the campus, especially in winter, and it is a popular location during the annual Christmas Bird Count conducted by the Audubon Society. The hilly portions of the campus represent an extension of the Chalk Hills discussed below.

Chalk Hills and related areas. The Chalk Hills in Woodland Hills are a privately-owned, small island of grassland vegetation south of the Ventura Freeway (US 101) in the foothills of the Santa Monica Mountains. Close proximity to these mountains enables this area to support wildlife species

[5] *Castle Peak is located west of Valley Circle Boulevard between Vanowen St. and Bell Canyon Rd.*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

including coyote (*Canis latrans*), bobcat (*Felis rufies*), western harvest mouse (*Reithrodontomys megalotis*), and California quail (*Callipepla californica*). Barn owls, great horned owls, red-tailed hawks (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*) are resident in the trees of the surrounding neighborhood and forage in the grassland. The site is the only location of square-stemmed buckwheat (*Eriogonum angulosum*) in the Santa Monica Mountains zone. Similar, geologically-related areas occur between the Chalk Hills and Pierce College, and to the west of Topanga Canyon Boulevard both to the north and south of the Ventura Freeway (US 101), and again on the western edge of the subregion at Boething's Treeland Nursery.

Sepulveda Flood Control Basin. The Los Angeles River and tributaries draining the western San Fernando Valley discharge into the Sepulveda Basin. A variety of open space land uses occur here including agriculture, wastewater treatment, outdoor recreation, and an outdoor nature center. The area is one of only five areas of the San Fernando Valley that is regularly used by wintering Canada geese. The area also includes grassland and open water habitats, as well as two lakes (one is concrete lined), and a segment of riparian woodland on the river. The basin is a popular location for the annual Christmas Bird Count conducted by the Audubon Society. A portion of the Sepulveda Basin has been restored to attract migratory waterfowl and other wildlife.

Southeast Valley Planning Subregion

No substantial areas of natural habitat for plants and animals are evident on aerial photographs covering this subregion. Although the Los Angeles River passes through this area, it is a vertical-walled, concrete-lined segment of the stream.

Metro Center Planning Subregion

Santa Monica Mountains and Griffith Park SEA. Griffith Park, located at the east end of the Santa Monica Mountains, supports coastal scrub, chaparral, riparian and oak woodland habitats. The area also includes the Hollywood Reservoir. England and Nelson (1976) consider Griffith Park an important "island" rest stop for migrating birds, as well as a "reservoir for native species" and "corridor" for wildlife movement between the Santa Monica Mountains and San Gabriel Mountains, via the Verdugo Mountains. The Department of Recreation and Parks manages a portion of the Park as a bird sanctuary.

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

Central Los Angeles Planning Subregion

No substantial areas of natural habitat for plants and animals are evident on aerial photographs covering this subregion. Although the Los Angeles River passes through this area, it is a vertical-walled, concrete-lined segment of the stream.

Northeast Los Angeles Planning Subregion

Los Angeles River. The river in this subregion is a concrete-lined conveyance channel, although a five-mile stretch of the river from Griffith Park to the Golden State (I-5) and Pasadena (SR 11) Freeway interchange contains a natural bottom (City of Los Angeles, 1991). The river is perennial below the Sepulveda Basin since 1985 as a result of the discharge of tertiary-treated wastewater from the Tillman Reclamation Plant. A limited amount of riparian scrub vegetation is present in the bed of the river, subject to scouring and reappearance elsewhere in the shifting bottom sediments.

Elysian Park/Dodger Stadium. Undeveloped portions of this area support chaparral and oak woodland vegetation, as evident on aerial photography. No specific details of biological resources present there could be found in the literature.

Mount Washington and vicinity. In the area east of the Golden State Freeway (I-5) and between the Glendale (SR 2) and Pasadena (SR 11) Freeways, there occurs a number of small pockets of grassland and coastal scrub habitat in the mountainous area in the vicinity of Mount Washington. No specific details of biological resources present there could be found in the literature.

Areas east of Occidental College. Small pockets of grassland and coastal scrub habitats remain in the mountainous area just to the east of Occidental College. No specific details of biological resources present there could be found in the literature.

Rose Hill/Arroyo Seco Parks and Vicinity. Areas of remnant grassland habitat occur at Rose Hill Park and Arroyo Seco Park, and in the mountainous terrain to the south and east. Included here is also the open water habitat of Ascot Reservoir. No specific details of the biological resources present there could be found in the literature.

Silverlake and Ivanhoe Reservoirs. These reservoirs located west of the Golden State (I-5) and Glendale (SR 2) freeway interchanges are concrete-lined open water habitats with some waterfowl use.

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

San Rafael Hills. The San Rafael Hills represent a southeastward extension of the Verdugo Mountains. A small portion of the foothills on the southern flank of these mountains and on both sides of the Foothill Freeway (I-210) occurs within this subregion. As evident on aerial photographs, the primary habitat type present is chaparral.

South Los Angeles Planning Subregion

No substantial areas of natural habitat for plants and animals are evident on aerial photographs covering this subregion.

Southwest Los Angeles Planning Subregion

El Segundo Dunes SEA. Located west of the runways of the Los Angeles International Airport, the El Segundo Dunes SEA is the last remnant of a coastal dune system that once stretched several miles in each direction from here (England and Nelson, 1976). A substantial portion of the original SEA has been deleted due to airport expansion. The present SEA borders a portion of Dockweiler Beach State Park. The vegetation found here, referred to as coastal dune scrub, occurs nowhere else in the County. The dunes support the entire world population of the El Segundo Blue butterfly (*Euphilotes battoides allyni*), a federally listed endangered species. Much of the area has been disturbed by a former residential development, but the area is currently undergoing restoration. The specific biological resources of the El Segundo Dunes are discussed by Mattoni (1990).

Ballona Wetlands and Ballona Creek SEA. The Ballona Wetlands, located just north of the El Segundo Dunes, are privately owned and subject to a future restoration (ca. 280 acres) of the area to tidally influenced coastal saltmarsh under the Playa Vista Plan (City of Los Angeles, 1992; Mattoni, 1990a). The specific biological resources of the Ballona region have been investigated in some detail (Dailey et al., 1974; Envicom Corp., 1979; Schreiber, 1981; Jones and Stokes Associates 1981; Corey, 1990; Corey and Massey, 1990; Allen, 1991; Carter, 1991; Henrickson, 1991; Mattoni, 1991; Soltz, 1991). Habitats present include coastal saltmarsh willow woodlands, freshwater marsh, coastal dunes, and coastal scrub. The Ballona Creek SEA, generally encompassing the Ballona Wetlands, is one of two remaining remnants of coastal saltmarsh habitat in Los Angeles County (England and Nelson, 1976), and is used as a breeding ground for several state-listed Endangered species including Belding's savanna sparrow (*Passerculus sandwichensis beldingi*), California least tern (*Sterna antillarum browni*), saltmarsh skipper (*Panoquina errans*), and saltmarsh harvest mouse (*Sorex ornatus salicornicus*).

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

Baldwin Hills. The Baldwin Hills support coastal scrub and grassland communities, reportedly containing plant species now found only at the edge of the Los Angeles Metropolitan area and on the desert side of the San Gabriel Mountains (England and Nelson, 1976)[6]. According to these authors, they are "one of the last remaining open spaces in the western portion of the Los Angeles Basin."

West Los Angeles Planning Subregion

Santa Monica Mountains including Topanga State Park. The largest portions of the Santa Monica Mountains that are contained within the City occur in this subregion. The biological resources of the Santa Monica Mountains are considered in general (Raven et al., 1986; Othmer, 1980; USDI:NPS, 1982; De Lisle et al., 1986). Wieslander (1934) mapped the vegetation in detail between 1927 and 1933. Muns (1983) has compiled a flora for Topanga State Park. Aside from project-related environmental impact reports and accounts of sensitive species, specific details are generally lacking. The subregion includes the south slopes of the range from Topanga State Park eastward to Laurel Canyon. As evidenced on aerial photographs, habitats in the area include mostly chaparral, but also coastal scrub, oak and riparian woodland, and small amounts of grassland.

Will Rogers State Park Beach coastline. In the Pacific Palisades, sandy beach as well as rocky and sandy intertidal zones offer habitat for shorebirds.

Stone Canyon Reservoir. There are actually two reservoirs here. The upper reservoir is concrete-lined, and the lower one is larger, with natural banks. The area provides habitat for waterfowl, and also support a small area of walnut woodland.

Harbor Planning Subregion

Palos Verdes Peninsula Coastline SEA. The City includes the eastern portion of this SEA from near Cabrillo Beach Park/Point Fermin westward to the City boundary. The Fort MacArthur Military Reservation is included as a buffer for the SEA. The shoreline encompasses headlands, rocky shoreline, sandy beaches, intertidal areas, kelp beds, coastal strand, and coastal scrub vegetation (England and Nelson, 1976). The coastal cliffs and offshore rocks offer roosting and feeding sites for shorebirds, gulls and other seabirds including the state- and federally-endangered brown pelican. The state- and federally-listed Endangered peregrine falcon (*Falco peregrinus*

[6] *This area was originally considered as a potential SEA in 1976, however, most of the area was "redesignated to open space", and has subsequently been incorporated into the Kenneth Hahn State Recreation Area (Koutnik, personal communication, Oct. 6, 1994).*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

anatum), and Species of Special Concern prairie falcon (*Falco mexicanus*) are reported to winter along bluff tops in this area.

Harbor Lake Regional Park SEA. Harbor Lake Regional Park, located northwest of the junction of the Harbor Freeway (SR 110) and Anaheim Boulevard, supports one of two remaining wetland areas that once covered the South Bay area (the other area is Madrona Marsh, outside the City) (England and Nelson, 1976). Habitats present include willow forest, freshwater marsh and open water habitats, which support frogs, toads, water-dependent birds, and migratory birds. The Harbor Lake area is noted for the number of songbirds found there during migration, including many which are outside their normal ranges (so-called "vagrants").

San Pedro Harbor. This area is heavily used for shipping traffic and recreational activities (i.e., jet skis and boating). Some biological value does remain in the harbor, particularly along the northern part of the jetty separating the harbor from the open ocean. Of special interest is the sandy beach on the ocean-side of the jetty adjacent to Cabrillo Park, where grunion (*Leuresthes tenuis*) spawn in spring on nights of high tides following a full moon. The harbor also provides habitat for fish and water birds. The heavy human activity in the area has reduced the value of the harbor to wildlife.

Significant Ecological Areas (SEAs)

The County of Los Angeles, through its General Plan, established 61 Significant Ecological Areas (SEAs), which represent a wide variety of biological communities within the County. The SEAs function to preserve this variety and to provide a level of protection to the resources within them. These SEAs are living laboratories containing examples of the County's diverse ecological heritage. SEAs are intended to be preserved in an ecologically viable condition for the purposes of public education, research, and other non-disruptive outdoor uses but do not preclude limited compatible development. The County General Plan outlines a process to regulate land uses in these areas and creates an advisory committee of scientists appointed to oversee the regulation of these policies.

A conditional use permit is required for development in SEAs in order to protect resources contained in SEAs from incompatible development, which may result in or have potential for environmental degradation[7]. A biological constraints analysis is required to describe in a general manner the extent, location, and sensitivities of ecological resources found within an SEA.

[7] *Section 22.56.215 of the County Code.*

Exhibit C-6, continued
NATURAL HABITATS AND SIGNIFICANT ECOLOGICAL AREAS (SEAs) WITHIN THE CITY OF LOS ANGELES[1]

Development proposed within a designated SEA is subject to review based on design compatibility criteria provided to guide specific land use decisions.

The SEAs are classified into the following eight categories:

Class 1 - The habitat of state and federally listed endangered, rare, or threatened plants and animals

Class 2 - Biotic communities, vegetative associations, and habitats of plants and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

Class 3 - Biotic communities, vegetative associations, and habitats of plants and animal species that are either one of a kind, or are restricted in distribution in Los Angeles County.

Class 4 – Habitat that serves, at some point in the life cycle of a species or group of species, as a concentrated breeding, feeding, resting, or migrating grounds, and is limited in availability.

Class 5 - Biotic resources that are of scientific interest because they either are at an extreme in the physical or geographic range of a population of community, or they represent an unusual variation in a population or community.

Class 6 – Areas important as game habitat or fisheries resources.

Class 7 - Areas that would preserve relatively undisturbed examples of natural biotic communities in Los Angeles County.

Class 8 - Special areas, not meeting the above criteria, but that have some notable biological features (such as a wildlife corridor) can also be designated as SEAs.

Exhibit C-7
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES[1]

KEY

State Status - California Department of Fish and Game (CDFG)	
SE	State Listed Endangered
ST	State Listed Threatened
CSC	Species of Special Concern[2]
SCE	State Candidate Endangered
SCT	State Candidate Threatened
SFP	State Fully Protected
SP	State Protected
SR	State Listed Rare
Federal Status - U.S. Fish and Wildlife Service (USFWS)	
FE	Federally Listed Endangered
FT	Federally Listed Threatened
FCH	Federally Listed Critical Habitat
FPE	Federally Proposed Endangered
FPT	Federally Proposed Threatened
FPCH	Federally Proposed Critical Habitat
FPD	Federally Proposed Delisting
FC	Federal Candidate Species
EXT	Extinct

1 *This list is current as of January 2001. Check the most recent state and federal lists for updates and changes, or consult the CDFG's California Natural Diversity Database.*

2 *CSC - California Special Concern species. The Department has designated certain vertebrate species as "Species of Special Concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all "Species of Special Concern" have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a "Threatened" or "Endangered" species under the State and/or Federal Endangered Species Acts.*

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

KEY (continued)

California Native Plant Society (CNPS)	
1A	Plants presumed extinct in California[3]
1B	Plants that are rare, threatened, or endangered in California or elsewhere[3]
2	Plants that are rare, threatened, or endangered in California, but more common elsewhere[3]
3	Plants about which more information is needed - a review list[4]
4	Plants of limited distribution - a watch list[5]
Habitat Code Designations - California Natural Diversity Database (CNDDB)	
AF	Alluvial Fan Sage Scrub
BW	Brackish Water
CB	Coastal Bluff Scrub
CD	Coastal Dunes
CH	Chaparral
CL	Coastal Lagoon

3 *All of the plants constituting Lists 1A, 1B, and 2 meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endatnered Species Act) of the California Department of Fish and Game Code, and are eligible for listing. According to the DFG, if the taxa on List 1A are rediscovered, they should be fully considered during preparation of environmental documents relating to CEQA. List 1B and 2 plants should be fully considered during preparation of environmental documents relating to CEQA.*

4 *Some of the plants constituting List 3 meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for listing. The DFG recommends that List 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.*

5 *Very few of the plants constituting List 4 meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for listing. Nevertheless, many of them are significant locally, and the DFG recommends that List 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA. This may be particularly appropriate for the type locality of a List 4 plant, for populations at the periphery of a species' range or in areas where the taxon is especially uncommon or has sustained heavy losses, or for populations exhibiting unusual morphology or occurring on unusual substrates.*

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

KEY (continued)

Habitat Code Designations - California Natural Diversity Database (CNDDB) (Con't)	
CM	Coastal Salt Marsh
CO	Coastal Habitats
CP	Chenopod Scrub
CS	Coastal Sage Scrub
DR	Desert Riparian
DW	Desert Wash
ES	El Segundo Dunes
ET	Estuary
FM	Freshwater Marsh
GL	Grassland (native or introduced)
MF	Montane Forest (mixed hardwood, coniferous)
OW	Oak Woodland (coast live, valley, canyon or scrub oaks)
PJ	Pinyon-Juniper Woodland
PL	Playa Habitats, coastal or inland
RP	Riparian Scrub
RV	Rivers (open water or aquatic habitats)
RW	Riparian Woodland
SG/SJ	San Gabriel/San Jacinto Mountains
VP	Vernal Pools
WA	Water (general open water habitats)

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE *	HABITAT
Invertebrates				
Euphilotes battoides allyni	El Segundo blue butterfly	FE	4	CD
Glaucopsyche lygdamus palosverdesensis	Palos verdes blue butterfly	FE, FCH	4	CS
Raphiomidas t. terminatus	El Segundo flower-loving fly	EXT	4	ES
Streptocephalus woottoni	Riverside fairy shrimp	FE, FPCH	4	CH
Fish				
Catostomus santaanae	Santa Ana sucker	CSC, FT	1,3	RV
Eucyclogobius newberryi	tidewater goby	CSC, FE, FPD, FCH	4	BW
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	FE, FPCH, SE, SFP	Unknown	
Gila orcutti	arroyo chub	CSC	1,2,3,4	RV
Onchorhynchus mykiss	southern steelhead	FE, FCH, CSC	Unknown	
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	CSC	1	RV
Amphibians				
Bufo microscaphus californicus	arroyo southwestern toad	CSC, SP, FE, FCH	1,2,3,4	RV, DR
Rana aurora draytoni	California red-legged frog	FT, FPCH, CSC, SP	1,2,3,4	
Rana muscosa	So. California population of mountain yellow-legged frog	FPE, CSC, SP	1,2,3,4	
Scaphiopus hammondii	western spadefoot toad	CSC, SP	1	VP, RV, CS, CH
Reptiles				
Anniella p. pulchra	silvery legless lizard	CSC	1,2,3,4	CH, OW, CS
Clemmys marmorata pallida	southwestern pond turtle	CSC, SP	1,2,3,4	RV
Lampropeltis zonata pulchra	San Diego mountain kingsnake	CSC, SP	1,2,3	CH, CS, OW
Phrynosoma coronatum blainvillei	San Diego horned lizard	CSC, SP	1,2,3,4	CS, CH, AF
Salvadora hexalepis virgultea	coast patch-nosed snake	CSC	1,2,3,4	CS, CH, OW
Thamnophis (Nerodia) hammondii	two-striped garter snake	CSC, SP	1,2,3,4	RV, FM
Xantusia riversiana	island night lizard	FT, SP	1,2,3,4	

* Refer to Exhibit C-1.

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE *	HABITAT
Birds				
Accipiter cooperii	Cooper's hawk (nest)	CSC	1,2,3,4	RW, OW
Accipiter striatus (migrant)	sharp-shinned hawk (nest)	CSC	1,2,3,4	RW
Aimophila ruficeps canescens	So. Cal.rufous-crowned sparrow	CSC	1,2,3,4	CS, CH
Amphispiza b. belli	Bell's sage sparrow	CSC	1,2,3,4	CS, CH
Asio flammeus	short-eared owl	CSC	3,4	CM, FM
Asio otus	long-eared owl	CSC	1,2,3,4	OW, RP
Athene cunicularia hypugea	burrowing owl	CSC	1,2,3,4	GL, DW, CS, CB
Charadrius alexandrinus nivosus	western snowy plover	FT, FCH, CSC	4	PL, ET, CD
Charadrius montanus	mountain plover	FPT, CSC	1,2,3	
Chlidonias niger	black tern	CSC	4	PL, CO, ET
Circus cyaneus	northern harrier (nest)	CSC	1,2,3,4	FM, ET, CM
Coccyzus americanus occidentalis	western yellow-billed cuckoo	SE	1,2,3,4	RW
Cypseloides niger (migrant)	black swift (nest)	CSC	1,2,3,4	RV, waterfalls
Dendroica petechia brewsteri	yellow warbler (nest)	CSC	1,2,3,4	RP, RW, CH
Elanus leucurus	white-tailed kite	SFP	1,2,3,4	GL, ET, FM, OW
Epidonax traillii	willow flycatcher (all subspecies)	SE	1,3	RW, RP
Epidonax traillii extimus	Southwestern willow flycatcher	FE, FCH, SE	1,3	RW, RP
Eremophila alpestris actia	California horned lark	CSC	1,2,3,4	GL, CS
Falco columbarius (migrant)	Merlin	CSC	1,2,3,4	gen. Flyover
Falco mexicanus	prairie falcon (nest)	CSC	1,2,3,4	DR, DW, CH
Falco peregrinus anatum	American peregrine falcon	(FE delisted 8/25/99) SE, SFP	1,2,3,4	CO, PL, ET
Icteria virens	yellow-breasted chat (nest)	CSC	1,2,3,4	RP, RW
Ixobrychus exilis hesperis (migrant)	western least bittern	CSC	1,2,3,4	RP, ET, FM, SM
Lanius ludovicianus	Loggerhead shrike	CSC	1,2,3,4	CS, CH, CP, DW

* Refer to Exhibit C-1

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE *	HABITAT
Birds (cont'd.)				
Laterallus jamaicensis coturniculus	California black rail	ST, SFP	4	FM, CM
Numenius americanus	long-billed curlew (nest)	CSC	4	CO, WA
Pandion haliaetus (migrant)	osprey (nest)	CSC	1,2,3,4	CO, WA, RV
Passerculus sanwichensis beldingi	Belding's savannah sparrow	SE	4	CM
Pelecanus occidentalis cal.fornicus	California brown pelican	SE, FE, SFP	4	CO
Phalacrocorax auritus	double-crested cormorant (rookery)	CSC	1,2,3,4	CO, WA, RV
Piranga rubra (migrant)	summer tanager	CSC	1,4	RW
Polioptila c. cal.fornica	California gnatcatcher	FT, FCH, CSC	1,4	CS, CH
Rallus longirostris levipes	light-footed clapper rail	SE, FE, SFP	4	CM
Riparia riparia (migrant)	bank swallow	ST	1,2,3	CO, RP, RV
Sterna antillarum browni	California least tern	SE, FE, SFP	4	CD, ET, PL
Vermivora virginiae (migrant)	Virginia's warbler	CSC	3	CH, OW, RW
Vireo bellii pusillus	least Bell's vireo	SE, FE, FCH	1,2,3	RP, RW
Mammals				
Antrozous pallidus pac.ficus	pallid bat	CSC	1,2,3,4	CS,CH,GL
Eumetopias jubatus	northern sea lion	FT	4	CO
Eumops perotis cal.fornicus	California mastiff bat	CSC	1,2,3,4	general
Lepus cal.fornicus bennettii	San Diego blacktailed jackrabbit	CSC	1,2,3,4	CS,CP,CH, DW
Macrotus cal.fornicus	California leaf-nosed bat	CSC	1	general
Microtis cal.fornicus stephensii	Stephen's California vole	CSC	4	FM,GL
Neotoma lepida intermedia	San Diego desert woodrat	CSC	1,2,3,4	CS,CH,DW
Onychomys torridus ramona	southern grasshopper mouse	CSC	1,3	CL,CS,CH, DW
Perognathus longimembris brevinasus	Los Angeles pocket mouse	CSC	1,4	CS,CH,DW
Perognathus longimembris pac.ficus	Pacific pocket mouse	CSC, FE	4	CS
Plecotus townsendii pallescens	pale big-eared bat	CSC	1,2,3,4	DW,CH,OW
Sorex ornatus salicornicus	southern Calif. saltmarsh shrew	CSC	4	CM

* Refer to Exhibit C-1

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE*	HABITAT
Plants				
Abronia maritima	red sand-verbena	4	4	CD
Acanthomintha obovata cordata	heart-leaved thorn-mint	4	unknown	CH,OW,PJ, GL
Androsace elongata acuta	California androsace	4	unknown	CH,OW,CS
Aster greatae	Greata's aster	1B	unknown	CH
Astragalus brauntonii	Braunton's milk vetch	FE, 1B	2,3	MF,CH,CS, GL
Astragalus pycnostachyus v. *lanosissimus*	Ventura marsh milk-vetch	SE, FPE, 1B	3,4	CM
Astragalus tener v. *titi*	coastal dunes milk-vetch	SE, FE, 1B	4	CB,CD
Atriplex pacifica	south coast saltscale	1B	4	CB,CS,PL
Atriplex parishii	Parish's brittlescale	1B	1	CS,VP,PL
Atriplex serenana v. *davidsonii*	Davidson's saltscale	1B	unknown	CBS,CS
Baccharis malibuensis	Malibu baccharis	1B	3	CS,CH,OW
Baccharis p. plummerae	Plummer's baccharis	4	3	MF,CH,OW,CS
Berberis nevinii	Nevin's barberry	SE, FE, 1B	1,2,3	CH,AF,CS
Calandrinia breweri	Brewer's calandrinia	4	unknown	CH,CS
Calandrinia maritima	seaside calandrinia	4	4	CBS,GL
Calochortus catalinae	Catalina mariposa lily	4	1,2,3	CH,OW,CS, GL
Calochortus c. v. *clavatus*	club-haired mariposa lily	4	1,3	CH,OW,GL
Calochortus plummerae	Plummer's mariposa lily	1B	3	CH,OW,CS, GL,MF
Calystegia peirsonii	Peirson's morning-glory	4	1	CH,CS,OW, CS,MF
Calystegia sepium binghamiae	Santa Barbara morning-glory	1A	4	CM
Camissonia lewisii	Lewis's evening-primrose	3	unknown	CB,OW,CD, CS,GL
Castilleja plagiotoma	Mojave Indian paintbrush	4	1	PJ,GB
Centromadia parryi ssp. australis (Hemizonia minthornii)	Santa Susana tarplant	SR, 1B	1,2,3	CH, CS
Cercocarpus betuloides v. *blancheae*	island mountain-mahogany	4	3	CH
Chorizanthe parryi v. *fernandina*	San Fernando Valley spineflower	SCE, FC, 1B	1,3	CS
Chorizanthe p. v. *parryi*	Parry's spineflower	3	3	CS,AF,CH, OW
Chorizanthe spinosa	Mojave spineflower	4	1	CS,DW
Convolvulus simulans	small-flowered morning-glory	4	unknown	CS,GL
Cordylanthus m. maritimus	salt marsh bird's-beak	SE, FE, 1B	4	CM
Crossosoma californicum	Catalina crossosoma	1B	4	CS

Refer to Exhibit C-1

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE *	HABITAT
Plants (Con't)				
Deinandra minthornii (Hemizonia parryi australis)	southern tarplant	1B	Unknown	ET, GL, VP
Dichondra occidentalis	western dichondra	4	4	CH,OW,CS, GL
Dithyrea maritima	beach spectaclepod	ST, 1B	4	CD,CS
Dodecahema leptoceras	slender-horned spineflower	SE, FE,1B	1	AF,CH
Dudleya b. blochmaniae	Blochman's dudleya	1B	3	CS,CB,CH, GL
Dudleya cymosa marcescens	marcescent dudleya	SR, FT, 1B	3	CH
Dudleya cymosa ovat.folia	Santa Monica Mtns. dudleya	FT, 1B	3,4	CH,CS
Dudleya multicaulis	many-stemmed dudleya	1B	2	CH,CS,GL
Dudleya virens	bright green dudleya	1B	4	CH,CS
Erysimum insulare sı,,frutescens	suffrutescent wallflower	4	unknown	CB,CD,CS
Fremontodendron mexicanum	Mexican flannelbush	SR, FE, 1B	1,2,3	MF,CH,OW
Galium angust.folium gabrielense	San Antonio Canyon bedstraw	4	1	MF
Galium cl.ftonsmithii	Santa Barbara bedstraw	4	2,4	OW
Galium johnstonii	Johnston's bedstraw	4	unknown	MF
Goodmania luteola	golden goodmania	4	Unknown	DW,PL,GL
Helianthus nuttallii parishii	Los Angeles sunflower	1A	3	CM,FM
Heuchera abramsii	Abram's alumroot	4	Unknown	MF
Heuchera elegans	urn-flowered alumroot	4	Unknown	MF
Hulsea vestita gabrielensis	San Gabriel Mtns. sunflower	4	1	MF
Juglans c. v. *cal.fornica*	So.Cal. black walnut	4	1,2,3	CH,OW,AF
Juncus acutus lecpoldii	southwestern spiny rush	4	4	CD,CM
Juncus duranii	Duran's rush	4	Unknown	MF
Lasthenia glabrata coulteri	Coulter's goldfields	1B	Unknown	CM,PL,VP
Lepechinia fragrans	fragrant pitcher sage	4	3	CH
Lilium humboldtii ocellatum	ocellated Humboldt lily	4	1,2,3	CH,OW,CO
Linanthus orcuttii	Orcutt's linanthus	1B	Unknown	CH,MF
Lupinus elatus	silky lupine	4	Unknown	MF
Lupinus excubitus v. *johnstonii*	interior bush lupine	4	Unknown	MF
Lupinus peirsonii	Peirson's lupine	1B	Unknown	CH,CS,RW
Malacothamnus davidsonii	Davidson's bush mallow	1B	1,3	CS,RW
Microseris douglasii v. *platycarpha*	small-flowered microseris	4	Unknown	OW,CS,GL
Monardella cinerea	gray monardella	4	Unknown	MF

Refer to Exhibit C-1

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

SCIENTIFIC NAME	COMMON NAME	STATUS	ZONE *	HABITAT
Plants (Con't)				
Monardella viridis saxicola	rock monardella	4	Unknown	CH,MF
Mucronea californica	California spineflower	4	Unknown	CH,CD,CS, GL
Muilla coronata	crowned muilla	4	Unknown	DW
Nama stenocarpum	mud nama	2	Unknown	FM
Nemacaulis d. v. *denudata*	coast woolly-heads	2	4	CD
Nemacladus gracilis	slender nemacladus	4	Unknown	OW,GL
Orcuttia californica	California Orcutt grass	SE, FE,1B	1,4	VP
Oreonana vestita	woolly mountain-parsley	1B	Unknown	MF
Oxytheca caryophylloides	chickweed oxytheca	4	Unknown	MF
Pentachaeta lyonii	Lyon's pentachaeta	SE, FE, 1B	3,4	CH,GL
Perideridia g. gairdneri	Gairdner's yampah	4	Unknown	CH,GL,VP,MF
Perideridia pringlei	adobe yampah	4	Unknown	CH,OW,CS
Phacelia exilis	Transverse Range phacelia	4	Unknown	MF
Phacelia mohavensis	Mojave phacelia	4	Unknown	OW,MF
Phacelia stellaris	Brand's phacelia	1B	Unknown	CD,CS
Polygala cornuta v. *fishiae*	Fish's milkwort	4	4	CH,OW,RW
Quercus engelmannii	Engelmann oak	4	Unknown	CH,OW,RW,GL
Ribes divaricatum v. *parishii*	Parish's gooseberry	1B	2	RW
Romneya coulteri	Coulter's matilija poppy	4	Unknown	CH,CS
Scutellaria bolanderi austromontana	southern skullcap	1B	Unknown	CH,OW,MF
Selaginella asprella	bluish spike-moss	4	Unknown	MF
Senecio ioncphyllus	Tehachapi ragwort	4	Unknown	MF
Suaeda esteroa	estuary seablite	1B	4	CM
Suaeda taxifolia	woolly seablite	4	4	CB,CM
Swertia neglecta	pine green-gentian	4	Unknown	MF
Syntrichopappus lemmonii	Lemmon's syntrichopappus	4	Unknown	CH
Thermopsis californica v. *argentata*	silvery false lupine	4	Unknown	MF

Refer to Exhibit C-1

Exhibit C-7, continued
SENSITIVE SPECIES COMPENDIUM - CITY OF LOS ANGELES

NDDB Highest Inventory Priority Plant Communities of Los Angeles City	
Community	**Mapping Zone of Occurrence (NDDB data)**
Walnut Forest	3
California Walnut Woodland	1,2
Valley Oak Woodland	1,2
Southern Willow Scrub	1
Southern Sycamore Alder Riparian Woodland	1,2,3
Southern Mixed Riparian Forest	1
Southern Cottonwood Willow Riparian Forest	1,3
Southern Coast Live Oak Riparian Forest	1,2,3
Riversidian Alluvial Fan Sage Scrub	1
Valley Needlegrass Grassland	2
Southern Dune Scrub	1
Southern Coastal Bluff Scrub	4
Coastal Salt Marsh	3

Source: Frank Hovore & Associates, December 1995; Environmental Affairs Department, 2001.

Exhibit C-8
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D. CULTURAL RESOURCES

D.1. PALEONTOLOGICAL RESOURCES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

V.c): Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

B. Introduction

Paleontological resources are the fossilized remains of organisms that have lived in the region in the geologic past and the accompanying geologic strata. Because the majority of species that have existed on Earth are extinct, the fossil record represents the primary source of data on ancient life forms. In addition, the fossil record is finite, and many scientists feel that no single species is sufficiently understood or represented in research as to preclude further need for specimens. Paleontological resources are considered non-renewable and important.

Paleontological resources occur throughout the City of Los Angeles. They are not evenly distributed; the potential for fossil occurrence depends on the rock type exposed at the surface in a given area. Rocks are classified into three principal types: igneous, metamorphic and sedimentary. Sedimentary rocks contain the bulk of fossils in the City, although metamorphic rocks may also contain fossils. Igneous rocks do not contain fossils. In addition to igneous and most metamorphic rocks, areas of artificial landfill, streambeds and beach sand do not contain fossils.

The older sedimentary rocks are exposed in the hills and mountains, while younger rock units are present in low-lying and flat valley and basin floors. The majority of igneous rocks in the region are found in the Santa Monica Mountains and the northern San Fernando Valley. Within the City of Los Angeles, metamorphic rocks are found mostly in the Santa Monica Mountains and within scattered exposures around the region.

Direct destruction of fossils within fossil-bearing rock units may result from grading or excavation associated with a project, particularly during the construction phase. Indirect destruction or loss of fossils exposed at the surface may result from increased erosion, human access, or other activity in a project area. Increased access could result from the opening of private or otherwise closed lands, new access routes through sensitive areas, or through excavation or the removal of

vegetation.

Paleontological resources are protected by state and federal legislation. State regulations mandate protection of paleontological resources on public lands and CEQA requires evaluation of impacts to paleontological sites. Paleontological resources are also subject to certain state regulations for historical resources.[1] City guidelines for the protection of paleontological resources are specified in Section VIII of the Conservation Element, and for public works projects, Standard Specifications for Public Works Construction, Section 6-3.2. Information on rock types can be found in 3. Data, Resources, and References.

C. Screening Criteria

- Could implementation of the project result in the disturbance of surface or subsurface fossils, either through site preparation, construction or operational activities, or through an increase in human activities at or near the fossil site?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Paleontological Resources and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Paleontological Resources from the proposed project.

D. Evaluation of Screening Criteria

Assess the potential for discovery of paleontological resources. The following sources are available: existing paleontological surveys for the project site; Los Angeles County Natural History Museum; Environmental and Public Facilities Maps - Vertebrate Paleontological Resource Sensitivity Areas in the City of Los Angeles and Invertebrate Paleontological Resource Sensitivity Areas in the City of Los Angeles; Exhibit D.1-1; or other appropriate resources.

Evaluate the degree of disturbance to the project site. Consider whether the site has been vacant or covered by surfaces that required little or no excavation or grading, such that there has been little surface or subsurface disturbance. Sites from which native topsoil has been removed, such as

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1 *The California Office of Historic Preservation (OHP) has jurisdiction over projects that may impact historic resources. For regulation of historic resources, see Exhibits D.3-1 to D.3-3.*

landfills, are unlikely to retain paleontological resource potential.

Review the description of the project and the construction/operation activities. Assess the amount of grading, excavation, erosion, and increased human activity (e.g., opening of previously closed lands, new access routes through sensitive areas, or removal of vegetation that could disturb surface and subsurface fossils). Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the physical setting, paleontology, and geology of the project site and surrounding area;
- Summary of surveys and research for the project site; and
- Summary of requirements and/or policies for paleontological resources that apply to the project. (See 3. Data, Resources, and References.)

Project Impacts

Using the information from the Evaluation of Screening Criteria, Environmental Setting, and project description, estimate the extent and importance of paleontological resources likely to be contained on the site and the consequences that would likely result from the project. Consider

compliance with guidelines and regulations such as the California Public Resources Code, Federal Antiquities Act, Conservation Element, and, for public works projects, Standard Specifications for Public Works Construction. Regional or statewide significance may be based on the quality and integrity of the resource, remaining supply, feasibility of recovery, or scientific or public importance. Assistance from the Los Angeles County Museum of Natural History or a professional consultant may be required.

Determine whether excavation, grading, or operational activities would impact to the depth of the subsurface rock units containing the fossils. Evaluate the potential destruction of fossils exposed on the surface by considering the increased human activity generated by the project, including potential for soil erosion, construction traffic in sensitive areas, and increased human access to sensitive areas after project completion. If the area has been disturbed through previous grading or excavation or installation of subsurface utilities, it is likely that fossils would have been discovered at that time, have been destroyed, or are no longer in their original location (e.g., they have been brought in from other areas with fill).

Cumulative Impacts

Review the list of related projects and estimate the extent of paleontological resources likely to be contained on the sites and the consequences that would likely result from these related projects. Determine the cumulative impact to fossils of regional or statewide significance from the related projects combined with the proposed project. In particular, consider cumulative impacts to fossils from the same time period. Evaluate the destruction of fossils by considering the cumulative increase in human activity, excavation, grading, or operational activities.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Revise the proposed project to avoid excavation or grading in areas with known or potential surface exposures of fossils, or within rock units with a high potential for paleontological resources;

- Provide erosion protection (e.g., retaining walls, drainage channels) to protect surface resources;

- Restrict or prevent access to sensitive resource areas on site;

- Retain a qualified paleontologist to monitor, and, if necessary, salvage scientifically significant fossil remains. Ensure scientific specimens become the property of a public, nonprofit educational institution, such as the Los Angeles County Museum of Natural History or similar institution;

- Protect subsurface fossils in place, through covering with appropriate soil materials; and

- Divert grading efforts in the area of an exposed fossil to allow evaluation and, if necessary, salvage of exposed fossils.

3. DATA, RESOURCES, AND REFERENCES

Los Angeles County Museum of Natural History, Department of Vertebrate Paleontology: 900 Exposition Boulevard, Los Angeles, California 90007; Telephone: (213) 763-3489, Lawrence G. Barnes Ph.D.; 213-763-3329. The Museum of Natural History does not maintain records of paleontological surveys or studies, but does perform record checks to determine if fossil resources are present within or near a project area, provides technical assistance, and acts as a repository for salvage fossils.

California Office of Historic Preservation: P.O. Box 942896, Sacramento, California 94296-0001; Telephone: (916) 653-6624. OHP has legal jurisdiction over projects, which may impact historic resources, which include certain paleontological resources. OHP can provide guidance as to the evaluation of significance of historic resources.

Conservation Element provides guidelines for the preservation of paleontological resources.

City Planning Department, Environmental and Public Facilities Maps (1997):

- Vertebrate Paleontological Resources Sensitivity Areas in the City of Los Angeles
- Invertebrate Paleontological Resources Sensitivity Areas in the City of Los Angeles

These maps were based on information prepared by the County of Los Angeles Natural History Museum in 1993 and delineate areas of similar paleontological sensitivity within the City. These sensitivity zones may contain several different rock units that share a common history of production of paleontological resources.

California Division of Mines and Geology (CDMG), 655 S. Hope St. Rm 700, Los Angeles, California 90017-2321; Telephone: (213) 239-0878. The following documents are available

from CDMG:

- CDMG Geologic Atlas Sheets of California - Los Angeles: These maps show the geologic formations underlying the City of Los Angeles in a single map, at a scale of 1:250,000.

- Dibblee Geological Foundation Maps - applicable United States Geological Survey (USGS) topographic quadrangle: Dibblee maps show geologic information in greater detail than Geologic Atlas Sheets, at a scale of 1:24,000, corresponding to 7½ minute USGS topographic quadrangles.

The Society of Vertebrate Paleontology, an international association of professional paleontologists, has developed guidelines for protection and preservation of paleontological resources, as well as mitigation standards for impacts to paleontological resources, in response to CEQA.

Rock Types

Sedimentary rocks are usually layered or bedded and formed from cemented accumulations of sand, silt or mud. The sedimentary rocks in the City range in age from the Cretaceous (100 million years before present) to the Recent periods. Intrusive igneous rocks, formed at depth from molten magma and intruded into other rock bodies, tend to be homogeneous masses, such as granite, and do not contain fossils. Extrusive igneous rocks, such as volcanic rocks, very rarely contain plants or animal fossils. Metamorphic rocks, products of modifications to igneous or sedimentary rocks by heat, pressure or fluids, may or may not contain fossils, depending on the degree of alteration and the original rock type.

Selected Legislation

Federal

Federal Antiquities Act of 1906 (P. L. 59-202; 32 Stat. 225)

This act forbids, and establishes criminal sanctions for, the disturbance of any object of antiquity on federal land without obtaining a permit from an authorizing authority.

Federal Land Management and Policy Act of 1976 (FLMPA) (P.L. 94-579, 43 U.S.C. 1701-1782)

FLMPA provides authority for the Bureau of Land Management (BLM) to regulate lands under its jurisdiction, to be managed in a manner to "protect the quality of scientific, scenic, historic,

ecological, environmental...and archaeological values." Authority is given to establish Areas of Critical Concern (ACEC).

National Environmental Policy Act (NEPA) of 1969 (P. L. 91-190; 83 Stat. 852, 42 U.S.C. 4321-3427)

With regard to paleontological resources, NEPA mandates the evaluation of impacts in order to "preserve important historic, cultural and natural aspects of our national heritage" (Section 101b.4).

State

Public Resources Code, Section 5097.5 (Stats. 1965, c. 1136, p. 2792)

This section prohibits "the excavation or removal of any vertebrate paleontological site...or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands."

CEQA (13 PRC, 21000 et seq)

According to CEQA, "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California (Div. 1, PRC 5020.1) (italics added). This has been subsequently interpreted as requiring identification of potential adverse impacts of a project to any object or site of scientific importance.

Guidelines for the Implementation of CEQA, as amended May 10, 1980 (14 Ca. Admin. Code: 15000 et seq)

The CEQA Guidelines authorize the Lead Agency to require mitigation to reduce and avoid significant effects on the environment. CEQA, Appendix G, subsection J, states, "A project will normally have a significant effect on the environment if it will disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study."

California Administrative Code, Title 14, Section 4307

States, "no person shall remove, injure, disfigure, deface, or destroy any object of paleontological, archaeological, or historical interest or value."

Local

Standard Specifications for Public Works Construction, Section 6-3.2

Requires that grading, excavation, or other ground disturbing activities for a public project be halted in the area of a paleontological or archaeological find, until such time as a resource expert can review the find, determine its significance, and if required, determine appropriate mitigation measures.

Exhibit D.1-1
PALEONTOLOGICAL POTENTIAL BY ROCK UNIT/GEOLOGIC FORMATION

Formation/Rock Unit	Paleontological Potential	Fossils Present
Palos Verdes Sand	High	Vertebrates and Invertebrates
San Pedro Sand	High	Vertebrates and Invertebrates
Lomita Marl	High	Vertebrates
Timms Point Silt	High	Vertebrates and Invertebrates
Fernando Formation or Reppeto Formation	High	Vertebrates and Invertebrates
Pico Formation	High	Vertebrates and Invertebrates
Monterey Formation	High	Vertebrates
Altamira Shale	High	Vertebrates
Model Formation	High	Vertebrates
Topanga Formation	High	Vertebrates and Invertebrates
Santa Suzana Formation[a]	High	Invertebrates
Chico Formation and/or Tuna Canyon Formation	High	Vertebrates and Invertebrates
Quaternary Alluvium	Low to High [b]	Vertebrates
Las Virgenes Sandstone[a]	Low	Invertebrates
Simi Conglomerate[a]	Low	none reported
Trabucco Formation	Low	none reported
Santa Monica Slate	Low	Invertebrates

[a] These rock units are grouped together as the Martinez Formation in the older literature on the region.

[b] Potential for discovery of resources in Quaternary deposits increases with increased depth of excavations.

NOTE: "Low," High" and "Undetermined" potential are scientifically recognized terms identifying the chance of fossil discovery during excavation into a given geologic unit. It is not uncommon for low potential deposits to overlay or otherwise cover more rock units with a high potential for discovery. Information on rock units on a particular site may be obtained from existing geotechnical studies prepared for the project site or from maps, such as the CDMG Geologic Atlas Sheets of California or the Dibblee Geological Foundation Maps.

Source: RMW Paleo Associates, 1995, based on literature, published and unpublished records of discovery of fossils in each geologic unit, the relative abundance of fossils at past discovery sites and the depositional environment associated with individual geologic units.

D.2. ARCHAEOLOGICAL RESOURCES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

V.b): Would the project cause a substantial adverse change in the significance of an archeological resource pursuant to §15064.5?

V.d): Would the project disturb any human remains, including those interred outside of formal cemeteries?

B. Introduction

Archaeology involves the physical, structural, and documentary evidence of past human endeavors. Such cultural resources may or may not be visible on the surface, and may be of either prehistoric or historic origin. Because of its climate, topography, and natural resources, the greater Los Angeles area is known to have supported prehistoric and historic cultures. The location of known archaeological sites is confidential to prevent scavenging of artifacts. Artifacts are considered finite and non-renewable resources.

Construction or operation activities, which affect the surface or subsurface of the ground at or near archaeological resources, can disturb or destroy them. Artifacts may be lost or destroyed through grading, crushing, scattering, or removal from the ground. In addition, scattering or otherwise taking the artifacts out of their original placement may result in the loss of important information about the relationship of artifacts to each other. With archaeological resources, the relationship of materials to each other in the ground is more informative than the same artifacts removed to a laboratory for study. Impacts may also occur through the alteration or destruction of a physical landscape with special values to Native Americans. The Native American Graves and Repatriation Act of 1990 protect Native American remains (see 3. Data, Resources, and References).

The California state inventory of known, documented archaeological resources for the Los Angeles area is maintained at the South Central Coastal (Regional) Information Center, at the Institute of Archaeology of the University of California at Los Angeles (UCLA) (known as the Information Center). All resources on this inventory should be evaluated for potential impacts in CEQA documentation. In addition, federal standards for eligibility to the National Register of

Historic Places[1] (National Register) may be used to determine whether known or potential resources should be examined under CEQA. Archaeological resources may be present on the grounds of historic sites or districts.

C. Screening Criteria

- Would the proposed project occur in an area with archaeological resources, human remains having archaeological associations, an archaeological study area, or a Native American sacred place, and involve grading, excavation, accelerated erosion, or other activities or changes to the site that could affect archaeological resources?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Archaeological Resources, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Archaeological Resources from the proposed project.

D. Evaluation of Screening Criteria

The following sources may provide assistance in identifying the presence or potential presence of archaeological resources: existing archaeological surveys and documented historical accounts; the Information Center at the UCLA Institute of Archaeology; the Native American Heritage Commission; California Department of Transportation (Caltrans); the Army Corps of Engineers (ACOE); State Park Service; National Register; local, county, and state landmarks lists; Sanborn Fire Insurance maps; the Environmental and Public Facilities Map, Prehistoric and Historic Archaeological Sites and Survey Areas; and other appropriate resources.

Where sufficient information or research is not available to determine the presence or absence of archaeological resources, consider the following:

- Presence of elements or features that are historically or culturally important to a significant earlier community.

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[1] *For federal eligibility criteria regarding listing of archaeological resources in the National Register, see Exhibit D.3-1 in D.3. HISTORICAL RESOURCES.*

- Features of the area that would create a favorable environment for prehistoric or historical use, such as:

  - A water source, travel corridor, native plants or animals, or sources of rock for construction, making tools, or artwork; or

  - Location in an area with unusual views, a defensive position or other values for ceremonial, ritual or astronomical observances.

Evaluate the degree of disturbance to the project site. Consider if the site has been vacant or covered by surfaces that required little or no excavation or grading, such that there has been little surface or subsurface disturbance (sites from which native topsoil has been removed, such as landfills, are unlikely to retain archaeological resource potential). Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact upon archaeological resources if it could disturb, damage, or degrade an archaeological resource or its setting that is found to be important under the criteria of CEQA because it:

- Is associated with an event or person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory;

- Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions;

- Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind;

- Is at least 100-years-old[2] and possesses substantial stratigraphic integrity; or

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[2] *Although the CEQA criteria state that "important archaeological resources" are those which are at least 100-years-old, the California Register provides that any site found eligible for nomination to the National Register will automatically be included within the California Register and subject to all protections thereof. The National Register requires that a site or structure be at least 50-years-old.*

- Involves important research questions that historical research has shown can be answered only with archaeological methods.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the physical setting, archaeology, and geology of the project site and surrounding area;

- Summary of surveys and research for the project site; and

- Summary of requirements and/or policies for archaeological resources that apply to the project. (See 3. Data, Resources, and References).

Project Impacts

If the project site is located in an area with known or potential presence of an archaeological resource, archaeological study area, or human remains having archaeological associations, reviews the description of the project and construction/operation activities. Assess the amount of grading, excavation, erosion and increased human activity (e.g., opening of previously closed lands, new access routes through sensitive areas, or through removal of vegetation) that would occur with project implementation.

Estimate the importance of archaeological resources likely to be contained on the site and the consequences that would likely result from the project. The significance of a site is measured by eligibility of the resource to the California Register of Historical Resources (California Register) or the National Register. Criteria for listing in the National Register include association with events, persons, history or prehistory or embodiment of distinctive characteristics. These criteria are based on context (theme, place, and time), integrity (location, design, setting, materials, workmanship, feeling), and association. The California Register uses the National Register criteria for listing resources significant at the national, state, or local level.

Consider compliance with guidelines and regulations such as the California Public Resources Code, Federal Antiquities Act (and subsequent federal legislation), Conservation

Element, and, for public projects, Standard Specifications for Public Works Construction. Assistance from the Information Center or a professional consultant may be required.

Most existing archaeological site records, information about what areas have already been surveyed, information concerning sites that have been tested or evaluated, and a library of excavation reports, are maintained as part of the State Inventory at the Information Center. The most immediate and complete source of updated site information is a "Quick Check" conducted by the Information Center. Under new directives, the Information Center is beginning to gather information about designated landmarks, historical sites, and historical maps, but this archive is not yet complete. The Information Center maintains a list of qualified archaeological consultants which is made available on request.

Determine whether construction or operational activities would disturb, damage, or degrade an important resource or its setting. Consider excavation and grading that directly impacts a resource; construction of permanent buildings that result in loss of access to buried resources; added human activity that may lead to scavenging or uncovering of resources; and increases in soil erosion. If the area has been disturbed through previous grading or excavation or installation of subsurface utilities, it is likely that resources would have been discovered at that time or have been destroyed.

Cumulative Impacts

Review the list of related projects and identify those in areas with known or the potential presence of archaeological resources. In the same manner as for project impacts, estimate the extent and importance of archaeological resources likely to be contained on the sites and the consequences that would likely result from these related projects. Determine the cumulative impact from the related projects combined with the proposed project. In particular, consider cumulative impacts to the population of resources which would remain and impacts to groupings (e.g., same camp, village, or settlement). Evaluate the destruction of resources exposed on the surface by considering the cumulative increase in human activity and soil erosion.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Cover archaeological sites with a layer of fill before building surface facilities such as tennis courts, parking lots, or gardens above them, when the following

conditions can be met:

  - The underlying site will not be seriously compacted;
  - The fill will not be chemically active;
  - The site is protected against natural deterioration; and
  - The site has been recorded and tested, and full parameters are known, i.e., horizontal extent, depth, age, cultural complexity, etc;

- Deed archaeological sites into permanent conservation easements;

- Undertake data recovery. Data recovery requires the preparation of an excavation plan[3] which sets forth the size of the sample to be acquired, the methods and techniques of excavation, methods and techniques of laboratory studies to be conducted, documentation procedures, and the place where all materials and documentation will be curated; and

- Conduct resource recovery. Some features or objects (rock rings, rock art, structural elements, architectural elements, etc.) can be documented in place, and then either relocated for public interpretation on the subject property, or removed to a museum or other institution for safekeeping and display.

3 *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format. Preservation Planning Bulletin No. 4 (a).*

3. DATA, RESOURCES, AND REFERENCES

Information Center: UCLA Institute of Archaeology, Fowler Museum of Cultural History, Los Angeles, California 90095; Telephone: (310) 825-4361.

California Office of Historic Preservation (OHP), P.O. Box 942896, Sacramento, California 94296-0001; Telephone: (916) 653-6624. Maintains many publications, including Instructions for Recording Historical Resources, 1995, and California Register: Proposed Guidelines for the Nomination of Properties, 1995.

The Cultural Heritage Commission (CHC), Los Angeles Conservancy, Natural History Museum of Los Angeles County, and the Community Redevelopment Agency (CRA) of the City of Los Angeles, have limited inventories of historical landmarks, but their data do not include archaeological sites and should be augmented by consultation with the Information Center.

CEQA, Appendix K, Archaeological Resources, contains standards for review and mitigation.

Archaeological Resource Management Report (ARMR): Recommended Contents and Format, OHP, 1989. Contains a useful checklist and guidelines for reviewing the adequacy of the preparation and organization of archaeological reports.

CEQA and Archaeological Resources, 1994. Governor's Office of Planning and Research (OPR).

Conservation Plan Element: Section II-3, Preservation of Archaeological Sites and Paleontological Findings, 2001.

City of Los Angeles -- Archaeological Resources Information:

In a comprehensive review of the City's archaeological resources completed in August 1993, the Information Center, which assigns site numbers and curates site records, estimated that only two percent of the City's approximately 800 square miles has been surveyed for archaeological resources. At that time, however, 196 prehistoric sites, 50 historical sites, and 10 undefined isolated occurrences had already been recorded. Of these, at least 26 sites were known to contain human burials, and 10 sites had both prehistoric and historic components. The prehistoric sites include named Native American villages, buried deposits and features, pit houses, occupied caves and rockshelters, bedrock mortars, camp sites, cemeteries and rock art. Historical sites were distinctly underrepresented in the records, since standing historic structures have not been regularly assigned archaeological site numbers or assessed for the potential existence of associated buried features until

recent state guidelines advised that this should be done. The historical sites already recorded are as varied as pre-1830s limekilns, stage stops, mission structures and dams, a log cabin, many adobes, quarries, oil exploration and development features, a submerged ship, a Civil War asphalt mine, aspects of the Pueblo and early water canal features, Chinatown, and a Japanese labor camp.

Selected Legislation

Federal

Federal Antiquities Act of 1906 (P. L. 59-209; 16 U.S.C. 431-433)

Basis for all following legislation. The government, acting for the people, should protect archaeological and historical sites and "any object of antiquity," and preserve them for public availability. Forbids disturbance of said objects of antiquity on federal lands without a permit issued by the responsible agency. Establishes criminal sanctions for unauthorized use or destruction of antiquities.

Historic Sites Act of 1935 (P. L. 74-292, 16 U.S.C. 461-467, 49 Stat. 666)

Declares, "it to be national policy to preserve for public use historic sites, properties, buildings, and objects of national significance." Gives the National Park Service (NPS) (through the Secretary of the Interior) broad powers to execute this policy, including criminal sanctions, on both federal and non-federal lands. It also sets up an advisory board to aid the Secretary of the Interior in implementing this Act.

Reservoir Salvage Act of 1960 (P. L. 86-523; 74 Stat. 220)

Requires Secretary of the Interior to institute an archaeological salvage program in connection with federally funded reservoir programs requiring the responsible agencies to comply with this program.

Historic Preservation Act of 1966 (P. L. 89-665; 80 Stat. 915)

Expansion of the National Register to include sites of not only national, but local significance; authorizes program of matching funds for their acquisition and preservation; and establishes the Advisory Council on Historic Preservation to help implement and monitor this Act.

National Environmental Policy Act (NEPA) of 1969 (P. L. 91-190; 83 Stat. 852)

Requires that cultural resources be considered in assessing the environmental impact of proposed federal projects.

Executive Order 11593 of May 13, 1971: "Protection and Enhancement of the Cultural Environment" Richard M. Nixon (36 F.R. 8921)

States that the federal government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment; specifies that all federal agencies shall institute inventories for historic and archaeological sites, and shall provide for their protection as specified by P. L. 89-665.

Archaeological and Historical Preservation Act of 1974 (P. L. 93-291, U.S.C. 469-469c; 88 Stat. 174)

Amends the Reservoir Salvage Act of 1960 to include all federal programs which may impact cultural resources; authorizes expenditure of program funds for salvage projects; and requires Secretary of the Interior to report annually to Congress on the effectiveness of the program.

Federal Land Policy and Management Act of 1976 (P. L. 94-579; 90 Stat. 2743)

Directs the Bureau of Land Management (BLM) to manage lands on the basis of multiple use in a manner that will protect the quality of scientific, historical, and archaeological values. It provides the guidelines for the acquisition and management of these resources.

American Indian Religious Freedom Act of 1978 (P. L. 95-341; 92 Stat. 469)

States that it is the policy of the United States to protect and preserve for Native Americans their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian including access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.

Native American Heritage Bill - Chapters 1492 (1984) and 370 (1992)

Policy to protect Native American remains and maintain integrity of their archaeological database; and to establish guidelines for recordation of reburial of human remains and grave goods.

Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) - (P. L. 101-601; 104 Stat. 3048, 25 U.S.C. 3001)

Conveys to Native Americans, of demonstrated lineal descendence, human remains and funerary or religious items that are held by federal agencies and federally-supported museums, or that have been recovered from federal lands. Also makes the sale or purchase of Native American human remains, "whether or not they derive from federal or Indian lands, illegal."

State

California Public Resources Code

Section 5097.5 (Stats. 1965, C. 11362792)

Defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historical, or paleontological resources located on public lands. Prohibits the knowing destruction of objects of antiquity without a permit (expressed permission) on public lands, and provides for criminal sanctions. Amended in 1987 to require consultation with the California Native American Heritage Commission whenever Native American graves are found. Violations for taking or possessing remains or artifacts are felonies.

Chapter 1332, Section 5097.9

Establishes the California Native American Heritage Commission to make recommendations to encourage private property owners to protect and preserve sacred places in a natural state and to allow appropriate access to Native Americans for ceremonial or spiritual activities. The Commission is authorized to assist Native Americans in obtaining appropriate access to sacred places on public lands, and to aid state agencies in any negotiations with federal agencies for the protection of Native American sacred places on federally administered lands in California.

Section 5097.98-99 (Stats. 1982, C. 1492. Amended 1987)

Requires that the Governor's California Native American Heritage Commission be consulted whenever Native American graves are found. Makes it illegal to take or possess remains or artifacts taken from Native American graves. Does not apply to materials taken before 1984. Violations occurring after January 1, 1988, become felonies.

CEQA (P. R. C. Section 21001)

Requires that cultural resources be considered in assessing the environmental impact of proposed projects.

California Register (1993, AB 2881, Chapter 1075)

Amends the Public Resources Code as it affects historical resources. Purpose is to develop and maintain, "an authoritative guide to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Sites, places, or objects which are eligible to the National Register (50-years-old or more) are automatically included in the California Register.

California Penal Code, Title 14, Part 1, Section 622.5

Provides that any person, not the owner thereof, who willingly destroys or injures objects of archaeological or historical value, whether on public or private land, is guilty of a misdemeanor.

California Administrative Code, Title 14, Section 4307

States, "no person shall remove, injure, disfigure, deface or destroy any object of paleontological, archaeological, or historical interest or value."

Local

Standard Specifications for Public Works Construction, Section 6-3.2

Requires that grading, excavation, or other ground disturbing activities for a public project be halted in the area of a paleontological or archaeological find, until such time as a resource expert can review the find, determine its significance, and if required, determine appropriate mitigation measures.

D.3. HISTORICAL RESOURCES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

V.a): Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

B. Introduction

Historical resources are found throughout the City of Los Angeles and are reminders of the City's historical and cultural development. Resources include, for example, buildings, structures, street lighting systems, spaces, sites, or components thereof. Uses include residential, non-residential (e.g., commercial, industrial, institutional), and public facilities. Resources may be important individually or as part of a district or grouping of complementary resources.

Significant historical resources include those designated or eligible for designation in the National Register of Historic Places (National Register); the California Register of Historical Resources (California Register) or other state program; as a City of Los Angeles Historic Cultural Monument; or in a City of Los Angeles Historic Preservation Overlay Zone (HPOZ). Historical resources may also include resources listed in the State Historic resources Inventory as significant at the local level or higher and those evaluated as potentially significant in a survey or other professional evaluation.

Agencies with jurisdiction over historical resources include the National Park Service (NPS), the California Office of Historic Preservation (OHP), and the City of Los Angeles (see Exhibits D.3-1 to D.3-4 for additional information). The NPS maintains the National Register. Criteria for listing in the National Register include association with events, persons, history, or prehistory or embodiment of distinctive characteristics. These criteria are based on context (theme, place, and time), integrity (location, design, setting, materials, workmanship, feeling, and association), and, if a recent resource, exceptional importance.

OHP implements state preservation law and is responsible for the California Register. The California Register uses the National Register criteria for listing resources significant at the national, state, or local level.

Within the City of Los Angeles, the Cultural Heritage Commission (CHC) is responsible for designating resources as Historic-Cultural Monuments. Monuments, which must meet criteria similar to those for the National Register, are designated and protected. The City assigns an HPOZ to an area that meets certain criteria in order to preserve historical resources and ensure that new development is compatible with the area. Projects within an HPOZ are monitored by the City Planning Department in order to maintain the historic integrity of the area.

Projects that affect historical resources, such as by demolition, relocation, rehabilitation, conversion, alteration, or construction, may have a significant impact. The stock of significant historical resources cannot be replenished and is finite. Thus, the permanent loss of a resource is irreversible. While, in some circumstances, the resource's integrity can be maintained after rehabilitation, conversion, alteration, or construction, insensitive work also may result in a significant impact.

C. Screening Criteria

- Are there historical resources on the project site or in the vicinity, which would be adversely impacted by the project through, for example, demolition, construction, conversion, rehabilitation, relocation, or alteration?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Historical Resources, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Historical Resources from the proposed project.

D. Evaluation of Screening Criteria

Evaluate the historical significance of the resource by considering the following questions. In general, a "yes" response to any of the questions indicates an historical resource may be involved.

1. Has the site been coded by the Department of Building and Safety with a Zoning Instruction (ZI) number in the 145 series (which indicates prior identification of the property as historic)?

2. Has the resource been designated by the City of Los Angeles as an Historic-Cultural

Monument or as a contributor to an HPOZ?

3. Is the resource included within the California Register maintained by the OHP and ranked with an evaluation code of 1 (National Register listed resource) or 2 (determined eligible for listing in the National Register)?

4. Has the resource been classified as historic in an historical resources survey conducted as part of the updating of the Community Plan, the adoption of a redevelopment area or other planning project?

5. Is the resource subject to other federal, state, or local preservation guidelines or restrictions?

6. Does the resource have known associations with an architect, master builder or person or event important in history such that the resource may be of exceptional importance?

7. Is the resource over 50-years-old and a substantially intact example of an architectural style significant in Los Angeles? (Age is calculated from an original building permit or the Land Use Planning and Mapping System (LUPAMS) maintained by the City Planning Department. See Exhibit D.3-5 for significant architectural styles.)

Review the description of the proposed project and determine the type of activities proposed during site preparation, construction, and operation. Projects that affect historical resources, such as demolition, relocation, rehabilitation, conversion, alteration, or construction, may have a significant impact if the project results in a substantial adverse change which would impair historical significance. Insensitive rehabilitation, conversion, alteration or construction may also result in a significant impact. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on historical resources if it would result in a substantial adverse change in the significance of an historical resource.

A substantial adverse change in significance occurs if the project involves:

- Demolition of a significant resource;
- Relocation that does not maintain the integrity and significance of a significant resource;

- Conversion, rehabilitation, or alteration of a significant resource which does not conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings; or

- Construction that reduces the integrity or significance of important resources on the site or in the vicinity.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Architectural description and condition of the resource(s);

- Listing, designation, or determination from city, state, or federal agency (e.g., listed or determined eligible for the National Register or California Register; designated as a City of Los Angeles Historic-Cultural Monument; included within an HPOZ as a contributor);

- Construction history (date of construction and major alterations, architect, builder and owner);

- Significance of owner, architect, builder, or architectural style in history; and

- Context of resource (population, district, grouping, etc.).

Project Impacts

Conduct an evaluation of the historical resource to determine its significance (based on listing or eligibility for listing). Field surveys and research, in addition to the review of the Initial Study screening process may be necessary to determine whether a resource is listed or eligible for listing. If a resource is not listed on the National Register, California Register, City of Los Angeles Historic-Cultural Monuments, or, if applicable, HPOZ, use the appropriate criteria for listing to determine whether it is eligible. Assistance is available from the agencies with jurisdiction over such resources and from the information included in 3. Data, Resources, and References. A professional consultant may be required.

Review the description of the proposed project and consider the potential impacts. When the demolition of an historical resource is proposed, weigh the impact given the significance of the resource and the population of similar resources which would remain. If the resource to be demolished is part of a district or grouping, also assess the impact to the listing or eligibility of the district or grouping.

When a significant historical resource is relocated, the ability to retain listing or eligibility depends upon individual circumstances. For example, relocation of a resource whose most significant feature is setting or position on a parcel would be more detrimental than if the key element is the architectural style and structural features. The style and feature would relocate with the building; however, the setting would not. Also, consider changes in the context (e.g., removal from a district).

Evaluate conversion, rehabilitation, or alteration to a significant historical resource in terms of the extent of the work and the impact on the listing or eligibility of the resource. Also, determine whether the work meets the standards for rehabilitation established by the Secretary of the Interior and the OHP (see Exhibits D.3-1 and D.3-4). Consider whether the conversion, rehabilitation, or alteration work would be compatible with the massing, size, scale, and architectural features of the resource. Projects more sensitive to historic integrity include minor repairs or temporary work that does not permanently affect significant elements and character.

If new construction is proposed, give key consideration to compatibility with the massing, size, scale, and architectural features of the historical resource(s). Determine the impacts to the setting and character of the area as well as whether the new construction might indirectly reduce the viability of a district or grouping of historical resources.

Cumulative Impacts

Review the list of related projects and identify those that:

- Are located within the same National Register district, HPOZ, general area, neighborhood, or community; or

- Involve resources with the same historical context or use (e.g., by the same architect or in the same period).

Determine the impact of the related projects. Consider the cumulative impacts of the proposed and related projects to the population of resources which would remain, and to districts and groupings.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Prepare a preservation plan or element which provides guidelines to ensure that the project conforms to the standards for rehabilitation established by the Secretary of the Interior and the OHP;

- Require new construction to be compatible with historical resources on the site and in the vicinity (e.g., mass, height, materials, setback, retention of mature landscaping);

- Require the project sponsor to relocate the historical resource or offer it for relocation by another individual or organization (provided that eligibility will be maintained following the relocation);

- Require the project sponsor to adaptively reuse the historical resource or incorporate it into the project;

- Undertake documentation according to the requirements of the Historic American Building Survey (HABS) such as large format photography, measured drawings and written narrative. Make available copies of this documentation to the Los Angeles Public Library (LAPL) and local preservation organizations and historical societies; and

- Require the project sponsor to allow local preservation organizations and historical societies to document the resource and/or remove significant historic elements for archives.

3. DATA, RESOURCES, AND REFERENCES

NPS, Pacific Great Basin Support Office, 1111 Jackson St., Suite 700, Oakland, CA. 94607, Telephone: (510) 817-1396. NPS maintains the National Register.

OHP, P.O. Box 942896, Sacramento, California 94296-0001; Telephone: (916) 653-6624. OHP duties include: administration of National Register, California Register, State Historical Landmarks and State Points of Historical Interest programs, and State Historical resources Inventory; Section 106 process (National Historic Preservation Act); and Responsible Agency for CEQA review.

CHC and the Cultural Affairs Department, 433 South Spring Street, 10th Floor, Los Angeles, California 90013; Telephone: INFO Desk (213) 473-7700. Responsible for designation and monitoring of City of Los Angeles Historic-Cultural Monuments.

Department of Building and Safety. Customer Call Center (888)-LA4-BUILD or outside Los Angeles County: (213) 977-6941, 201 N. Figueroa Street, Los Angeles, CA 90012. Maintains ZI codes for property parcels. The ZI 145 series is currently used for historic buildings.

City Planning Department; Telephone: (213) 482-7077; Bureau of Engineering; Telephone: (213) 847-8704; and Community Redevelopment Agency (CRA) of the City of Los Angeles; Telephone: (213) 977-1600, maintain historical resources surveys.

Bureau of Street Lighting; 600 S. Spring St. 14th Floor, Los Angeles, CA 90013. Telephone: (213) 847-6400, is responsible for historic street lights in the City.

Los Angeles Conservancy, a regional non-profit preservation organization; 523 W. 6th St. Los Angeles, CA 90014, Telephone: (213) 623-2489. This organization's activities include:

- Historical resources surveys;
- Information regarding how to obtain the results of surveys; and
- Information regarding the significance of particular architects and buildings.

Recording Historic Structures, HABS/Historic American Engineering Record, John A. Burns, ed, Washington: American Institute of Architects Press, 1989.

References to other sources are included within HABS/Historic American Engineering Record, An Annotated Bibliography, compiled by James C. Massey, et al, NPS, 1992.

Exhibit D.3-1
NATIONAL CRITERIA AND STANDARDS

National Register

To be eligible for listing in the National Register, a resource must possess significance in American history and culture, architecture, or archaeology. These criteria are the Register's standards for determining the significance of properties. Buildings, sites, districts, structures, or objects of potential significance must possess integrity of location, design, setting, and materials and meet one or more of four established criteria:

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Yield, or may be likely to yield, information important in prehistory or history.

Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic material or alteration of features and spaces shall be avoided.

3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired significance in their own right shall be retained and preserved.

5. Distinctive features, finishes and construction techniques or examples of skilled craftsmanship, which characterize an historic property, shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive historic feature, the new feature shall match

the old in design, color, texture, and other visual qualities, and where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Exhibit D.3-2
CALIFORNIA REGISTER CRITERIA AND EVALUATION SYSTEM

The evaluation instructions and classification system proscribed by OHP in its "Instructions for Completing the California Historical resources Inventory Form, June 1990" provide the following general categories of evaluation. Categories 1 through 4 involve various levels of National Register eligibility. The California Register may include surveyed resources ranked from 1 - 5.

1. Listed in the National Register.

2. Determined eligible for listing in the National Register in a formal process involving federal agencies.

3. Appears eligible for listing in the National Register in the judgment of the persons completing or reviewing the form.

4. May become eligible for listing in the National Register.

5. Ineligible for the National Register, but of local interest.

6. None of the above.

7. Undetermined.

Resources eligible to be nominated for listing in the California Register include:

- Individual historical resources;
- Historical resources contributing to the significance of an historic district under criteria adopted by the Commission;
- Historical resources identified as significant in historical resource surveys, if the survey meets the criteria listed in California Public Resources Code . 5024.1(g); and
- Locally designated resources if the criteria for local designation have been determined by the Commission to be consistent with California Register criteria adopted by the Commission.

Exhibit D.3-3
CITY OF LOS ANGELES CRITERIA

City of Los Angeles Historic-Cultural Monument Designation

In the City of Los Angeles, resources may be designated as Historic-Cultural Monuments under Sections 22.120, et seq., of the Los Angeles Municipal Code (LAMC). An historical or cultural monument is defined as:

> "any site (including significant trees or other plant life located thereon), building or structure of particular historic or cultural significance to the City of Los Angeles, such as historic structures or sites in which the broad cultural, political, economic or social history of the nation, state or community is reflected or exemplified, or which are identified with historic personages or with important events in the main currents of national, state or local history, or which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period style or method of construction, or a notable work of a master builder, designer, or architect whose individual genius influenced his age."

City of Los Angeles Historic Preservation Overlay Zones (HPOZs)

HPOZs are essentially locally designated historic districts or groupings of historical resources. Under the HPOZ ordinance (LAMC Section 12.20.3.), to be significant, structures, natural features or sites within the involved area or the area as a whole shall meet one or more of the following criteria:

(A) has substantial value as part of the development, heritage or cultural characteristics of, or is associated with the life of a person important in the history of the city, state or nation;

(B) is associated with an event that has made a substantial contribution to the broad patterns of our history;

(C) is constructed in a distinctive architectural style characteristic of an era of history;

(D) embodies those distinguishing characteristics of an architectural type or engineering specimen;

(E) is the work of an architect or designer who has substantially influenced the development of the City;

(F) contains elements of design, details, materials or craftsmanship which represent an important innovation;

(G) is part of or related to a square, park or other distinctive area and should be developed or preserved according to a plan based on a historic, cultural, architectural or aesthetic motif;

(H) owing to its unique location or singular physical characteristics, represents an established feature of the neighborhood, community or City; or

(I) retaining the structure would help preserve and protect an historic place or area of historic interest in the City.

Exhibit D.3-4
STATE OFFICE OF HISTORIC PRESERVATION (OHP)
LIST OF NON-ADVERSE REPAIRS AND IMPROVEMENTS

According to the OHP and the Advisory Council on Historic Preservation, the following work does not usually involve adverse effect on historical resources:

1. Electrical work, limited to upgrading or in-kind replacement;

2. Plumbing work, limited to upgrading or in-kind replacement, with the exception of historic fixtures which shall be repaired when possible;

3. Installation of mechanical equipment, which does not affect the exterior of the building or require installation of new ductwork throughout the interior;

4. Repainting of existing painted surfaces if destructive surface preparation treatments are not used, including, but not limited to, water blasting, sandblasting, and chemical removal;

5. In-kind repair/partial replacement of porches, cornices, exterior siding, doors, balustrades, stairs, or other trim;

6. In-kind replacement of deteriorated windows;

7. Replacement of windowpanes in-kind or with double or triple glazing so long as glazing is clear and not colored and replacement does not alter existing window material and form;

8. Caulking and weather stripping with compatibly colored materials;

9. In-kind repair/replacement of roof materials;

10. Installation of insulation, with the exception of urea formaldehyde foam insulation or any thermal insulation with a water content into wall cavities, provided that decorative interior plaster or woodwork or exterior siding is not altered by this work item;

11. Installation of fire or smoke detectors;

12. Installation of security devices, including deadbolts, door locks, window latches, and door peepholes, and the installation of electronic security systems;

13. In-kind repair/replacement of driveway or walkways;

14. In-kind repair/replacement of fencing;

15. Floor refinishing;

16. In-kind repair/replacement of floors;

17. Installation of grab bars and minor interior modifications for handicap accessibility;

18. In-kind repair/replacement of signs and awnings; and

19. In-kind repair/replacement of interior stairs.

Exhibit D.3-5
ARCHITECTURAL STYLES AND PERIODS

The following architectural styles and related periods of significance are historically important in Los Angeles:

Adobe	1800-1870
Monterey	1840-1870
Greek Revival	1825-1860
Classical Revival	1840-1870
Italianate	1870-1900
Gothic Revival	1870-1900
Eastlake	1870-1900
Second Empire	1870-1885
Queen Anne	1880-1905
Chateauesque	1890-1915
American Foursquare	1894-1908
Turn of the Century	1895-1905
Beaux Arts	1895-1930
Mission Revival	1890-1915
Craftsman	1895-1925
Pueblo Revival	1900-1930
Commercial Vernacular	1910-1925
Spanish Colonial Revival	1915-1930
Modernism	1920-1940
Art Deco	1920-1940
Monterey Revival	1925-1940
Colonial Revival	1930-1945
Tudor Revival	1930-1945
Streamline Moderne	1935-1945
PWA Moderne	1930-1940
California Ranch House	1935-1990
Corporate International	1945-1990

Source: Los Angeles Conservancy, 1995.

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Queen Anne	1880-1905
Chateauesque	1890-1915
American Foursquare	1894-1908
Turn of the Century	1895-1905
Beaux Arts	1895-1930
Mission Revival	1890-1915
Craftsman	1895-1925
Pueblo Revival	1900-1930
Commercial Vernacular	1910-1925
Spanish Colonial Revival	1915-1930
Modernism	1920-1940
Art Deco	1920-1940
Monterey Revival	1925-1940
Colonial Revival	1930-1945
Tudor Revival	1930-1945
Streamline Moderne	1935-1945
PWA Moderne	1930-1940
California Ranch House	1935-1990
Corporate International	1945-1990

Source: Los Angeles Conservancy, 1995.

E. GEOLOGY

E.1. GEOLOGIC HAZARDS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VI.a.i): Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

VI.a.ii): Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

VI.a.iii): Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

VI.a.iv): Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

VI.c): Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

VIII.j): Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

B. Introduction

Geologic processes that result in geologic hazards include: surface rupture, ground shaking, ground failure, tsunamis, seiches, landslides, mudflows, and subsidence of the land.[1] Because the region is generally considered to be geologically active, most projects will be exposed to some risk from geologic hazards, such as earthquakes. Thus, significant geologic impacts exceed the typical risk of hazard for the region.

[1] *Sediment and erosion are addressed in E.2. SEDIMENTATION AND EROSION.*

Surface ruptures are the displacement and cracking of the ground surface along a fault trace. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a narrow zone along the fault. The effects of ground shaking, the actual trembling or jerking motion of the ground during an earthquake, can vary widely across an area and depend on such factors as earthquake intensity and fault mechanism, duration of shaking, soil conditions, type of building, and other factors. Ground failure results from the cyclical ground acceleration generated during an earthquake, producing landslides, ground cracking, subsidence and differential settlement. Liquefaction is a form of earthquake-induced ground failure that occurs primarily in relatively shallow, loose, granular, water-saturated soils.

Tsunamis are large ocean waves generated by large-scale, short-duration submarine earthquakes. Tsunami waves are capable of traveling great distances (over 1,000 miles) and damaging low-lying coastal regions. Seiches are waves formed from oscillations in enclosed or restricted bodies of water (i.e., harbors, lakes). Seiches can cause water to overtop reservoirs and lakes.

Mudflows and landslides are the downslope movement of soil and/or rock under the influence of gravity. Mudflow and landslide processes are influenced by factors such as thickness of soil or fill over bedrock, steepness and height of slope, physical properties of the fill, soil or bedrock materials and moisture content. These factors may increase the effective force of gravity upon a slope, decrease the ability of a slope to resist gravitational influence or a combination of the two, which can lead to mudflows and landslides.

Subsidence is a localized mass movement that involves the gradual downward settling or sinking of the Earth's surface, resulting from the extraction of mineral resources, subsurface oil, groundwater, or other subsurface liquids, such as natural gas. Settlement is the gradual downward movement of a structure due to compression of the soil below the foundation. The principal cause of subsidence is the extraction of subsurface liquids, whereas settlement results from the compression of soils due to the weight of the structure or by surcharging following the placement of fill.

Construction is regulated by the Los Angeles Building Code, Sections 91.000 through 91.7016 of the Los Angeles Municipal Code (LAMC). The Los Angeles Building Code provides requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from geological hazards. Necessary permits, plan checks, and inspections are also specified.

C. Screening Criteria

- Is the project located in an area susceptible to unusual geologic hazards considering the following:

  - Designation on official maps and databases;

  - Past episodes on-site or in the surrounding area; and

  - Physical properties of the site, including the topography, soil or underlying bedrock (including thickness of bedrock and soil compressibility, strength, moisture content, and distribution)?

- Would the project include any of the following:

  - Placement of structures designed for regular occupancy or infrastructure on fill; or

  - Active or planned extraction (removal) of mineral resources, groundwater, oil, or natural gas on-site or in the surrounding area?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Geologic Hazards, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant Geologic Hazard impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. To assist in determining whether the project is located in an area of known or suspected geologic hazard, consult the following maps and databases:

- Environmental and Public Facilities Maps, including:

  - Alquist-Priolo Special Study Zones and Fault Rupture Study Areas,
  - Inundation and Tsunami Hazard Areas,

- Areas Susceptible to Liquefaction,
- Landslide Inventory and Hillside Areas,
- Areas Containing Significant Mineral Deposits, and
- Oil Field and Oil Drilling Areas;

- ZIMAS (Zone Information & Map Access System): http://zimas.lacity.org

- Navigate LA: http://navigatela.lacity.org/

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for tsunami hazards

Using the above information, field research, published reports, or other appropriate maps or studies, as available, assess whether the project is located in an area susceptible to geologic hazards. Consider past episodes on site or in the surrounding area; steepness/height of slopes; physical properties of the soil; the presence of fill; or extraction of resources below the surface. If necessary, consult with the Bureau of Engineering or Department of Building and Safety.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant geologic hazard impact if it would cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the physical setting and geology, such as the topography, steepness and height of slopes or cliffs, physical properties of the soil and underlying bedrock, proximity to bodies of water, presence of fill, and extraction or mining activities;

- Identification of the geologic processes that may result in geologic hazards on the project site or in the surrounding area; and

- Summary of requirements and/or policies for geologic hazards that apply to the project site.

Project Impacts

Using the information from the Evaluation of Screening Criteria and the description of the proposed project, project site, and surrounding area, determine the geologic hazards that the project would cause or accelerate. Substantial damage to structures or infrastructure and exposure of people to substantial risk of injury is related to the probable frequency of potential geologic hazards (i.e., likely number of events per year or decade) and the probable severity of the consequences to people, property, or infrastructure that may result (i.e., injuries to people and the valuation of property damage). Consider that the geologically active nature of the region means that most projects will be exposed to geologic hazards, such as seismic activity. Significant impacts, as indicated by the significance threshold, exceed the typical risk of hazard for the region. Consider the type of uses that would be included in the project, the characteristics of the occupants of the project, and the change in risk of hazard or damage that would result from the project.

Cumulative Impacts

Review the description of the related projects. Identify those with elements, activities, or operations which would cause or accelerate geologic hazards that would extend off-site. Consider the impact from the combined effect of the related and proposed projects, in the same manner as described above for Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Use interim precautionary steps during construction; and
- Use design and structural features that exceed the requirements of the Los Angeles Building Code and Planning and Zoning Code. (Chapter 1 of the Municipal Code).

3. DATA, RESOURCES, AND REFERENCES

Department of Building and Safety, 201 North Figueroa Street, 4th Floor, Construction Services Center, Los Angeles, California 90012; Telephone: (213) 833-8389.

Bureau of Engineering, Geotechnical Engineering Group, 650 S. Spring St., Suite 495, Los Angeles, CA 90014. (213) 847-4010.

Bureau of Engineering, Structural Engineering Group, 650 S. Spring St., Suite 400, Los Angeles, CA. 90014. (213) 847-8774.

City Planning Department, Environmental and Public Facilities Maps (1996):

- Alquist-Priolo Special Study Zones and Fault Rupture Areas illustrates the approximate locations of Alquist-Priolo Special Study Zones and fault rupture areas;
- Inundation and Tsunami Hazard Areas;
- Areas Susceptible to Liquefaction;
- Landslide Inventory and Hillside Areas illustrates the approximate locations of hillside areas, areas with known or probable bedrock landslides, and areas of surficial landslides larger than five acres;
- Areas Containing Significant Mineral Deposits identifies areas within a Mineral Resource Zone (MRZ) 2. Projects within this designation may experience subsidence/settlement where mineral extraction has occurred or is planned; and
- Oil Field and Oil Drilling Areas show areas known to have supported at least six months of oil production, indicating an increased risk for subsidence.
- ZIMAS (Zone Information & Map Access System) http://zimas.lacity.org
- Navigate LA http://navigatela.lacity.org/
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps.

Planning and Zoning code is available from the City Planning Department's Central Publications Unit at 200 N. Spring St., 5th Floor, Los Angeles, CA., 90012; Online at: http://amlegal.com/los_angeles_ca/.

Selected Legislation

Federal

Flood Insurance Rate Maps (FIRMs) (10 CFR Section 1022.11, 43 CFR Section 64.3)

FIRMs are prepared by the Federal Insurance Administration of the Department of Housing and Urban Development (HUD) after a risk study for a community has been completed and the risk premium rates have been established. The maps indicate the risk premium zones applicable in the community and when those rates are effective. They are used in making flood plain determinations and to determine if a proposed action is located in the base or critical action flood plain, as appropriate.

State

Alquist-Priolo Earthquake Fault Zoning Act (PRC Section 2621.5)

Provides policies and criteria to assist cities, counties, and state agencies in the development of structures for human occupancy across the trace of active faults. Intended to provide the citizens of the state with increased safety and to minimize the loss of life during and immediately following earthquakes by facilitating seismic retrofitting to strengthen buildings, including historical buildings, against ground shaking.

E.2. SEDIMENTATION AND EROSION

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

VI.b): Would the project result in substantial soil erosion or the loss of topsoil?

B. Introduction

Projects that change the natural ground surface may expose earth materials, which are subject to erosion from both wind and water forces. Impacts are related to the amount of land exposed to wind and water forces and the characteristics of the site. Such erosion affects not only the integrity of the ground surface, but also results in the transport and deposition of dust in the surrounding locale and/or sediments in downstream water bodies. Impacts of sediment runoff on water quality are addressed in G.2. SURFACE WATER QUALITY.

Construction is regulated by the Los Angeles Building Code (Sections 91.7000 through 91.7016 of the Los Angeles Municipal Code (LAMC)). The Los Angeles Building Code provides requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from sedimentation and erosion. Necessary permits, plan checks, and inspections are specified. Also included in these requirements is the provision that any grading work in excess of 200 cubic yards (cu.yd.) that will occur between November 1 and April 15 (the "rainy season") must include an erosion control system approved by the Department of Building and Safety.

Under the National Pollutant Discharge Elimination System (NPDES), the State Water Resources Control Board has issued two general stormwater discharge permits for Los Angeles County to cover industrial and construction activities. The permits are required for specific industry types based on standard industrial classification and for construction activities on five acres or more. The Regional Water Quality Control Board (RWQCB) oversees implementation and enforcement of the general permits, including Waste Discharge Requirements (WDR). The Public Works Department, Bureau of Engineering, Stormwater Management Division, is the agency responsible for overseeing implementation of permit responsibilities for the City. Presently, under the General

Construction Stormwater Permit, projects greater than five acres are required to incorporate, to the maximum extent possible, permanent or post-construction best management practices (BMPs) in project planning and design.

C. Screening Criteria

- Would the project result in grading, clearing or excavation of more than 20,000 cu.yd. on a slope of ten percent or more?

- Does the project include grading, clearing, or excavation activities in an area of known or suspected erosion hazard (based upon designation on official maps and databases)?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Sedimentation and Erosion, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant Sedimentation and Erosion impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. To determine if the project is located in an area of known or suspected erosion hazard, consult the following maps and databases:

- Environmental and Public Facilities Maps, Landslide Inventory and Hillside Areas; and

- Zimas (Zone Information & Map Access System) http://zimas.lacity.org/

- Navagate LA http://navagatela.lacity.org

Indications of high and very high levels of erosion hazard indicate known or suspected erosion hazard. Determine whether the project includes grading, clearing or excavation activities that could result in sedimentation and erosion impacts. If necessary, use field research, published reports, or other appropriate studies, as available, or consult with the Bureau of Engineering or Department of Building and Safety. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have significant sedimentation or erosion impacts if it would:

- Constitute a geologic hazard to other properties by causing or accelerating instability from erosion; or

- Accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition which would not be contained or controlled on-site.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the physical setting and geology, such as the topography of the site, steepness and height of slopes or cliffs, characteristics of the soil, and type and extent of vegetation;

- Identification of the erosion processes that may result in geologic hazards on the project site or in the surrounding area; and

- Summary of requirements and/or policies for erosion hazards that apply to project site.

Project Impacts

Using the information from the Evaluation of Screening Criteria and the description of the proposed project, project site, and surrounding area, determine the erosion hazards that the project would cause or accelerate. Assess the probable frequency of potential geologic hazards (i.e., likely number of events per year or decade) and the probable severity of the consequences to people, property, or infrastructure that may result (i.e., injuries to people and the valuation of property damage). Consider the type of uses that would be included in the project, the characteristics of the occupants of the project, and the change in risk of

hazard or damage that would result from the project. Determine whether sediment runoff would be contained or controlled on-site. Exposure between November 1 and April 15 (the "rainy season") and removal of vegetative cover are more likely to result in erosion and sedimentation. Conditions such as steep slopes and cliffs or impermeable soil can also exacerbate runoff.

Cumulative Impacts

Review the description of the related projects. Identify those with activities or operations which would cause or accelerate erosion hazards. Assess the probable frequency of potential geologic hazards and the probable severity of the consequences to people, property, or infrastructure that may result from the combined effect of the proposed and related projects, in the same manner as described above for Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Establish an erosion control plan prior to construction;

- Revegetate cleared areas as soon as feasible after grading or construction with temporary seeding, permanent seeding, mulching, and stabilization, vegetative buffer strips, protection of trees, or other soil stabilization practices;

- Reduce sedimentation by using detention basins, straw bale dikes, silt fences, earth dikes, brush barriers, velocity dissipation devices, drainage swales, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, temporary sediment basins, or other controls; and

- Incorporate permeable paving materials that permit water penetration.

3. DATA, RESOURCES, AND REFERENCES

Department of Building and Safety, 201 North Figueroa Street, 3rd Floor, Construction Services Center, Los Angeles, California 90012; Telephone: (888) 524-2845. Technical requirements for grading activities and grading plan submittals are contained in the Los Angeles Building Code, and are outlined in form B-164 of the Department of Building and Safety.

Environmental and Public Facilities Maps (1996) Landslide Inventory and Hillside Areas illustrates the approximate locations of hillside areas, areas of known or probable bedrock landslides, and areas of surficial landslides larger than five acres.

General Permit No. CA 5000002 - WDR for Stormwater Runoff Associated with Construction Activities (Requirements of the NPDES).

Navigate LA available online at: http://navagate.la.lacity.org.

Zone Information & Map Access System, (ZIMAS) available online at: http://zimas.lacity.org

See also E.1. GEOLOGIC HAZARDS.

E.3. LANDFORM ALTERATION

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

I.b): Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

V.c): Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

B. Introduction

This section addresses the potential effects of a project on distinct and prominent geologic or physical features, such as hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds and wetlands. While some of the environmental impacts surrounding these resources are evaluated in other sections of this document (such as A.1. AESTHETICS), this section directly addresses the alteration of these landforms, which primarily occurs through grading and other earth moving activities. These activities may alter landforms in various ways, including lowering ridgelines, covering wetlands, filling canyons, or removing rock outcrops.

All grading in Los Angeles is regulated by the Los Angeles Building Code (Sections 91.7000 through 91.7016, of the Los Angeles Municipal Code (LAMC)), which includes requirements for excavations, fills, and the planting and irrigation of graded slopes. Grading may also be regulated by policies, which apply to specific geographic areas, such as those, which may be imposed by a specific plan, a local coastal program or the California Coastal Act, the Community Plan, or the General Plan and its elements.

Examples of specific policies that support the protection of distinct and prominent landforms include:

- Sections 30251 and 30253 of the California Coastal Act which require that activities within the coastal zone (generally includes land and water 1000 yards inland of the mean high tide line) minimize alteration of natural landforms and do not create or contribute to erosion, geologic instability, etc., in coastal areas;

- Several Community Plans encourage "cluster type" development in hillside areas in order to minimize the amount of grading and alteration of the natural landform; and

- The Mulholland Scenic Parkway Specific Plan includes policies, which regulate grading activities within the specific plan area. These policies are intended to minimize grading, preserve significant ridgelines, and minimize alteration of the natural landform characteristics of the Santa Monica Mountains through the use of grading standards set forth in the City Planning Department's Landform Grading Manual.

C. Screening Criteria

- Does the project site contain any distinct and prominent geologic or physical features that may be physically altered by project implementation?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Landform Alteration, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Landform Alteration from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, proposed grading plans and proposed project operations. Identify any distinct and prominent resources on the project site, which may include, but are not limited to, hilltops, ridgelines, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Determine whether the project activities could physically alter the identified landform(s) through, for example: lowering ridgelines; reducing wetlands or streambeds; filling canyons; or removing rock outcrops. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on landform alteration if one or more distinct and prominent geologic or topographic features would be destroyed, permanently covered or

materially and adversely modified. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds and wetlands.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Describe the existing slopes and topography of the site and surrounding areas, including any distinct or prominent geologic or physical features. Include a map, as appropriate;

- Identify any specific grading or landform alteration policies that apply to the project site as imposed by any specific plan, local coastal program or the California Coastal Act, the Community Plan, the General Plan and its elements, the Hillside Ordinance or other portions of the LAMC; and

- Describe any drainage and diversion structures, retaining walls, cribbing and other surface protection devices existing on the site or immediately adjacent.

Project Impacts

Review the grading and construction plans to identify which distinct and prominent geologic or physical features on the project site would be impacted by project construction or operation. Determine what type of impact the project would have on the resource(s), such as major changes to existing slopes or ridgelines, the filling of canyons, removal or destruction of rock outcrops, covering of wetland areas, etc. Determine whether these changes would destroy an existing prominent resource and/or whether other project activities would result in adverse modifications. Note how long modifications would last and whether the resource would be restored.

The project-grading plan may be used to determine grading amounts and other earth moving activities that may impact a landform. Identify the location and quantities of cut and fill areas, height of cut and/or fill slopes, steepness and stability of proposed slopes and structures, details and location of proposed drainage devices, and, if it would impact an identified landform, the location of disposal sites for excess materials.

Cumulative Impacts

Review the list of related projects. Identify those with distinct and prominent geologic or physical features that would be altered. Assess the impact on these features from implementation of the related projects in the manner described above in Project Impacts. Identify cumulative impacts that would occur and determine their significance. Consider multiple impacts on a single feature or the combined impact on a group of like features.

Sample Mitigation Measures

Potential mitigation measures include the following:

- the modification of grading or excavation plans to avoid a distinct landform; and

- a reduction in amount of grading to conform to natural contours.

3. DATA, RESOURCES, AND REFERENCES

Specific plans, Coastal Act, especially policies 30251 and 30253, for projects within the coastal zone, and various specific plans, which include hillside areas, such as the Mulholland Scenic Parkway Specific Plan. Available from the City Planning Department's Central Publications Unit (see address and telephone below).

Landform Grading Manual, available from the City Planning Department's Central Publications Unit at 200 N. Spring St. 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255.

See also E.1. GEOLOGIC HAZARDS and E.2. SEDIMENTATION AND EROSION.

E.4. MINERAL RESOURCES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

X.a): Would the project result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state?

X.b): Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

B. Introduction

Underlying the City of Los Angeles are finite deposits of non-renewable mineral resources, including petroleum and natural gas, limestone, and aggregate (e.g., rock, sand, and gravel). Development that includes placement of structures over resource areas or blocks access to a resource area results in the loss of availability of resources. Impacts are related to the characteristics of the resource and the degree of loss.

Federal, State and City agencies regulate or have documented the presence of mineral resources. The State Geologist, California Division of Mines and Geology (CDMG), and State Mining and Geology Board (SMGB) provide assistance and direction with regard to mineral resources. The SMGB uses a classification system that divides land into four Mineral Resource Zones (MRZ) based on quantity and significance of mineral resources. (See Exhibit E.4-1) Projects located within the MRZ-2 designation are subject to City policies established in Section VII, Mineral Resources, of the Conservation Element. The Bureau of Land Management (BLM) and the United States Forest Service (USFS) issue permits for mining activity on federal lands.

C. Screening Criteria

- Is the project located within, or would it block access to, a MRZ-2, or other known or potential mineral resource area (based upon designation on official maps and databases such as those identified below)?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Mineral Resources, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Mineral Resources from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. To determine if the project is located in, or could block access to, a mineral resource area, consult the following maps:

- Environmental and Public Facilities Maps, including:

  - Areas Containing Significant Mineral Deposits; and
  - Oil Field and Oil Drilling Areas.

In addition, use field research, published reports, or other appropriate studies, as available, to assess whether the project is located in a MRZ-2 or other important mineral resource area. Consult with the CDMG as needed.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a mineral resource that is located in a MRZ-2 or other known or potential mineral resource area; and

- Whether the mineral resource is of regional or statewide significance, or is noted in the Conservation Element as being of local importance.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the project site and surrounding area;
- Discussion of the mineral resource on the site, as well as within a regional and statewide context; and
- Summary of the requirements and/or policies for mineral resources that apply to the project site.

Project Impacts

Using the information from the Evaluation of Screening Criteria and the description of the proposed project, assess whether implementation of the project would result in a loss of, or loss of access to, the identified mineral resource. Determine whether alternative means of accessing the mineral resource exist and whether the loss of access would be permanent or temporary. Also, consider the importance of the mineral on a state, regional and local level, in terms of economic value, remaining supply, and feasibility of recovering the resource.

Cumulative Impacts

Review the description of the related projects. Identify those with activities and operations, which are within, or would block access to, a MRZ-2 or other important mineral resource area. Assess whether the related projects would result in the cumulative loss of, or loss of access to the mineral resource(s). Consider the importance of the resource and then consider the impact from the combined effect of the proposed and related projects, in the same manner as described above for Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Design the project so that no or only nonpermanent structures are atop or blocking the mineral resource area; and
- Establish easements to preserve possible future use of the mineral resource.

3. DATA, RESOURCES, AND REFERENCES

CDMG, Southern California Regional Office located at 655 S. Hope St., #700, Los Angeles, California 90017-3231; Telephone: (213) 239-0878. CDMG prepares a Mineral Land Classification Report for the City of Los Angeles area. The criteria used in the classification reports are established by the SMGB and are contained in California Surface Mining and Reclamation Policies and Procedures, Special Publication 51, 1983.

City Planning Department, Environmental and Public Facilities Maps (1996):

- Areas Containing Significant Mineral Deposits illustrates the approximate locations of MRZ-2 areas within the City of Los Angeles; and
- Oil Field and Oil Drilling Areas shows areas known to have supported at least six months of oil production.

Conservation Element of the General Plan, available from the City Planning Department's Central Publications Unit at 200 N. Spring St. 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255, Online at: http://www.lacity.org/PLN/.

Selected Legislation

State

Surface Mining and Reclamation Act of 1975

PRC Section 2711 declares that the extraction of minerals is essential to the continued economic well-being of the state and to the needs of the society, and that the reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety.

Exhibit E.4-1
STATE MINING AND GEOLOGY BOARD (SMGB)
MINERAL RESOURCE ZONE (MRZ) CLASSIFICATIONS

The SMGB classification system divides land into four MRZs, reflecting varying degrees of significance. These categories are as follows:

- **MRZ-1**: Areas where available geologic information indicates there is little likelihood for the presence of significant mineral resources;

- **MRZ-2a:** Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present, as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information;

- **MRZ-2b:** Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present, as determined by limited data;

- **MRZ-3a:** Areas containing known mineral occurrences of undetermined mineral resource significance;

- **MRZ-3b:** Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific types of mineral deposits; and

- **MRZ-4:** Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources.

F. HAZARDS

F.1. RISK OF UPSET/EMERGENCY PREPAREDNESS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VII.a): Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

VII.b): Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous chemicals into the environment?

VII.e): For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project create a safety hazard for people residing or working in the project area?

VII.f): For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

VII.g): Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

B. Introduction

Hazardous materials generally are chemicals, which have the capability of causing harm during an accidental release or mishap, and are characterized as being toxic, corrosive, flammable, reactive, an irritant or strong sensitizer. The term "hazardous substances" encompasses every chemical regulated by both the United States Department of Transportation's (DOT) "hazardous materials" regulations and the Environmental Protection Agency's (EPA) "hazardous waste" regulations, including emergency response. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment.

Activities and operations that use or manage hazardous or potentially hazardous or explosive substances could create a hazardous situation if an accidental explosion or release of these substances occurred. Individual circumstances, including the type of substance, quantity used or managed, and the nature of the activities and operations, affect the probable frequency and severity of consequences from a hazardous situation. Federal, state, and local laws regulate the use and management of hazardous or potentially hazardous or explosive substances. For example, the Clean Air Act Amendments (CAAA) of 1990 require facilities that exceed federal threshold levels of listed substances to prepare Risk Management Plans. State threshold levels have also been established.

Emergency response plans and emergency evacuation plans specify appropriate actions to be undertaken with regard to emergency situations such as warning systems, evacuation plans/procedures, and emergency action plans. These plans are required by state environmental and occupational health laws and regulations for businesses that use specified hazardous or extremely hazardous materials or involve a potential threatened release of acutely hazardous materials above certain threshold limits. Projects may require new or revised plans due to the construction or expansion of operations.[1]

Creation of human health hazards or exposure of people to existing sources of potential health hazards, including asbestos, is addressed in F.2. HUMAN HEALTH HAZARDS. According to the federal Occupational Safety and Health Administration (OSHA), hazardous chemicals are chemicals that would be a risk to employees if there is exposure in the workplace. They are listed and regulated through OSHA and the California Occupational Safety and Health Administration (CalOSHA).

Toxic air emissions are addressed in B.3. TOXIC AIR CONTAMINANTS.

C. Screening Criteria

- Would the project use or manage hazardous or potentially hazardous or explosive substances (including, but not limited to, oil, pesticides, chemicals, or radiation)?

- Would the project require a new or revised risk management plan, emergency response, or emergency evacuation plan?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Risk of Upset/Emergency Preparedness, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Risk of Upset/Emergency Preparedness from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project. Determine whether operation or construction would involve the use, generation, disposal, transport, or management of potentially hazardous or explosive substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in

[1] *Risks due to earthquake-related hazards are addressed in E.1. GEOLOGIC HAZARDS.*

sufficient quantities to cause a potential hazard. Emergency response and evacuation plans are required for businesses that use hazardous materials or involve a potential threatened release of acutely hazardous materials during operation or construction. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The regulatory framework;
- The probable frequency and severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance;
- The degree to which the project may require a new, or interfere with an existing, emergency response or evacuation plan, and the severity of the consequences; and
- The degree to which project design will reduce the frequency or severity of a potential accidental release or explosion of a hazardous substance.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the project site, including any on-site activities or structures;
- Physical description of land uses and activities in the surrounding area and along appropriate transportation routes (generally, from the project site to the nearest designated truck route), including distance to sensitive receptors, such as schools, hospitals, or residential uses;
- Description of emergency response or evacuation plan(s) affecting the project and/or the surrounding area; and
- Summary of the regulatory framework.

Project Impacts

Review the description of the proposed project. Identify the activities and operations which would involve the use, generation, disposal, transport, or management of potentially hazardous or explosive substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in sufficient quantities to cause a potential hazard. Estimate the probable frequency of a potential accidental release or explosion of a hazardous substance and the probable severity of the consequences to people or property that would result. Elements of individual projects, such as the type of substance, the quantity used or managed, and the nature of the activities and operations, affect the risk of accidental explosion or release of hazardous substances. Identify and evaluate project features or components that would reduce the risk associated with use or management of hazardous, potentially hazardous, or explosive substances. Consider the regulatory framework and determine the resulting risk.

Review applicable emergency response or evacuation plans. Determine the impact of the project on implementation of the plan(s) and whether the project would require new or expanded plans to be written, because of project activities or location.

Cumulative Impacts

Review the description of the related projects. Identify those with activities and operations which would involve the use, generation, disposal, transport, or management of potentially hazardous or explosive substances (including, but not limited to, oil, pesticides, chemicals, or radiation). Determine the combined impact from the related and proposed projects, in the same manner as described above for Project Impacts. Determine the cumulative impact on the implementation and adequacy of emergency response or evacuation plans due to increases in the amount of hazardous materials used or the location of the projects.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Use non-toxic or less toxic substances in project construction or operation;

- Investigate opportunities and implement programs to reduce the amount of waste chemicals generated; and

- Redesign operations and or use alternate transportation routes.

3. DATA, RESOURCES, AND REFERENCES

Los Angeles Fire Department (LAFD), Bureau of Fire Prevention and Public Safety; 200 N. Main St., Room 1000, Los Angeles, CA. 90012; Telephone: Research Unit (213) 485-6021.

Los Angeles County Fire Department, Hazardous Materials Division; Telephone: (213) 890-4045.

CalOSHA Consultation Service; 10350 Heritage Park Dr., Suite 201, Santa Fe Springs, CA 90670. Telephone: (562) 944-9366, or Consultation Toll Free at (888) 963-9424.

Hazardous materials are defined and listed in various federal and state laws and regulations. These include, but are not limited to, 40 CFR 302 (hazardous substances), 40 CFR 261 (hazardous waste), 49 CFR 172.101 and appendices (hazardous materials), 22 CCR, Section 66261 (hazardous waste), 20 HSC, Chapter 6.5 (hazardous waste).

Requirements for emergency response plans, emergency evacuation plans, and emergency action plans can be found in numerous state and federal laws and regulations. A partial list includes, but is not limited to, the following: 29 CFR 1910.120; Title 8, CCR Sections 3215, 3220 and 5192; Title 22 CCR Section 66265.50-52; and 20 HSC Sections 25504 and 25534.

Risk Management Plans are required under certain conditions by federal and state laws and regulations. The regulations list substances and threshold levels that trigger preparation of Risk Management Plans. Some relevant federal regulations can be found in 40 CFR 68 et seq, which implement Section 112(r)(7) of the CAAA. Some State regulations are listed in Title 22 CCR Section 66261.113, 20 HSC Section 25531 et seq., Title 8 Section 5189, and Title 19 Sections 2510 and 2620 to 2732.

Work place operations and exposure are included in laws and regulations of OSHA and CalOSHA. See, for example, 29 CFR 1910 and Title 8, CCR, Section 5192(a)(3)(A) through (D) and Section 5155.

F.2. HUMAN HEALTH HAZARDS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VII.a): Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

VII.b): Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous chemicals into the environment?

VII.c): Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

VII.d): Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

B. Introduction

A variety of activities, operations, and projects can create human health hazards, or expose people to existing sources of potential health hazards. Impacts can result directly from a process or substance (e.g., removal of asbestos containing materials) or indirectly (e.g., transmission of a disease by rodents or insects). Individual circumstances, including the type of hazard and nature of the activities and operations, affect the probable frequency and severity of consequences from the health hazard. Federal, state, and local laws regulate these hazards.

Hazardous materials generally are substances which, by their nature and reactivity, have the capability of causing harm or a health hazard during normal exposure or an accidental release or mishap, and are characterized as being toxic, corrosive, flammable, reactive, an irritant or strong sensitizer. The term “hazardous substances” encompasses chemicals regulated by both the United States Department of Transportation's (DOT) "hazardous materials" regulations and the Environmental Protection Agency's (EPA) "hazardous waste" regulations, including emergency response. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment. A designation of “acutely” or “extremely” hazardous refers to specific listed chemicals and quantities.

A health hazard may also occur where there is contact with or contamination from asbestos-containing material (ACM), which includes both friable ACM and Class I nonfriable ACM. Friable asbestos is more easily airborne than non-friable asbestos. Actions which may cause ACM to be broken, crumbled, pulverized, or reduced to powder include physical wear and disturbance by mechanical force, such as, but not limited to, sanding, sand blasting, cutting or abrading, improper handling or removal, or leaching of matrix binders. Class I nonfriable ACM includes, but is not limited to, fractured or crushed asbestos cement products, transite materials, mastic, roofing felts, roofing tiles, cement water pipes and resilient floor covering. Friable ACM is material containing more than 1 percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. California Occupational Safety and Health Administration (CalOSHA) defines asbestos-containing construction material as material which contains more than 1/10 of 1 percent asbestos by weight.

Risk of accidental explosion or release of hazardous substances and interference with an emergency response or evacuation plan is addressed in F.1. RISK OF UPSET/EMERGENCY PREPAREDNESS. According to the Occupational Safety and Health Administration (OSHA), hazardous chemicals are chemicals that would be a risk to employees if there were exposure above specified limits in the workplace. They are listed and regulated through OSHA and CalOSHA.

C. Screening Criteria

- Would the project create a health hazard, such as by introducing or directly modifying any of the following (or similar) facilities/activities:
    - Pipeline for hazardous or potentially hazardous or explosive substance which is:
        - More than eight miles in length; or
        - Less than eight miles in length with more than one-half mile subject to activity at any time;
    - Subterranean storage field or above ground tanks;
    - Solid waste facility;
    - Waste water treatment plant;
    - Major utility transmission or distribution facility;

- Land use or activity with recognized vector (e.g., rodents, insects, etc.) management problems; or

- Facility that uses or manages hazardous substances in sufficient quantities to cause a potential hazard?

- Would the project locate people adjacent to a health hazard, such as any of the above uses?

- Would the project create a health hazard through activities that involve the disturbance, removal, storage, or disposal of ACM or lead paints?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Human Health Hazards, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Human Health Hazards from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. Determine whether any of the uses or activities listed would be part of the project or adjacent to the project site. Health hazards may be created by increasing the frequency or severity of consequences from human exposure to hazardous materials or conditions. Vector management issues may include conditions or activities that attract rodents, insects, or other vectors. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The regulatory framework for the health hazard;

- The probable frequency and severity of consequences to people from exposure to the health hazard; and

- The degree to which project design would reduce the frequency of exposure or severity of consequences of exposure to the health hazard.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the project site and surrounding area, identifying potential health hazards and sensitive receptors; and

- Summary of applicable health and safety regulations.

Project Impacts

Review the description of the proposed project, project site, and surrounding area. Identify the activities and operations, which could create a health hazard. Specific circumstances, including the type of hazard, distance between the hazard and people, and the nature of the activities and operations, affect the probable frequency and severity of the consequences. Identify and evaluate project features or components that would reduce the human health risk below that typically associated with the proposed land use or activity. Considering this and the regulatory framework, determine the resulting hazard.

Cumulative Impacts

Review the description of the related projects. Identify those with activities or operations, which would create a health hazard, such as by introducing any of the uses or activities listed in the Screening Criteria to locations where people could be impacted. Determine the combined impact from the proposed and related projects, in the same manner as described above for Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Relocate storage of hazardous substances away from site boundaries;
- Develop a community warning plan;

- Provide spill containment measures;

- Develop a health and safety plan;

- Provide barriers that contain hazards (e.g., appropriate buffers between land uses or air curtains of sufficient strength to control insect vectors); and

- Reduce or eliminate conditions that exacerbate the frequency or severity of occurrences (e.g., avoid landscaping, such as ivy, which can provide nesting areas for rodents; prevent ponding of water which can provide breeding areas for mosquitos).

3. DATA, RESOURCES, AND REFERENCES

Los Angeles County Department of Health Services; 313 N. Figueroa St., Los Angeles, CA 90012. Telephone: (213) 240-8144.

South Coast Air Quality Management District (SCAQMD), Rules and Regulations. Regulation X – Subpart M and Rules 470, 1108, 1108.1, 1120, 1403, and 1414. Information regarding a particular rule or regulation may be obtained by calling the SCAQMD at (909) 396-2000 or 1-800-CUT-SMOG.

Federal extremely hazardous substances and planning thresholds are listed in 40 CFR 355, Appendices A and B. State extremely hazardous substances and planning thresholds are referenced in 19 CCR 2729(a). State acutely hazardous materials and threshold quantities are listed in 8 CCR 5189, Appendix A and referenced in 20 HSC 25532.

State extremely hazardous wastes are asterisked in 22 CCR, Div. 4.5, Chapter 11, Appendix X and referred to in 22 CCR 66261.110 and 66261.113.

State and federal acutely hazardous wastes are listed in 22 CCR 66261.33(c) and 40 CFR 261. Subpart D, respectively.

Asbestos-containing construction material is defined in 8 CCR 1529(b), a CalOSHA regulation.

See also F.1. RISK OF UPSET/EMERGENCY PREPAREDNESS.

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G. WATER RESOURCES

G. WATER RESOURCES

G.1. SURFACE WATER HYDROLOGY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VIII.c): Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

VIII.d): Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

VIII.e): Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?

VIII.g): Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

VIII.h): Would the project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?

VIII.i): Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

XVI.b): Would the project result in the construction of new water or wastewater treatment facilities, the construction of which could cause significant environmental effects?

XVI.c): Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

B. Introduction

This section addresses the potential surface water hydrology impacts that may be associated with the implementation of a project, including flood hazard impacts and changes in the amount or movement of surface water. Surface water impacts may occur when a project results in either

increased on- or off-site storm water flows, changes in absorption rates, alterations to existing surface water flow patterns or directions (including the intake and use of water from a surface water body), or other factors which result in a changed rate of flow. Surface waters include lakes, rivers, streams, reservoirs, the ocean, and similar water bodies. Flood hazard is defined as flooding which occurs during a storm event, particularly the 50-year developed storm event.[1] Impacts may also occur when development of a project results in the depletion of natural flood plain values through development of land within a flood plain area, which is accounted for in the 50-year developed storm event. These impacts typically result in an increased potential for flood hazard.

C. Screening Criteria

- Is the project located within a 100-year flood plain, an area designated as hillside (as identified in the Los Angeles Municipal Code (LAMC) Section 91.7001), or other known flood-prone area?

- Would run-off from the project site drain onto an unimproved street or on to adjacent properties other than public right-of-way (ROW)?

- Would project implementation affect a surface water body such that the amount of surface water, current, course or direction of flow would change?

- Would the run-off factor for the developed project site exceed the percentage of imperviousness for the existing land use category, as contained in the Bureau of Engineering Manual, Part G, Storm Drain Design?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Surface Water Hydrology, and review the associated Methodology to Determine Significance, as appropriate.

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[1] *The 50-year developed storm event is the maximum predicted rainfall event used by the City and County of Los Angeles for determining storm water runoff quantities utilized in the design of the local storm drain system. This specification has been incorporated in the Bureau of Engineering Manual Part G, Storm Drain Design. The year refers to a calculated storm magnitude, which would occur with an approximate frequency of every 50 years. "Developed" refers to hydrology calculations, which assume that all land is developed according to its general plan/zoning designation. A "developed condition" permeability factor is assigned to each parcel, even if it is currently vacant, in order to design adequate storm drain facilities for future conditions.*

A "no" response to each of the preceding questions indicates that there would normally be no significant impact on Surface Water Hydrology from the proposed project.

D. Evaluation of Screening Criteria

Identify the location of the proposed project site using the Environmental and Public Facilities Maps (100 Year and 500 Year Flood Plains and Landslide Inventory and Hillside Areas) and/or relevant Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). In addition, use the United States Geological Survey (USGS) topographic map(s) for the site and any available project or field study information to determine the potential for flooding.

Determine whether changes to the project site would cause run-off to drain on to an unimproved street or on to adjacent properties other than public ROW. Review the proposed activities and geological conditions of the project site and surrounding area to determine the project's potential to affect the existing current, direction of flow, or amount of water in a surface water body, including lakes, rivers, streams, or the ocean. Consult the Department of Public Works Bureau of Engineering, Los Angeles County Flood Control District and the Army Corps of Engineers (ACOE), as necessary.

Review the project plans and identify the percentage of imperviousness for the site, after project completion. Compare to the percentage for the existing zoning classification reproduced in Exhibit G.1-1. See the Bureau of Engineering Storm Drain Manual if assistance is needed.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A proposed project would normally have a significant impact on surface water hydrology if it would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;

- Substantially reduce or increase the amount of surface water in a water body; or

- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

B. Methodology to Determine Significance

Environmental Setting

Describe the project site, including the topography, soil types, location and size of impermeable surfaces (buildings, paving, hardscape, parking lots), location within a flood plain, and the size and location of drainage facilities. Note the existing direction of flow of surface water runoff from the site. Identify storm drains and surface water bodies to which the runoff drains directly or eventually.

Project Impacts

Determine whether the project would result in a change in water flows during a projected 50-year developed storm event that would flood the site or off-site properties, upstream or downstream and cause harm to people or damage to property or sensitive biological resources (see C. BIOLOGICAL RESOURCES for a definition of sensitive biological resources). Consider topography, soil types, location and size of impermeable surfaces, the size and location of drainage facilities, and flood control facilities. Mechanisms of flood control include, but are not limited to: dams, flood control basins, levees, channelization, pumping stations, upstream retention, diversion of run-off, and spreading grounds. Also, consider the nature of the land uses involved when determining the likelihood of harm or damage. (The City has designated certain land uses as appropriate to locate within a defined flood plain.)

Determine whether the project would result in an increase or decrease of water in a surface water body during project construction or operation, and whether project-related changes in the current or direction of flow of water would be permanent and adverse. Consult with the Bureau of Engineering, the Los Angeles County Flood Control District, or the ACOE, as appropriate.

Cumulative Impacts

Identify the related projects that could affect the same surface water body or flood plain as the proposed project. Using the methodology identified in Project Impacts, determine the combined effect of the proposed and related projects. Consult with the Bureau of Engineering and other flood control agencies, as appropriate.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Construct new or improved existing storm water management facilities to reduce or retard the amount of peak runoff from the project site. Such measures may include the construction of detention basins or other structures that will slow down or delay the peak flow of storm water runoff from the site;
- Redesign the project such that structures and other important facilities that would be adversely affected by flooding are no longer located within flood hazard areas or so that the floodway open space is preserved;

- Raise the building pad or ground floor of proposed structures to an elevation above flood prone areas; and

- Reduce impervious surfaces and materials. Maximize landscaped and natural areas.

3. DATA, RESOURCES, AND REFERENCES

Bureau of Engineering Public Counters. Construction Services Center, 4th Floor, 201 North Figueroa Street, Los Angeles, California 90012; Telephone: (213) 977-6032. Valley District, Van Nuys Municipal Building, 14410 Sylvan Street, 2nd Floor, Van Nuys, California 91401; Telephone: (818) 756-8421. Harbor District, San Pedro Municipal Building, 638 South Beacon Street, Room 400, San Pedro, California 90731; Telephone: (310) 732-4677. West Los Angeles District, 1828 Sawtelle Boulevard, 3rd Floor, Los Angeles, CA 90025-5516; Telephone: (310) 575-8384.

Bureau of Engineering, Structural and Technical Engineering, 650 South Spring Street, Room 400, Los Angeles, California 90014-1913; Telephone: (213) 847-4010.

Department of Building and Safety, Construction Services Center, 201N. Figueroa St., 4th Floor, Los Angeles, California 90012; Telephone: (213) 847-8774.

Los Angeles County Flood Control District, 900 South Fremont, Alhambra, California 91803; Telephone: (626) 458-5100.

ACOE, 911 Wilshire Boulevard, #1525, Los Angeles, California 90017; Telephone: (213) 452-3908.

Bureau of Engineering Manual, Part G, Storm Drain Design.

Flood Insurance Rate Maps (FIRMs) (10 CFR Section 1022.11, 43 CFR Section 64.3). FIRMs are prepared by the Federal Insurance Administration of the Department of Housing and Urban Development (HUD) after a risk study for a community has been completed and the risk premium rates have been established. The maps indicate the risk premium zones applicable in the community and when those rates are effective. They are used in making flood plain determinations and to determine if a proposed action is located in the base or critical action flood plain, as appropriate.

USGS topographic maps.

City Planning Department, Environmental and Public Facilities Maps (1996):

- 100 Year and 500 Year Flood Plains; and
- Landslide Inventory and Hillside Areas.

Exhibit G.1-1
DEVELOPMENT CLASSIFICATIONS
(Typical Percentage of Imperviousness, by Zone)

Zoning Classification	Type of Development	I_d
	Park (lawn areas only)	15
	Undeveloped Hillside or Mountainous Areas[a]	35
A1, A2, RA	Agricultural and One-Family Dwelling	35
RE11, RE15, RE20, RE40	One-Family Dwelling - Level Area	35
	- Hillside Area	50
R1, RD1.5, RD2	One-Family Dwelling - Large Hillside Lot	50
RS, R1, RE9	One-Family Dwelling - Level Area	40
	- Hillside Area	70
R2, RW1, RW2, RD3, RD4, RD5, RD6	Multiple Dwelling	60
R3	Multiple Dwelling	70
R4, R5, P, PB, CR, C1, C2, C4, C5, CM, MR1, MR2, M1, M2, M3	Multiple Dwelling, Parking, All Commercial and Manufacturing	100
	Playgrounds, Schools	100
RPD[b]	¾ of land area with I_d per development above; ¼ of land area with I_d for park	

Notes:

I_d is the percentage of imperviousness of a sub-area.

[a] To be used in computing runoff prior to development regardless of zoning classification.

[b] Residential Planned Development – Investigate development (in field or from plans) before allocating value of I_d

Source: Bureau of Engineering Manual Part G, Storm Drain Design.

G.2. SURFACE WATER QUALITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

VIII.a): Violate any water quality standards or waste discharge requirements?

VIII.b): Substantially deplete groundwater supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume of a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

VIII.C): substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

VIII.g): Place housing within a l00-year flood hazard area as mapped on a federal flood hazard Boundary or flood Insurance Rate Map or other flood hazard delineation map?

B. Introduction

Water quality may be impacted by pollutants discharged directly into receiving waters. Industrial flows discharged from manufacturing, cleaning, or cooling operations, and activities such as dewatering of groundwater encountered during construction can usually be directed to an outfall or pipe and are therefore categorized as "point sources."

Water quality may also be affected by pollutants found in surface water runoff originating from a wide range of dispersed sources, or "nonpoint sources." In rural settings, such as agricultural or forestland, this runoff is treated as non-point sources. In urban settings, this runoff is typically guided into a "storm drain system" and ultimately discharged to the receiving waters at a specific location(s). Hence, these storm drain system discharges are treated as point sources. Stormwater runoff is part of the natural hydrologic cycle. Drainage patterns and pollutant concentrations are frequently altered through processes such as urbanization and agriculture. Recent studies have indicated that stormwater runoff is a significant source of water pollution, which may result in declines in fisheries and other aquatic life, restrictions on recreational activities, and general

impairment of the existing and potential beneficial uses of receiving waters. "Stormwater runoff" encompasses "urban runoff," which includes the discharge of pollutants to water bodies from such non-storm (or "dry weather") related activities as irrigation, hosing sidewalks, draining swimming pools, and washing cars. Dry weather flows also include illegal discharges to the storm drain system, such as unauthorized connections, leaks, or spills.

Regulatory Framework

In 1948, Congress enacted the Water Pollution Control Act, which has since been amended significantly on several occasions, and is now commonly referred to as the Clean Water Act (CWA). The CWA delineates a national permitting system for point discharges known as the National Pollutant Discharge Elimination System (NPDES). NPDES is the basic regulatory and enforcement tool available under the CWA. NPDES permits typically incorporate specific discharge limitations for point source discharges to ensure that dischargers meet permit conditions and protect state-defined water quality standards. California is authorized to administer key components of the federal water quality management program in the state.

The existing NPDES framework was expanded in 1987 to regulate stormwater runoff (discharges) originating from municipal and industrial sources. The Los Angeles Regional Water Quality Control Board (LARWQCB) is authorized to implement a municipal stormwater-permitting program as part of its general NPDES authority, as an agent of the State Water Resources Control Board (State Board). Municipal permits typically require permittees to develop an areawide stormwater management plan, implement best management practices (BMPs) and perform stormwater monitoring. The City of Los Angeles is a co-permittee under the County of Los Angeles municipal permit.

In general, environmental impacts to surface water quality are assessed in relation to the existing characteristics of the body of water that would receive the discharge (receiving water body), including its size, flows, designated beneficial uses, and present concentrations of pollutants. Increased concentrations of toxic metals, organic compounds, suspended solids, nutrients, pathogenic microorganisms and other pollutants, or changes in temperature may result in sedimentation, eutrophication, habitat degradation, and/or threats to public health.

For point source discharges from proposed projects, the nature of the discharge is directly related to the process that produces the discharge. Nonpoint source impacts to receiving waters during project operation are related to such factors as land use type, size, design, and intensity. Construction activities may also result in the discharge of stormwater runoff pollutants, including dissolved solids, to receiving waters. If a project includes point source discharges, the

pollutants associated with the discharges may need to be identified and quantified for an NPDES permit from the LARWQCB.

Major surface water bodies in the City of Los Angeles include: the Los Angeles River, Tujunga Wash, Ballona Channel, Santa Monica Bay, and San Pedro Bay. In addition, the City is served by an extensive network of storm drains which either drain directly to the Santa Monica Bay, San Pedro Bay, or to waterways that ultimately drain to Santa Monica or San Pedro Bays.

C. Screening Criteria

Would the proposed project:

- Involve or allow an activity or process that would result in a point source discharge to a receiving water body?

- Create conditions, which may result in soil erosion, sediment runoff or nonpoint sources of contamination?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Surface Water Quality, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Surface Water Quality from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and surrounding area. Consider the location, size and slope of the site and the type, size, and intensity of land use(s) proposed. A receiving water body may include rivers, lakes, reservoirs, the ocean and others, as appropriate. Evaluate activities such as manufacturing, processing, cleaning, grading, cooling, dredging, dewatering of groundwater (during construction or operation), auto-related uses (e.g., parking[1], auto

[1] *The City of Los Angeles CEQA Guidelines include a categorical exemption for surface parking lots of up to 110 spaces (equivalent to 35,310 square feet).*

repair), storage of raw materials and/or finished products, use or storage of solid waste or hazardous/toxic materials, agriculture, waste water treatment operations, and landfills. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination or nuisance as defined in Section 13050 of the California Water Code (CWC) (see definitions below) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include a general description of the project site and adjacent areas to which runoff currently drains directly or eventually. Describe the locations of on- or off-site water bodies and existing drainage outlets (i.e., storm drains). Address the existing water quality of water bodies to which the site drains and applicable adopted water quality objectives or standards. Water quality is increasingly being addressed through watershed programs. Within the next few years TMDLs (Total Maximum Daily Loads) will be developed for local watersheds, and the impact of projects on the TMDL allocations will need to be evaluated.

Project Impacts

The CWC includes the following definitions:

"**Pollution**" means an alteration of the quality of the waters of the state to a degree which unreasonably affects either of the following: 1) the waters for beneficial uses or 2) facilities which serve these beneficial uses. "Pollution" may include "Contamination."

"**Contamination**" means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or through the spread of

disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

"**Nuisance**" means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of, the treatment or disposal of wastes.

Review the description of the proposed project, project site and surrounding area. Determine the nature, quantity, duration, and affect of project discharges. Describe any proposed treatment of the discharge. Assess the impact on the receiving water body relative to existing conditions and any applicable water quality objectives or standards. Consider factors such as the size of the site as a percentage of the entire watershed and the predominant land uses in the watershed. The percentage of imperviousness factors reproduced in Exhibit G.1-1[2] may be used to evaluate the relative amount of runoff from various land use types. Consult with the Bureau of Engineering, the Los Angeles County Flood Control District, the LARWQCB, the Environmental Protection Agency (EPA), or the Army Corps of Engineers (ACOE), as appropriate. A professional consultant may be required.

Cumulative Impacts

Review the description of the related projects. Identify those that are in the same watershed or that drain to the same water body as the proposed project. Evaluate the combined impact on the receiving water body of related project discharges in combination with the proposed project discharge as described for project impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Establish an erosion control plan prior to construction. Include such measures as:

[2] *Exhibit G.1-1, Development Classifications, is found in G.1. SURFACE WATER HYDROLOGY.*

- Use of natural drainage, detention ponds, sediment ponds, or infiltration pits to allow runoff to collect and seep into the ground at a rate which would reduce or prevent downhill erosion,

- Use of barriers to direct and slow the rate of runoff and to filter out large-sized sediments,

-

- Use of downdrains or chutes to carry runoff from the top of a slope to the bottom, and

- Control the use of water for irrigation so as to avoid off-site runoff;

- Employ permeable paving materials that permit water penetration to a soil depth of 18 inches or more, or provide a coefficient of runoff of 0.6 or less;

- Include properly designed and maintained biological oil and grease removal systems in new storm drain systems to treat water before it leaves the project site;

- Properly store hazardous materials to prevent contact with precipitation or runoff;

- Develop and maintain effective monitoring and cleanup program for spills and leaks of hazardous materials;

- Place equipment to be repaired or maintained in uncovered areas on a pad of absorbent material to contain leaks, spills, or small discharges;

- Provide periodic and consistent removal of landscape and construction debris;

- Sweep parking lots at regular, frequent intervals to remove debris. Remove any significant chemical residue left by vehicles by appropriate methods;

- Use non-toxic alternatives for such applications as insecticides, herbicides, rodenticides, and fertilizers. Apply chemical controls only when precipitation is not forecast for the area;

- Use permeable surfaces (such as grassy swales, green strips near parking areas, or porous pavement) to allow infiltration to reduce the peak flow of runoff and minimize the transport of pollutants to receiving waters;

- Install detention basins to remove suspended solids by settlement. Fit basins with trash racks at the inlets to catch floating solids; and

- Periodically monitor the water quality of runoff before discharge.

3. DATA, RESOURCES, AND REFERENCES

For updated information about City ordinances and permit requirements for surface water runoff, contact the Bureau of Engineering, Stormwater Management Division, at 650 South Spring Street, Suite 700, Los Angeles, California 90014; Telephone: 213-847-6350.

LARWQCB Waste Discharge Requirements, Stormwater/Urban Runoff Discharge for Los Angeles County and Co-Permittees, Water Quality Order No. 96-054, NPDES Permit No. CAS614001.

LARWQCB Water Quality Control Plan, June 13, 1994.

National Research Council, Monitoring Southern California's Coastal Waters 1990.

Santa Monica Bay Restoration Project, State of the Bay 1993, January 1994.

State Board, General Permit for Stormwater Discharges Associated With Construction Activities, Water Quality Order No. 92-06-DWQ; General Permit No. CAS000002.

State Board, General Permit for Stormwater Discharges Associated With Industrial Activities Excluding Construction Activities, Water Quality Order No. 91-13-DWQ (as amended by Water Quality Order No. 92-12-DWQ); General Permit No. CAS000001.

State Board, Ocean Plan, August 1995.

State Board, Stormwater Bulletin Board Service. Monitoring data for various watersheds in California.

State Board, Stormwater Quality Task Force, California Stormwater Best Management Practice Handbooks, March 1993. Provides general guidance in developing and implementing BMPs for stormwater quality for municipal, industrial and construction activities. Primarily

addresses the requirements of the stormwater program as developed from section 402 (p) of the CWA.

EPA, Office of Wastewater Enforcement and Compliance, Draft Stormwater Pollution Prevention for Industrial Activities, 1992.

EPA, Water Planning Division, Final Report of the Nationwide Runoff Program, December 30, 1983.

Regulatory Framework

The State Board has the overall responsibility to develop and implement state water quality control policy and is the EPA-designated agency for administering applicable federal CWA programs, including adopting water quality standards for waters of the state. The California Water Code (CWC) establishes nine administrative areas in the State, which are administered by Regional Water Quality Control Boards (RWQCB), which adopt Water Quality Control Plans for their respective regions. The Water Quality Control Plans designate beneficial uses for each receiving water body and establish water quality objectives to ensure reasonable protection of the beneficial uses. The primary method of plan implementation for point discharges is through the issuance of permits.

The owner or operator of any facility discharging or proposing to discharge waste to surface waters (typically from a point source) is required to apply for an NPDES permit with the appropriate RWQCB. Effluent limits are set by the RWQCB for each potential pollutant in accordance with applicable state and federal water quality criteria for the receiving water body. Within the City, the criteria are contained in the Los Angeles Region Basin Plan. The owner or operator of any facility discharging or proposing to discharge waste that may affect groundwater quality or from which waste may be discharged in a diffused manner (e.g. erosion from soil disturbance) must first obtain Waste Discharge Requirements (WDR) from the appropriate RWQCB.

The State Board has issued two general stormwater discharge permits to cover industrial and construction activities, which are required for specific industry types based on standard industrial classification and construction activities on one acre or more or less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. The RWQCB oversees implementation and enforcement of the general permits. The Bureau of Sanitation and Watershed Protection, Stormwater Management Division, are the agencies responsible for overseeing implementation of permit responsibilities for the City. Presently, under

the General Construction Stormwater Permit, projects of one acre or greater are required to incorporate, to the maximum extent possible, permanent or post-construction BMPs in project planning and design as discussed in the current permit, which was approved in December 2001.

Selected Legislation

Federal

NPDES (40 CFR Sec. 122.1)

The NPDES program requires permits for the discharge of pollutants from any point source into waters of the United States. These point sources include: concentrated animal feeding operations, concentrated aquatic animal production facilities, discharges into aquaculture projects, and discharges of stormwater.

Federal Water Pollution Control Act (Clean Water Act - CWA) (33 U.S.C. 1251)
Clean Water Act Amendments of 1972, PL 92-500
Clean Water Act Amendments of 1977, PL 95-217
Clean Water Act Amendments of 1987, PL 100-4

The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.

State

CWC, Division 7 Water Quality

This division of the Code addresses: the conservation, control and utilization of water resources; water quality; and charges the state and regional water boards with coordination and control of water quality. Section 13050 defines pollution, contamination and nuisance, as well as other terms used in the water code.

G.3. GROUNDWATER LEVEL

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VIII.b): Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

VIII.f): Would the project otherwise substantially degrade water quality?

VIII.g): Would the project place housing within a 100-year flood hazard area as mapped on a federal flood hazard Boundary or flood Insurance Rate Map or other flood hazard delineation map?

VIII.i): Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

VIII.j): Would the project inundation by seiche, tsunami, or mudflow?

B. Introduction

The City of Los Angeles overlies eight groundwater basins as identified in the Los Angeles Region Water Quality Control Plan, adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB), and designated by the California Department of Water Resources (DWR). The Los Angeles Coastal Plain includes the West Coast Basin, the Central Basin, the Santa Monica Basin, and the Hollywood Basin. The San Fernando Valley overlies the San Fernando Basin and portions of the Eagle Rock, Verdugo, and Sylmar Basins. These groundwater basins are depicted in Exhibits G.3-1 and G.3-2. The Los Angeles Region Water Quality Control Plan identifies several beneficial uses common to all of these basins including municipal and domestic supply, industrial process and industrial service supply, and agricultural supply.

Groundwater is a major component of the water supply for many public water suppliers in the Los Angeles metropolitan area, and is also used by private industries, as well as a limited number of

private agricultural and domestic users. Local groundwater provides approximately 15 percent of the total water supply of the City of Los Angeles. The Los Angeles Department of Water and Power (DWP) owns and operates these wells and can act as lead agency under CEQA for projects involving wells and water production facilities. Production rights are adjudicated in three of the four major groundwater basins (West Coast, Central, and San Fernando Basins), and are monitored and controlled by a Watermaster. The DWP serves as the Watermaster for the San Fernando Basin. Production rights are not adjudicated in the Santa Monica and Hollywood basins.

Each groundwater basin is replenished by deep percolation of precipitation and return water from irrigation. Individual basins may also be replenished by surface spreading of local runoff, imported water and reclaimed water; injection of imported water (for protection against saline intrusion); and subsurface inflow from other basins. The major spreading areas are generally on the higher portions of the valley floor near the mountain front, or along major streams or channels.

Water table changes and/or changing the direction of flow may result from extracting groundwater for water supply needs or site dewatering, increasing or decreasing groundwater recharge, intercepting and removing groundwater from cuts or excavations, or remediation of contaminated groundwater. Earthwork cuts or excavations in areas of shallow groundwater may necessitate the use of temporary or permanent removal of groundwater by dewatering systems.[1] Groundwater recharge may be reduced if an area currently available for spreading of stream runoff is reduced, if permeable streambeds are lined, or if permeable areas located above groundwater basins are replaced by hard surfaces (paving, buildings, etc.). Groundwater recharge may be increased if larger permeable areas are created.

Possible impacts resulting from lowering the water table include changes in the production of nearby existing wells, reduced basin yield, salt water intrusion (see G.4, GROUNDWATER QUALITY), subsidence (see E.1., GEOLOGIC HAZARDS), stream flow reduction (see G.1., SURFACE WATER HYDROLOGY), impacts to vegetation, and changes in the direction and rate of travel of existing contaminants in the groundwater. Possible impacts of raising the water table include seepage or other impacts on below ground structures, structural damage from settling or expansion of clay soils (see E.1., GEOLOGIC HAZARDS), and changes in the direction and rate of flow of contaminants including saltwater intrusion (see G.4. GROUNDWATER QUALITY).

[1] *Permanent removal of groundwater allocated to DWP requires an agreement with DWP.*

C. Screening Criteria

- Does the project include the installation of production water wells or a permanent groundwater extraction or dewatering system in a groundwater basin used for potable water supply purposes?

- Does the project include planned groundwater recharge through surface spreading or injection?

- Would the project involve cuts or excavation that would intercept an aquifer?
- Would the project reduce permeable areas overlying a spreading ground used for groundwater recharge?

- Would the run-off factor for the developed project site exceed the percentage of imperviousness for the existing land use category, as contained in Part G of the Bureau of Engineering Manual, Storm Drain Design[2]?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Groundwater Level, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to each of the preceding questions indicates that there would normally be no significant impact from the proposed project on Groundwater Level.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site and surrounding area. Locate any underlying groundwater basins, aquifers, and spreading grounds. Review Exhibits G.3-1 and G.3-2, and the Environmental and Public Facilities Map, Groundwater Basins and Groundwater Contamination Areas, as necessary. Identify any proposed water wells, recharge activities, permanent groundwater extraction or dewatering systems, or any proposed cuts or excavations that may intercept an aquifer. Evaluate whether there would be a reduction in permeable areas overlying a spreading ground used for groundwater recharge. Determine the percentage of imperviousness and review Exhibit G.1-1.[2] Compare this information with the Screening Criteria.

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2 *Percentage of imperviousness factors from the Bureau of Engineering Manual are reprinted in G.1. SURFACE WATER HYDROLOGY in Exhibit G.1-1.*

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on groundwater level if it would:

- Change potable water levels sufficiently to:
  - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;
  - Reduce yields of adjacent wells or well fields (public or private); or
  - Adversely change the rate or direction of flow of groundwater; or
- Result in demonstrable and sustained reduction of groundwater recharge capacity.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification and description of the underlying groundwater basin(s), including the level, quality, direction of flow, and existing uses of the water;
- Location, existing uses, production capacity, quality, and other pertinent data for spreading grounds and potable water wells in the vicinity (usually within a one mile radius);
- Area and degree of permeability of soils on site; and
- Ongoing or planned groundwater remediation activities.

Project Impacts

Review the description of the proposed project and the information from the Evaluation of Screening Criteria.

Determine which activities could impact the groundwater resources by considering the following factors:

- The rate, duration, location and quantity of extraction, dewatering, spreading, injection, or other activities;

- The projected reduction in groundwater resources and any existing wells in the vicinity (usually within a one mile radius); and

- The projected change in local or regional groundwater flow patterns.

For subsurface cuts and excavation that intercept an aquifer, determine the projected change in localized flow and the quantities of potable groundwater that would require removal, if any. Note impacts to structures from seepage or other potential conditions and determine whether groundwater removals would be temporary or permanent.

If there is a projected loss of a large permeable area, including permeable streambeds, which historically allowed water to percolate, address the following:

- The total amount of permeable area that would be covered or lost;

- The average reduction in volume of recharge water due to project implementation (short-term and long-term, if applicable); and

- The lost recharge potential as compared to the adjudicated or estimated safe yield of the underlying groundwater basin.

Consult with local and regional water agencies and utilities, as needed.

Cumulative Impacts

Review the list of related projects and identify those located over the same groundwater basin or near the same recharge area or well(s) as the proposed project that could change potable water levels or reduce groundwater recharge capacity. Analyze the potential combined effects of the related projects with the proposed project, using the method described in Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Relocate proposed wells;
- Compensate existing, adjacent well owners who would be affected by the proposed project;
- Reduce proposed impermeable areas that would result in loss of recharge capacity;
- Construct replacement recharge capacity at an alternative location in the same basin;
- Avoid areas of shallow groundwater when locating roadways, underground trenches, and buildings requiring subsurface foundations; and
- If use of areas with shallow groundwater is deemed unavoidable, develop a dewatering plan, subject to review and approval of the City. The plan may include such measures as:
  - Modify the structural design of the project so that a permanent dewatering system is not needed, where feasible;
  - Removal of all standing water from excavations during construction;
  - Installation of subsurface drains;
  - Construction of retaining walls to carry water collecting behind the wall to a controlled drainage system;

- Sealing bedrock fractures; or
- Returning the water to the groundwater basin by injection well, where feasible.

3. DATA, RESOURCES, AND REFERENCES

LADWP/Upper Los Angeles River Area (ULARA) Watermaster, 111 North Hope Street, Los Angeles, California 90012-2694; Telephone: (213) 367-0896.

Adjudication Documentation, Report of Referee, Superior Court, Los Angeles County No. 650079, July 1992. A thorough description of the groundwater resources of the San Fernando Valley area.

DWR, Annual Watermaster Reports, published for the Central Basin, West Coast Basin, and Upper Los Angeles River Basin (covering the San Fernando Basin).

DWR Bulletin 104: Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, June 1991. The most comprehensive study of the area resources for the Coastal Plain Basins.

City Planning Department, Environmental and Public Facilities Maps (1996): Groundwater Basins and Groundwater Contamination Areas.

LARWQCB, Water Quality Control Plan, June 13, 1994.

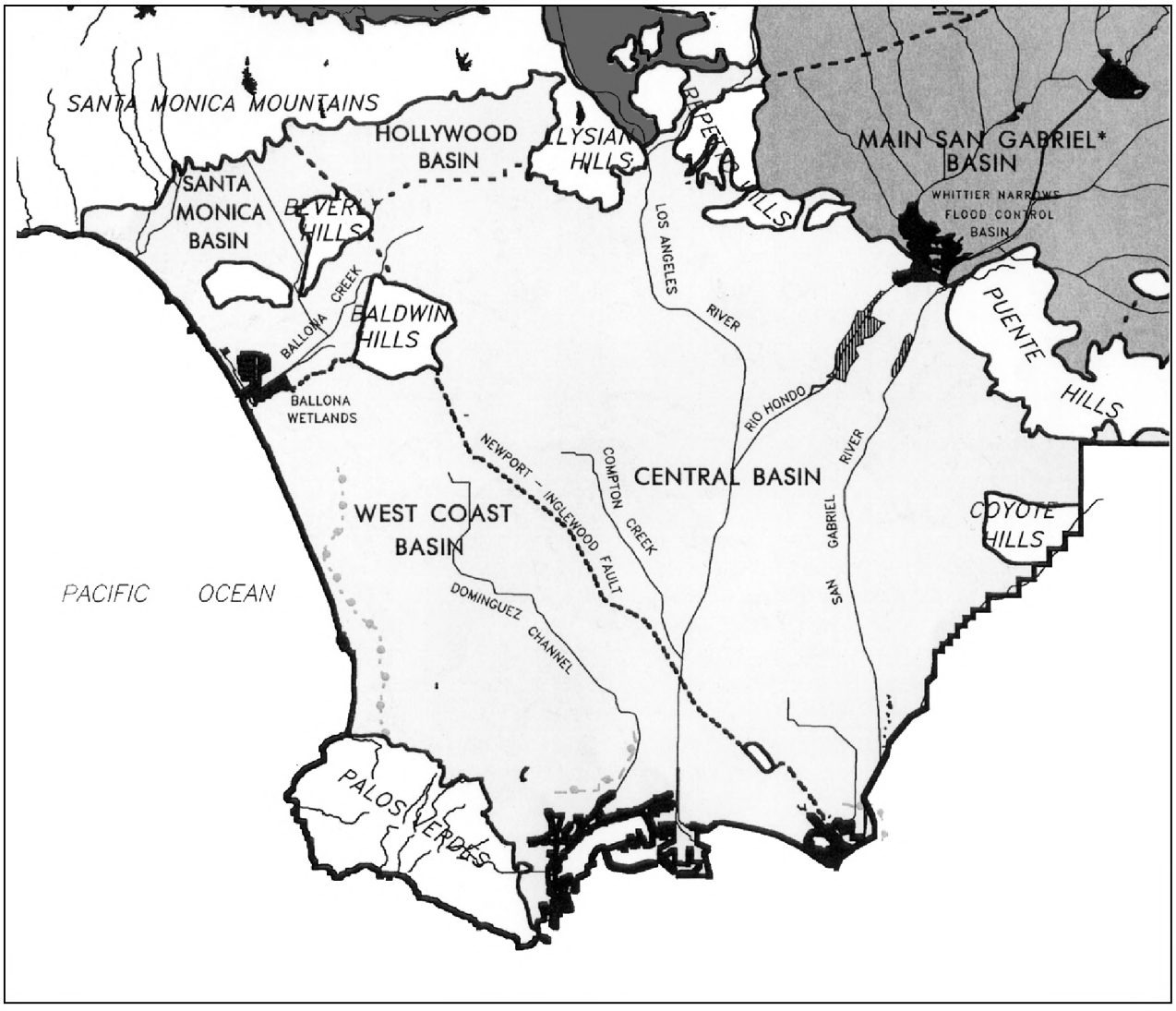

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Exhibit G. 3-1
Los Angeles Basin

_____ Regional Boundary
_____ Streams
* The main San Gabriel is a part of the San Gabriel groundwater basins

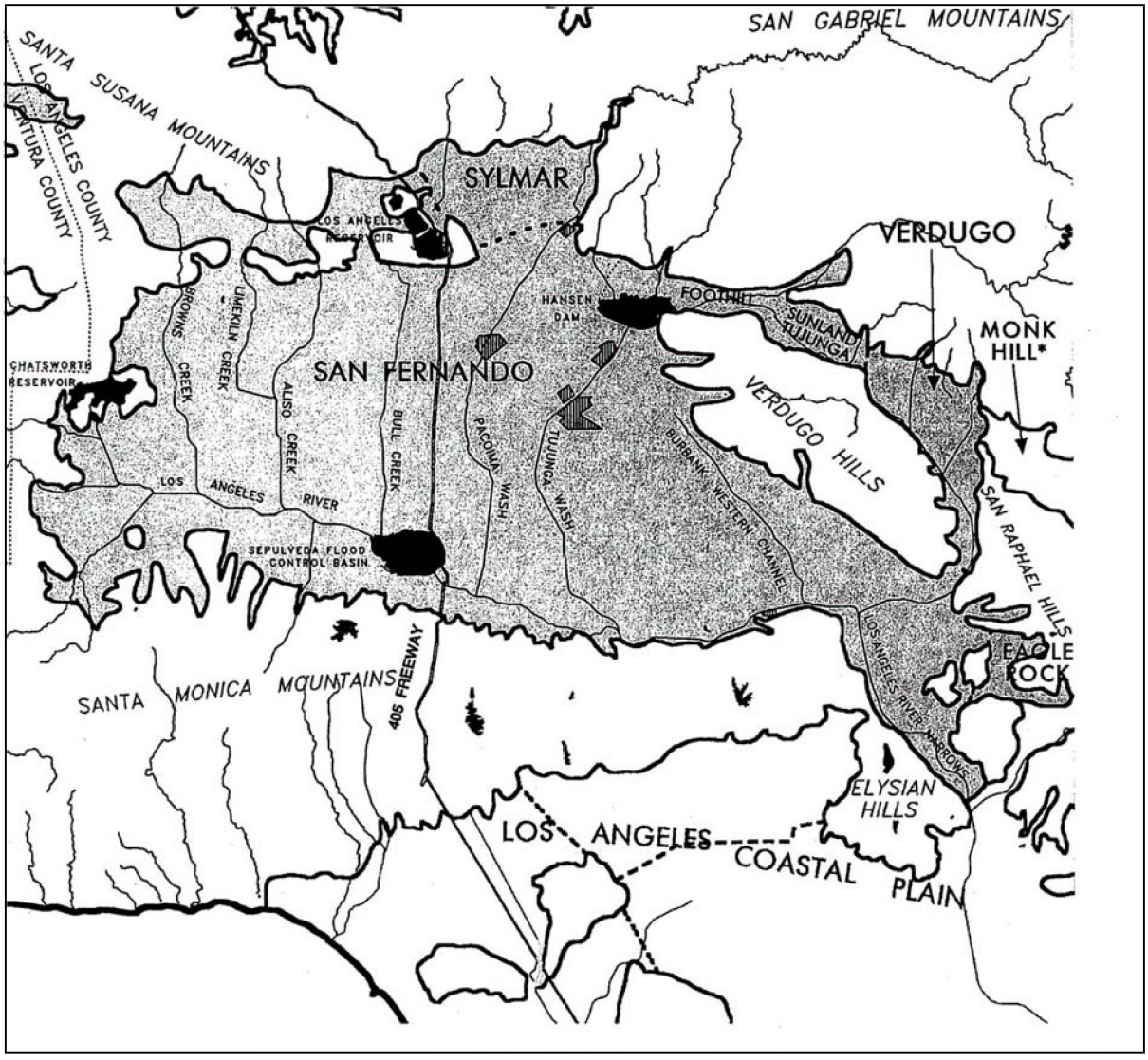

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Exhibit G. 3-2
San Fernando Basin

_____ Regional Boundary
_____ Streams
..... County Line

G.4. GROUNDWATER QUALITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VIII.ga): Would the project place housing within a 100-year flood hazard area as mapped on a federal flood hazard Boundary or flood Insurance Rate Map or other flood hazard delineation map?

VIII.h): Would the project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?

B. Introduction

The City of Los Angeles overlies eight groundwater basins, as identified in the Los Angeles Region Water Quality Control Plan, adopted by the Los Angeles Region Water Quality Control Board (LARWQCB) and designated by the California Department of Water Resources (DWR). The Los Angeles Coastal Plain includes the West Coast Basin, the Central Basin, the Santa Monica Basin and the Hollywood Basin. The San Fernando Valley overlies the San Fernando Basin, and portions of the Eagle Rock, Verdugo and Sylmar Basins. These groundwater basins are depicted in Exhibits G.3-1 and G.3-2[1].

The Los Angeles Region Water Quality Control Plan identifies a number of beneficial uses common to all of these basins, including municipal and domestic supply, industrial process and industrial service supply, and agricultural supply. It also establishes water quality objectives for a number of constituents of each groundwater basin to protect these uses, identifies existing water quality problems in general terms, and sets forth an implementation plan to maintain or improve groundwater quality to allow the objectives to be met.

Historically, the groundwater basins have become contaminated as a result of human activities and natural phenomena. Contamination can result from spills, leaks, leachate, or discharges of contaminants; returns from agricultural or urban irrigation; salt water intrusion; septic system and wastewater discharges; and other sources. Areas of contaminated groundwater are relatively well-

documented in the Los Angeles area by several agencies that regulate, use or manage groundwater supplies, including the LARWQCB. The Environmental and Public Facilities Map, Groundwater Basins and Groundwater Contamination Areas, indicates major known areas of contamination underlying the City.

Degradation of groundwater quality may result from a variety of activities, including: the discharge or application of wastewater, groundwater, or solid waste to the land surface or subsurface areas; groundwater injections or withdrawals, or other activities that could result in a change in the flow direction of existing plumes of groundwater contamination or saltwater intrusion; drilling that intercepts areas of groundwater contamination; leaking underground or above-ground storage tanks; or accidental spills or releases or other hazardous materials on permeable soils. (See also G.3. GROUNDWATER LEVEL.)

Responsibility for implementation of the Water Quality Control Plan to protect groundwater quality rests with the LARWQCB. A primary mechanism of implementation used by the LARWQCB is the issuance and enforcement of permits (Waste Discharge Requirements, or WDRs) for discharge of any wastewater, groundwater, or contaminants to the ground surface or subsurface. Discharges that require WDRs include, but are not limited to: septic systems, dewatering systems, holding/equalization tanks, evaporation ponds, percolation ponds and leachfields, landfills, land treatment units (bioremediation), oil field brine disposal and land disposal of wastes. Additionally, the LARWQCB, California Department of Toxic Substances Control (DTSC), and the Environmental Protection Agency (EPA) can investigate, regulate, and remediate groundwater contamination (e.g. Superfund projects).

C. Screening Criteria

- Would the project include the installation or operation of water wells,[2] or any groundwater extraction or recharge system, that is in the vicinity (usually within one mile) of the coast, an area of known groundwater contamination or seawater intrusion, a municipal supply well or spreading ground facility?

- Would the project include surface or subsurface application or introduction of potential contaminants or waste materials during construction or operation? Examples of such projects include: on-site disposal systems (septic systems), holding/equalization tanks, evaporation ponds, underground or above-ground storage tanks, percolation ponds and

[2] *Other than monitoring wells and wells intended to remediate existing, or prevent future, groundwater contamination or saltwater intrusion.*

leachfields, landfills and other land surface waste disposal facilities, land treatment units (bioremediation), oil field brine disposal, and agricultural activities.

- Could the project result in releases or spills of contaminants that could reach a groundwater recharge area or spreading ground or otherwise reach groundwater through percolation?

- Would the project involve drilling to or through a clean or contaminated aquifer?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Groundwater Quality, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Groundwater Quality from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project site, construction and operational activities and the relationship of the site to underlying groundwater basins. Review Exhibits G.3-1 and G.3-2,[3] and the Environmental and Public Facilities Map, Groundwater Basins and Groundwater Contamination Areas, or other relevant maps, reports, and studies to identify groundwater recharge areas, spreading grounds, aquifers, or known areas of contamination. Identify any proposed installation or operation of water wells; groundwater extraction or recharge systems; direct or indirect introduction of contaminants; or drilling to or through an aquifer. Compare this information to the Screening Criteria.

The LARWQCB is a primary source of information regarding existing water quality problems. In addition, water utilities and the Watermaster of each adjudicated groundwater basin may be contacted for information regarding water rights, hydrologic features and groundwater contamination.

[3] *See G.3. GROUNDWATER LEVEL.*

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally result in a significant impact on groundwater quality if it would:

- Affect the rate or change the direction of movement of existing contaminants;
- Expand the area affected by contaminants;
- Result in an increased level of groundwater contamination (including that from direct percolation, injection or salt water intrusion); or
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification and description of the underlying groundwater basin(s), recharge areas, spreading grounds, aquifers and wells. Include the quality, quantity and use of the water;
- Area and degree of permeability of soils on the project site and in areas where operations could involve surface discharges;
- The location and nature of any existing groundwater contamination in the vicinity of the project site (usually within a one-mile radius), including saltwater intrusion and leaking underground storage tanks (available from the local fire department, the County Health Department, or the State Leaking Underground Storage Tanks (LUST) database);
- Description of any ongoing or planned remediation activities; and
- Existing groundwater levels and direction of flow in the vicinity of the project.

Project Impacts

Using the information from the Evaluation of Screening Criteria, describe proposed construction and operational features of the project that involve any intrusion into groundwater, including extraction, dewatering, planned surface application, subsurface disposal, percolation, or injection of potential contaminants or waste materials. Consider the characteristics of the material proposed for application or injection; any pre-treatment; methods of application, injection; etc. Analyze any potential changes in the amount of groundwater contamination (e.g., concentration, levels or area involved) or the rate and direction of flow of existing groundwater contamination due to project-related activities. Also, determine the impact on the water quality of existing production wells and the size of the contaminated area.

Cumulative Impacts

Review the list of related projects and identify those located over the same groundwater basin or in the vicinity of the same area of known groundwater contamination, or seawater intrusion, municipal supply well, spreading ground facility or the coast that could increase groundwater contamination. Analyze the potential combined effect of the related projects with the project using the methods described in Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Modification to reduce or eliminate the discharge or contamination;
- Reduction or modification of planned groundwater extraction; and
- Treatment of extracted contaminated water.

3. DATA, RESOURCES, AND REFERENCES

Los Angeles Department of Water and Power (DWP)/Upper Los Angeles River Area (ULARA), 111 North Hope Street, Los Angeles, California 90012; Telephone: (213) 367-0906. Annual ULARA Watermaster Report describes water rights, and general hydrologic features for the San Fernando, Sylmar, Eagle Rock and Verdugo Basins, and groundwater contamination.

Los Angeles Fire Department (LAFD) - Records of known leaking underground storage tanks and other information on the location and use of hazardous materials.

LARWQCB, 320 West 4th Street, Suite 200, Los Angeles, California 90013; Telephone: (213) 576-6600.

City Planning Department, Environmental and Public Facilities Maps (1996): Groundwater Basins and Groundwater Contamination Areas.

LARWQCB Remedial Investigation of Groundwater Contamination in the San Fernando Valley, December 1991, which describes the nature and extent of groundwater contamination in the San Fernando, Sylmar, Verdugo and Eagle Rock basins. Also provides geologic and hydrogeologic characterizations for each basin.

LARWQCB, Los Angeles Region Water Quality Control Plan, 1994, which describes groundwater basins, beneficial uses, water quality objectives, and the implementation plan to protect water quality objectives and beneficial uses.

Safe Drinking Water Act of 1974, PL 93-523; Safe Drinking Water Act of 1986, PL 99-339, which establishes a federal program to monitor and increase the safety of all commercially and publicly supplied drinking water.

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H. LAND USE

H.1. LAND USE CONSISTENCY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

IX.b): Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

IX.c): Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

B. Introduction

This section addresses the consistency or compliance of proposed projects with the goals and policies of the General Plan and its elements, including the Framework Element, 35 adopted Community Plans, as well as the Planning and Zoning Code,[1] and any applicable specific plans, interim control ordinances (ICOs), community design overlay districts (CDOs), local coastal plans and redevelopment plans. City and regional utility plans and other adopted plans that contain environmental policies related to the physical environment that are applicable to the project activities and/or site may also be relevant.

C. Screening Criteria

- Is the project inconsistent with the General Plan or its elements, or an applicable specific plan, local coastal plan, redevelopment plan, interim control ordinance or adopted environmental goals or policies?

- Would the project require a General Plan amendment or zone change?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the

[1] *Chapter 1 of the Los Angeles Municipal Code (LAMC).*

Significance Threshold for Land Use Consistency, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Land Use Consistency from the proposed project.

D. Evaluation of Screening Criteria

Review the proposed project for consistency with the General Plan and other adopted environmental goals and policies. Potential areas of inconsistency include, but are not limited to: land use type; height, bulk, design or density; waste or wastewater generation; resource consumption or degradation; and other plan policies that relate to the physical environment. Use the most recent Community Plan maps and Zone Information & Map Access System (ZIMAS) http://zimas.lacity.org/ to assist in identifying ordinances and plan areas that may pertain to the project site, or consult the Community Planning Bureau of the City Planning Department. As appropriate, evaluate the General Plan and its elements (including the Framework Element), Community Plans, specific plans, ICOs, CDO's, local coastal plans, redevelopment plans, Planning & Zoning Code, utility plans, and resource management plans. Identify and assess the project's consistency with applicable habitat conservation plans or natural community conservation plans. Consider whether policies are mandatory or guidance, and which is the agency with primary jurisdiction. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- Whether the proposal is inconsistent with the adopted land use/density designation in the Community Plan, redevelopment plan or specific plan for the site; and

- Whether the proposal is inconsistent with the General Plan or adopted environmental goals or policies contained in other applicable plans.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Community Plan land use and density designation;

- Zoning designation and other Planning and Zoning Code land use regulations relevant to the project site;
-
- Adopted ICOs, specific plan, redevelopment plan, CDO's local coastal plan or provisions of the Coastal Act, if any, applicable to the project site;

- Other City land use policies, such as the General Plan and Elements, including the Framework Element, Airport Hazard Zone Regulations, etc., if applicable to the project site; and

- Adopted City environmental policies, ordinances and plans, such as the City Solid Waste Management Policy Plan (CiSWMPP), Source Reduction and Recycling Element (SRRE), utility and resource conservation plans or programs, wastewater policies, Clean Air Program (CAP), etc., if any, applicable to the project site.

Project Impacts

Using the information from the Evaluation of Screening Criteria, evaluate the project for consistency with detailed local standards and requirements as well as with the broader context of the General Plan and its elements, environmental plans and policies, and regional utility/environmental plans. Identify project elements that conflict with the plans or policies and whether the conflict(s) would result in the project being inconsistent with the land use designation and/or environmental goals and policies of the City. Consider whether the project includes a proposed General Plan (land use) amendment and/or zone change, and whether all elements of the inconsistency have been addressed (i.e., density, design, etc.). For conflicts with environmental goals and policies, consider whether the project would interfere with the City's efforts to meet such goals, or be inconsistent with adopted policies.

Cumulative Impacts

Identify related projects in the vicinity of the proposed project and evaluate them in the same manner as the proposed project to determine if, when viewed together with the proposed project, conformance with the General Plan or other adopted plans or environmental policies would be significantly affected. Consider whether the combination of projects would conflict with the planned land uses and densities in the General Plan, or would interfere with adopted environmental goals and plans. Plans with a broad, regional perspective may be more applicable or useful in evaluating cumulative impacts because the goals and objectives of these plans may be implemented by comprehensive measures taken by government agencies.

Sample Mitigation Measures

Generally, a project determined to be inconsistent with the General Plan will require, as a condition of approval, a General Plan amendment or zone change to eliminate the inconsistency. This requires a finding that the requested change would not substantially alter the City's goals for the affected community. To mitigate an inconsistency prior to this determination, consider the following:

- Modify the project's proposed land uses to be consistent with designated land uses, zoning and/or General Plan and its element(s); or

- Relocate proposed structures or reduce the project's density/intensity to reduce conflicts or inconsistencies with the Land Use Element and plans.

3. DATA, RESOURCES, AND REFERENCES

The following references are available from the City Planning Department, Community Planning Bureau, 200 N. Spring St., 6th Floor, Los Angeles, California 90012. The Bureau may be reached at (213) 978-3893:

- General Plan and its elements, including the Framework Element and the 35 adopted Community Plans;
- District Zoning maps;
- ICOs;
- CDOs;
- Specific plans;
- Local coastal plans; and
- Airport Hazard Zone maps.

Planning and Zoning Code, (Chapter 1 of the LAMC) is available from the City Planning Department's Central Publications Unit at 200 N. Spring St., 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255. For further information, call (213) 978-1310

Zone Information & Map Access System (ZIMAS) available online at: http://zimas.lacity.org.

Redevelopment plans are available from the Community Redevelopment Agency (CRA) of the City of Los Angeles, 354 South Spring Street, Suite 800, Los Angeles, California 90013; Telephone: (213) 977-1600.

City utility plans are available from the following City departments:

Department of Water and Power

- Utility Plans/Power Division
  111 North Hope Street, Room 1121
  Los Angeles, California 90012
  Telephone: (213) 367-0285

- Urban Water Management Plan
  Division of Public Affairs
  Telephone: (213) 367-1361

Department of Public Works
Bureau of Sanitation
- Wastewater plans
  Wastewater Engineering Service Division
  Telephone: (323) 342-6235

- Hyperion System
  Hyperion Treatment Plant
  Telephone: (310) 648-5000

CiSWMPP and SRRE are available from the Solid Resources Citywide Recycling Division of the Bureau of Sanitation, 433 South Spring Street, 5th Floor, Los Angeles, California 90013; Telephone: (213) 473-8228.

Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization (MPO) for the region and offers resources and assistance. SCAG is located at 818 West Seventh Street, 12th Floor, Los Angeles, California 90017; Telephone: (213) 236-1800.

California Department of Fish and Game, South Coast Region, 4949 Viewridge Avenue, San Diego, CA 92123-1662; Telephone: (858) 467-4201.

H.2. LAND USE COMPATIBILITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

IX.a): Would the project physically divide an established community?

IX.b): Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

IX.c): Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

B. Introduction

This section addresses the potential for projects or programs to create situations of incompatibility between land uses or activities. Such incompatibility may result from environmental impacts associated with the proposed land use. Examples of incompatibility include land uses, which create noise, odor, safety hazards, visual, or other environmental impacts which conflict with surrounding land uses and the activities and conditions typically associated with those land uses. In addition, a project may disrupt the physical arrangement of an established community by introducing new infrastructure or isolating land uses that could interrupt the typical activities or change the land use conditions in a community.

C. Screening Criteria

- Would the project include a land use type that is incompatible with existing or proposed adjacent land uses (due to size, intensity, density or type of use)?

- Would the project include features such as a highway, aboveground infrastructure, or an easement through an established neighborhood community that could cause a permanent disruption in the physical arrangement of that established community or otherwise isolate an existing land use?

- Would the project result in a "spot" zone?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Land Use Compatibility and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant Land Use Compatibility impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, including the proposed land use or activity, and the size, density and intensity of the operation. Noise, odor, signage, safety hazards, traffic or other impacts may indicate an incompatibility with existing adjacent or surrounding land uses or current zoning for those sites, if vacant. Also, consider the types of land uses surrounding the project and the typical activities that occur at these sites, compared to those that would occur at the proposed project. Indicate the presence or lack of buffers between the project and adjacent land uses of other types. Note that a zone change required to implement the project may indicate a potential incompatibility with adjacent existing land uses. Review specific plans for urban design compatibility programs or regulations and their relevance to project design.

If the project includes elements such as a highway, aboveground infrastructure or an easement, identify the existing land uses that would be removed or would be adjacent to the new infrastructure. Determine the duration of any disruption of the physical arrangement of an established neighborhood or community. Such impacts may result from a physical separation or the creation of barriers that would disrupt the social or physical interaction between established land uses that comprise a neighborhood or community.

A "spot" zone occurs when the zoning or land use designation for only a portion of a block changes, or a single zone or land use designation becomes surrounded by more or less intensive land uses.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The extent of the area that would be impacted, the nature and degree of impacts, and the type of land uses within that area;
- The extent to which existing neighborhoods, communities, or land uses would be disrupted, divided or isolated, and the duration of the disruptions; and
- The number, degree, and type of secondary impacts to surrounding land uses that could result from implementation of the proposed project.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, describe and map, as appropriate, the existing land uses and current zoning of the project site and the properties in the immediate vicinity of the proposed project. Also, identify uses near the site such as schools, libraries and residences which may be particularly sensitive to potential nuisance impacts (e.g., noise, odor, safety hazards) associated with the proposed project.

If the proposed project may disrupt or divide an established community, evaluate the existing neighborhoods or communities immediately surrounding the project. Address the type of land uses in the area, and the location of residences, businesses, schools, and other community facilities in relation to the proposed project and supporting residences.

Project Impacts

A significant land use compatibility impact may be indicated by the presence of one or more significant project impacts, which suggest that the location or intensity of the proposed project could conflict with existing uses. However, the presence of project impacts does not automatically indicate a land use compatibility impact and the effect of these impacts should be evaluated within the primary impact category (e.g., noise, traffic).

Evaluate the nature, extent and number of secondary impacts to determine the extent of any conflict between the project and existing uses in the area. Consider the type of activities typically expected to occur at land uses adjacent to the project and whether nuisance impacts from the proposed project would conflict with these activities.

If the proposed project would add such features as a highway, aboveground infrastructure or easement, determine the extent to which existing neighborhoods or communities would be impacted by its implementation. Evaluate the extent of the physical separation, barrier or other disruption of existing land uses or activities that could result from the proposed project. Indicate the duration of the disruption (e.g., long-term, permanent) of the physical or social interaction between land uses that comprise an established neighborhood or community.

Cumulative Impacts

The cumulative impact assessment should identify other known projects or land use changes proposed in the vicinity of the project that may either combine with the proposed project to create a land use incompatibility with the existing land uses, or be subject to nuisance impacts resulting from a proposed project that creates a land use incompatibility with the related projects. Evaluate the potential impacts using the methodology described above.

Sample Mitigation Measures

Mitigation measures to reduce secondary impacts are found in the individual sections (noise, traffic, etc.). Potential mitigation measures that may reduce land use compatibility impacts include:

- Change the project design, configuration, visual screening, setbacks, building heights, etc., to be compatible with surrounding uses;

- Restrict certain operational characteristics of the proposed use to reduce or eliminate impacts, such as limiting hours of operation or placing restrictions on specific types of uses or activities proposed for the project, etc.;

- Provide enclosed structures around certain activities that normally occur outdoors;

- Place aboveground infrastructure under ground, or grade separate key portions of the proposed highway, rail line, or other infrastructure to minimize physical separations;

- Provide pedestrian and bicycle routes or crossings to increase mobility; and

- Provide a buffer (such as a decorative wall or landscaping) where residential uses are adjacent to non-residential uses.

3. DATA, RESOURCES, AND REFERENCES

City Planning Department, 201 North Figueroa Street, 3rd Floor, Los Angeles, California 90012; Telephone: (213) 977-6083. For plan check, first go to Counter A, 4th floor (Building and Safety). They will refer visitors to the Planning Department as appropriate.

See also H.1. LAND USE CONSISTENCY.

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I. NOISE

I.1. CONSTRUCTION NOISE

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XI.a): Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

XI.b): Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

XI.d): Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

XI.e): For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

XI.f): For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

B. Introduction

Construction of facilities and structures requires the use of equipment, which may generate high noise levels and adversely affect noise sensitive uses.[1] In assessing the impact of construction noise upon the environment, the nature and level of activities that generate the noise, the pathway through which the noise travels, the sensitivity of the receptor, and the period of exposure are all considered.

Environmental noise is measured in decibels (dB). To better approximate the range of sensitivity of the human ear to sounds of different frequencies, the A-weighted decibel scale (dBA) was devised. Because the human ear is less sensitive to low frequency sounds, the A-scale de-emphasizes these frequencies by incorporating frequency weighting of the sound signal. When the A-scale is used, the decibel levels are represented by dBA. On this scale, the range of human hearing extends from about 3 dBA to about 140 dBA. A 10-dBA increase is judged by most people as a doubling of the sound level.

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1 *For impacts during operation, see I.2 OPERATIONAL NOISE, I.3. RAILROAD NOISE, and I.4. AIRPORT NOISE, as appropriate.*

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. The Community Noise Equivalent Level (CNEL) represents an energy average of the A-weighted noise levels over a 24-hour period with 5 dBA and 10 dBA increases added for nighttime noise between the hours of 7:00 p.m. and 10:00 p.m. and 10:00 p.m. to 7:00 a.m., respectively. The increases were selected to account for reduced ambient noise levels during these time periods and increased human sensitivity to noise during the quieter periods of the day.

Typical construction equipment types are presented in Exhibit I.1-1. Noise levels from these equipment types ranges from 76 to 91 dBA for equipment powered by internal combustion engines, saws, and vibrators and from the mid-80s to more than 100 dBA for impact equipment. Exhibit I.1-2 provides typical noise levels for each construction phase. The excavation and finishing phases include the noisiest construction activities.

The Environmental Protection Agency (EPA), establishes emission standards for construction equipment according to the provisions of the Noise Control Act of 1972, set forth in 40 CFR, Part 204. In addition, the City of Los Angeles Noise Ordinance addresses noise generated at construction sites, including permissible hours of construction, increases in ambient noise levels, and the technical feasibility of reducing noise from certain construction equipment. The Los Angeles Police Department (LAPD) enforces the provisions of the Noise Ordinance.[2]

C. Screening Criteria

- Would construction activities occur within 500 feet of a noise sensitive use?

- For projects located within the City of Los Angeles, would construction occur between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at anytime on Sunday?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Construction Noise and review the associated Methodology to Determine Significance, as appropriate.

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2 *Refer to Sections 41.40, 112.02, and 112.05 of the Los Angeles Municipal Code (LAMC). Technical infeasibility means that specified noise limitations cannot be achieved despite the use of mufflers, shields, sound barriers and/or any other noise reduction devices or techniques during operation of the equipment.*

A "no" response to all of the preceding questions indicates that there would normally be no significant impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, including information on construction activities. Consult a map showing the location of noise sensitive uses within 500 feet of the project site. Noise sensitive uses include residences, transient lodgings, schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks. Determine whether construction activities would occur within 500 feet of a noise sensitive use or during the hours specified in the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use;

- Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use; or

- Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at anytime on Sunday.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification of noise sensitive land uses within 500 feet of the project site, including description, location, and distance from the project; and

- Quantification of ambient noise levels (existing and projected at the time of construction) measured in CNEL.

One of the following methodologies can be used to determine ambient noise levels:

- Field measurements involving the use of a noise meter at and surrounding the project site;

- "Presumed Ambient Noise Levels," as set forth in the LAMC, Section 111.03 (see Exhibit I.1-3); or

- A noise monitoring program performed according to the procedures set forth in the LAMC, Sections 111.02 and 112.05. This involves taking measurements at selected locations to establish ambient background noise levels.

Project Impacts

Review the description of the proposed project, including the duration of construction activities. Identify the type, amount, and scheduling of construction equipment to be used during each construction phase, and the distance from construction activities to noise sensitive uses.

Calculate the noise emissions from individual equipment by using the noise levels shown in Exhibits I.1-1 and I.1-2, or other applicable references, the distance to the noise sensitive uses, and noise attenuation standards. Noise models may be used, as appropriate. Noise levels 50 feet from a source decrease by approximately 3 dBA over a hard, unobstructed surface, such as asphalt, and by approximately 4.5 dBA over a soft surface, such as vegetation. For every doubling of distance thereafter, noise levels drop another 3 dBA over a hard surface and 4.5 dBA over a soft surface. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of emissions as that shown in Exhibit I.1-1.

Determine the combined noise levels from equipment that will be operated simultaneously. Noise levels measured in decibels increase logarithmically and cannot be added arithmetically. When transmission path topography between the construction noise source and the receptor location is complex, consult an experienced noise specialist, as necessary.

Establish the change in noise level from construction activities at the location of sensitive receptors. Subtract the projected noise level without construction equipment from the projected noise level during construction activities. Considering the number of days various noise levels are

projected, determine whether construction activities would exceed both the number of days, times of day, and dBA increases in the Significance Threshold.

Cumulative Impacts

As feasible, identify construction activities for related projects that would coincide with the project's construction operations. Calculate noise levels using the methodology in Project Impacts and logarithmically add the noise from these construction activities to the project-related construction noise to determine the cumulative effect of the construction activities. Consult a noise specialist, or use a noise model, as needed.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Use noise control devices, such as equipment mufflers, enclosures, and barriers. Natural and artificial barriers such as ground elevation changes and existing buildings can shield construction noise. Stage construction operations as far from noise sensitive uses as possible;

- Avoid residential areas when planning haul truck routes;

- Maintain all sound-reducing devices and restrictions throughout the construction period;

- Replace noisy equipment with quieter equipment (for example, a vibratory pile driver instead of a conventional pile driver and rubber-tired equipment rather than track equipment); and

- Change the timing and/or sequence of the noisiest construction operations to avoid sensitive times of the day.

3. DATA, RESOURCES, AND REFERENCES

Noise Ordinance No. 161,574, LAMC Section 112.05 and No. 166,170, LAMC Section 41.40 provide construction hours and construction equipment noise thresholds.

Noise Ordinance No. 156,363, LAMC Section 111.02 provides sound level measurement procedures.

Noise Ordinance No. 156,363, LAMC Section 111.03 provides ambient noise levels.

Los Angeles Association of Environmental Professionals (AEP), Thresholds of Significance, Construction noise threshold used by Port of Long Beach, 1992.

EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, Prepared by Bolt, Beranek and Newman, 1971.

Categories of Construction Equipment

1. Impact equipment and tools: This group includes pile drivers, pavement breakers, tampers, rock drills, and small; hand-held pneumatically, hydraulically, or electrically powered tools. In the case of conventional pile drivers, whether steam-powered or diesel-powered, the impact of the hammer dropping onto the pile is the dominant noise-generating component. However, sonic or vibratory pile drivers do not produce impact noise as it vibrates the pile at resonance, rather than using a drop hammer.

2. Equipment powered by internal combustion engines: The internal combustion engine, usually of the diesel type, is used to provide motive and/or operating power. Engine powered equipment can be divided into categories according to its mobility and operating characteristics as earthmoving equipment (highly mobile), materials handling equipment (semi-mobile), and stationary equipment.

3. Other equipment: Certain types of construction equipment, such as power saws or concrete vibrators do not fall under either of the two categories above.

Selected Legislation

Federal

Federal Noise Control Act of 1972 (40 CFR Sec. 204)

Public Law 92-574. Regulates noise emissions from operation of all construction equipment and facilities; establishes noise emission standards for construction equipment and other categories of equipment; and provides standards for the testing, inspection, and monitoring of such equipment. Gives states and municipalities primary responsibility for noise control.

State

California Noise Control Act of 1973 (Health and Safety Code, Division 28)

Declares that excessive noise is a serious hazard to the public health and welfare; establishes the Office of Noise Control with the responsibility to set standards for noise exposure in cooperation with local governments or the state legislature.

Exhibit I.1-1
NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT

Equipment	Levels in dBA at 50 feet[a]
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Cranes (derrick)	86-89
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Back Hoe	73-95
Pile Driving (peaks)	95-107
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88

[a] Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of emissions as that shown in this table.

Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

Exhibit I.1-2
OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level (dBA Leq)	
	50 feet	Noise Levels at 50 feet with Mufflers (dBA)
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

Exhibit I.1-3
PRESUMED AMBIENT NOISE LEVELS (dBA)

Zone		Day	Night
Residential:	A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, R5	50	40
Commercial:	P, PB, CR, C1, C1.5, C2, C4, C5, CM	60	55
Manufacturing:	M1, MR1, MR2	60	55
Heavy Manufacturing:	M2, M3	65	65

Source: LAMC, Section 111.03.

I.2. OPERATIONAL NOISE

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XI.a): Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

XI.b): Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

XI.c): Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

XI.d): A substantial temporary or periodic increase in ambient noise levels in the project vicinity above the existing without the project?

XI.e): For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

XI.f): For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

B. Introduction

Stationary and mobile vehicular noise sources associated with the operation of a project may increase existing noise levels and/or adversely expose people to severe noise levels.[1]

Environmental noise is measured in decibels (dB). To better approximate the range of sensitivity of the human ear to sounds of different frequencies, the A-weighted decibel scale (dBA) was devised. Because the human ear is less sensitive to low frequency sounds, the A-scale de-emphasizes these frequencies by incorporating frequency weighting of the sound signal. When the A-scale is used, the decibel levels are represented by dBA. On this scale, the range of human hearing extends from about 3 dBA to about 140 dBA. A 10-dBA increase is judged by most people as a doubling of the sound level.

[1] *For other noise impacts, see I.1. CONSTRUCTION NOISE, I.3. RAILROAD NOISE, and I.4. AIRPORT NOISE, as appropriate.*

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. The Community Noise Equivalent Level (CNEL) represents an energy average of the A-weighted noise levels over a 24-hour period with 5 dBA and 10 dBA increases added for nighttime noise between the hours of 7:00 p.m. and 10:00 p.m. and 10:00 p.m. to 7:00 a.m., respectively. The increases were selected to account for reduced ambient noise levels during these time periods and increased human sensitivity to noise during the quieter periods of the day.

Because stationary noise sources include a wide range of noise-generating equipment and processes, which come from an equally wide range of uses, noise levels generated by stationary sources can vary substantially (for examples and descriptions, see 3. Data, Resources, and References). The effects of stationary noise depend on factors such as characteristics of the equipment and operations, distance and pathway between the generator and receptor, and weather. Stationary noise sources may be regulated at the point of manufacture (e.g., equipment or engines) or as a part of local codes and requirements (e.g., noise ordinance or zoning).

The predominant noise source within the City of Los Angeles is transportation, including railroad, airport and motor vehicle sources. Traffic volume, average speed, vehicular fleet mix (i.e., combination of automobiles, motorcycles, buses, and trucks), roadway steepness, distance and characteristics of the pathway between generator and receptor, and weather all influence the level of noise near roadways. For example, as the roadway traffic volume, speed, proportion of fleet mix represented by trucks, and roadway grade increase, so do the composite noise levels at the locations affected by the traffic noise. However, as the roadway volume increases beyond a certain point, congestion increases, in turn causing reduced traffic speeds, which would to some extent offset noise from the traffic volume increase. Dense urban areas within the City of Los Angeles may experience noise levels ranging from the low- to high-70 decibel range. The California Department of Motor Vehicles (DMV) has jurisdiction over noise emissions from individual vehicles (Motor Vehicle Code Section 23130).

C. Screening Criteria

- Would the proposed project introduce a stationary noise source[2] likely to be audible beyond the property line of the project site?

- Would the project include 75 or more dwelling units, 100,000 square feet (sf) or greater of

[2] *Stationary noise sources may include, but are not limited to, machinery, engines, energy production, and other mechanical or powered equipment and activities such as loading and unloading or public assembly that may occur at commercial, industrial, manufacturing, or institutional facilities. Stationary noise sources do not include vehicles entering or exiting the property.*

nonresidential development or have the potential to generate 1,000 or more average daily vehicle trips?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Operational Noise, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact from Operational Noise from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and the project traffic study to determine the size of each land use involved, information on stationary noise sources such as machinery or motorized equipment, and the vehicle trips that would be generated by the project. L.1. INTERSECTION CAPACITY explains how to calculate the number of average daily vehicle trips.

Determine the noise level from stationary sources at the property line by evaluating the decibel output of each source, the distance to the property line and the path over which the sound travels. Use an applicable noise model, as needed. In general, at a distance of 50 feet from the source over a hard surface, the decibel level decreases by 3 dBA, and over a soft surface (such as grass) the decibel level decreases by 4.5 dBA. For every doubling of distance thereafter, noise levels drop another 3 dBA over a hard surface and 4.5 dBA over a soft surface.[3]

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the "normally unacceptable" or "clearly unacceptable" category, or any 5 dBA or greater noise increase (see the chart below).

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3 *Federal Highway Administration (FHWA), Highway Traffic Noise Prediction Model (FHWA R77-108), 1978.*

Land Use	Community Noise Exposure CNEL, db			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging - Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters	-	50 - 70	-	above 65
Sports Arena, Outdoor Spectator Sports	-	50 - 75	-	above 70
Playgrounds, Neighborhood Parks	50 - 70	-	67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	-	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	-
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	-

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: California Department of Health Services (DHS).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification of surrounding land uses, including description, location and distance from the project; and

- Quantification of ambient noise levels (existing and projected at the time of project occupancy) measured in CNEL.

One of the following methodologies can be used to determine ambient noise levels:

- Field measurements involving the use of a noise meter at and surrounding the project site;

- "Presumed Ambient Noise Levels," as set forth in the Los Angeles Municipal Code (LAMC), Section 111.03 (see Exhibit I.1-1[4]); or

- A noise-monitoring program performed according to the procedures set forth in LAMC, Section 111.02 and 112.05. This involves taking measurements at selected locations to establish ambient background noise levels.

Project Impacts

The change in ambient noise levels is measured by adding project-generated operational noise to the projected future ambient noise level at the time of project occupancy. The incremental increase in noise generated by the project is the project impact. Calculate the future exterior ambient noise level according to the procedure outlined above, under Environmental Setting.

Stationary Sources

Review the project description and identify the type, amount, noise impact, and operating characteristics of proposed equipment on the project site (e.g., 24-hour function, sporadic use expected). Identify the distance and the characteristics of the pathway between the noise source and the nearby land uses that would receive the noise. Noise models may be used, as appropriate.

Noise levels 50 feet from a source decrease by approximately 3 dBA over a hard, unobstructed surface, such as asphalt, and by approximately 4.5 dBA over a soft surface, such as a vegetated area. For every doubling of distance thereafter, noise levels drop another 3 dBA over a hard surface and 4.5 dBA over a soft surface. These reduction rates can be used to adjust noise levels at the noise receptor locations, based on their relative distances from the project equipment.

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[4] *See I.1. CONSTRUCTION NOISE.*

Once noise levels from individual pieces of equipment on the project site have been calculated, logarithmically add together the noise levels from all equipment operating simultaneously. (Noise levels measured in decibels increase logarithmically and cannot be added arithmetically.) Where the noise transmission path between the source and the receptor is complex, consult a noise specialist as necessary.

To determine the change in noise level, subtract the projected ambient noise level without the project's stationary noise from the projected noise level during project operation. Use the chart in the Significance Threshold to determine the significance of the difference.

Mobile Vehicular Sources

Review the project description, determine the number of vehicle trips to be generated by the project, and distribute the trips on the street system (use the traffic study or methodology described in L.1. INTERSECTION CAPACITY). Determine the characteristics of the noise transmission pathway. Using a mobile noise prediction model, project the future exterior ambient noise levels for these streets with and without the proposed project. Base the selected noise model on the Federal Highway Administration (FHWA) highway noise prediction procedures described in FHWA-77-108 or the most recent revision. The City of Los Angeles recommends the use of either LEQV2 or SOUND32 prediction models as developed by California Department of Transportation (Caltrans). LEQV2 requires the following information: (a) traffic volumes, (b) roadway, barrier and receiver geometry, (c) vehicle speed, (d) number of lanes, (e) fleet mix, and (f) drop-off rates. It uses angles, distances and elevations to define source-receptor spatial relationships. SOUND32 requires the following information: (a) traffic volumes, (b) roadway, barrier and receiver geometry, and (c) drop-off rates. This model uses a three dimensional coordinate system to define source-receptor spatial relationships.

If monitoring was used to quantify existing noise levels, use existing traffic conditions (volumes, roadway geometry, etc.) to model the existing noise levels. A comparison of monitored existing noise levels and modeled existing noise levels can be used to calibrate the modeling resulting.

To determine the change in noise level, subtract the projected noise level on the selected roadways without the project's traffic-generated noise from the projected noise level, including the project's traffic-generated noise. Use the chart in the Significance Threshold to determine the significance of the difference.

Noise levels increase approximately 3 dBA for each doubling of roadway traffic volume, assuming that the speed and fleet mix remain constant. A change in vehicle speed can also change noise levels. If vehicle speed and fleet mix can be assumed to remain constant after project implementation, and the project would result in traffic that is less than double the existing traffic, then the project's mobile noise impacts can be assumed to be less than significant.

For a program-level analysis where project details are unknown, assume the full build out of allowable land use and density. Use the methodology above to determine program-generated noise increases.

Cumulative Impacts

For impacts from stationary sources, as feasible, identify the type and amount of equipment to be used by the related projects. Determine whether noise from these sources would impact the same land uses impacted by the proposed project. For those, calculate and logarithmetically add the related project noise to project-generated noise to determine the cumulative effect of the activities.

The analysis for project impacts from mobile vehicular sources uses future traffic levels to establish future ambient noise levels. As these traffic levels include trips from the related projects, additional evaluation is not required.

Sample Mitigation Measures

Potential mitigation measures include the following:

Stationary Sources

- Redesign the source to radiate less noise (e.g., substitute a quieter equipment type process or enclose the source with sound absorbent material);

- Use insulation or construct solid barriers between noise sources and noise receivers;

- Separate noise sources from noise receivers by distances sufficient to attenuate the noise to acceptable levels;

- Insulate structures;

- Limit the hours of use for the equipment;

- Prepare an acoustical analysis and adopt the resulting insulation and attenuation measures; and

- Conduct inspections of the equipment prior to issuance of the occupancy permit to verify on-site containment of noise emissions.

Mobile Vehicular Sources

- Attenuate the sound by using barriers, or redirect sound transmission paths;

- Reduce vehicle trip generation, or reduce speed limits on roadways; and

- Locate any delivery, truck loading, or trash pickup areas as far from noise sensitive land uses as possible. Limit designated hours for deliveries.

3. DATA, RESOURCES, AND REFERENCES

Noise Element, 1999. Available from the City Planning Department's Central Publications Unit at 200 N. Spring St., 5th Floor, Los Angeles, California 90012; Telephone: (213) 978-1255.

Noise Ordinance No. 156,363, LAMC Section 111.02 provides sound level measurement procedures.

Noise Ordinance No. 156,363, LAMC Section 111.03 provides ambient noise levels.

Noise Control Act of 1972.

Association of Environmental Professionals (AEP), Thresholds of Significance, Noise Thresholds, 1992.

FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), 1978.

LEQV2 and SOUND32 sound prediction models, developed by Caltrans.

California Noise Insulation Standards, CAC, Title 25, Housing and Community Development.

California Motor Vehicle Code, Section 23130.

Stationary Source Categories

Agricultural operations: Agricultural noise is generated by a host of soil preparation and crop harvesting equipment, pesticide applicators, and conveying and elevating equipment.

Commercial/Institutional: Building service equipment is generally considered a stationary noise source. Building service equipment includes heating, ventilating, and air conditioning facilities, water and waste water systems elevators, and escalators. The most common urban noise source in the air conditioning category is the modern high efficiency-cooling tower, which contains two noise sources - fans and water spray. The increasing use of window or through the wall packaged air conditioning units leads to the generation of noise outside. In addition to their inherent noise characteristics, as these units age, loose metal parts and window frames may rattle.

Home workshops and gardening tools: Noise from these sources includes various motors that operate power mowers, power trimmers, edgers and leaf blowers, and power operated saws and drills.

Industrial: Much of the equipment used in industry and many industrial processes and operations generate noise. The intakes and discharges from fans, compressors, and engines often penetrate the walls of industrial buildings. Even a wholly enclosed industrial plant can generate noise because ducts and piping outside buildings radiate the noises generated from the inside. Inadequately insulated walls and roofs transmit noise. Sheet metal walls, for example, vibrate in response to inside noise and become effective noise radiators. Outdoor industrial operations also constitute sources of noise, including storage operations, steel and scrap yards, and truck and rail freight handling yards.

Lumbering operations: These operations involve the use of diesel powered equipment, chain saws, and hoisting and conveying equipment. Sawmill noise is produced by saws and planers and other lumber shaping equipment, the operation of hoisting and conveying equipment, and the operation of yard and loading equipment.

Mineral production: Mineral production includes both surface and underground mining; sand and gravel pit operations, and crushed rock operations. Noises generated from these sources include sounds emanating from rock crushers, screens, conveyor belts, diesel engines, electric motors, dump trucks, power shovels, rock drills, and blasting.

Petroleum production and refining: Principal sources of noise from petroleum production operations include pressure-reducing valves in pipes, steam turbines, derricks, gear boxes, compressors, electric

motors, diesel engines, and maintenance equipment.

Port Operations: Primary noise sources from port activities include bulk-loading facilities, shipping container-handling equipment, truck traffic, and train movements. The sound of ship engines and trains running contribute to the low steady-state noise emanating from a port, which is punctuated by ship whistles and train horns.

Public and private utilities: Public and private utilities engage in construction activities producing the same kind of noises discussed in I.1 CONSTRUCTION NOISE. They also operate hydroelectric, steam and diesel electric generation plants, compressors, pumps and pipelines, all of which generate noises similar to those discussed above as industrial noise sources.

Public services: Sources of noise from public services include sirens on emergency vehicles, truck and loading noise from rubbish collection and disposal, and equipment noise generated through the maintenance of streets, sewers and water systems.

Mobile Source Categories

Automobiles: The passenger automobile usually makes much less noise than other types of motor vehicles. They produce little exhaust noise except at low frequencies. The combination of wind, gearing, and tire noises produces an identifiable spectrum of noise at speeds over 40 mph and at distances over 100 feet. At higher speeds, this combination of sounds is identifiable at distances up to one mile under quiet ambient conditions. The loudest element of automobile noise at a long distance is the sound of tires.

Buses: Buses tend to radiate less noise than other heavy vehicles because their engine compartments are sealed. Bus noise, however, usually increases with use because of damage to these seals.

Motorcycles: Motorcycle noise is distinctive because, in addition to noise from intake, exhaust, and gearing systems, motorcycles radiate considerable noise directly through the engine walls.

Trucks: Trucks make more noise than other motor vehicles. Diesel trucks are generally the most significant motor vehicle noise source. A single, large diesel truck may produce noise levels equal to noise generated by 30 passenger cars. Under most conditions of operation, exhaust noise predominates. At low speeds, under heavy acceleration, engine and transmission noise may be louder. At high speeds on level roadways, tire noise predominates. Other sources of noise from trucks include the chassis, brakes, sheet metal parts, loose pins, and cargo.

I.3. RAILROAD NOISE

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XI.a): Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

XI.b): Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

XI.c): A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

XI.d): A substantial temporary or periodic increase in ambient noise levels in the project vicinity above the existing without the project?

B. Introduction

Railroad operations may increase existing noise levels and/or adversely affect noise-sensitive land uses. The effects of railroad noise depend on factors such as characteristics of the equipment and operations; distance and characteristics of the pathway between the generator and receptor; and weather. Section 17 of the Federal Noise Control Act, rather than state or local regulations, establishes controls and limits on railroad operations, through the United States Environmental Protection Agency (EPA) and United States Department of Transportation (U.S. DOT).

Environmental noise is measured in decibels (dB). To better approximate the range of sensitivity of the human ear to sounds of different frequencies, the A-weighted decibel scale (dBA) was devised. Because the human ear is less sensitive to low frequency sounds, the A-scale de-emphasizes these frequencies by incorporating frequency weighting of the sound signal. When the A-scale is used, the decibel levels are represented by dBA. On this scale, the range of human hearing extends from about 3 dBA to about 140 dBA. A 10 dBA increase is judged by most people as a doubling of the sound level.

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. The Community Noise Equivalent Level (CNEL) represents an energy average of the A-weighted noise levels over a 24-hour period with 5 dBA and 10 dBA

during these time periods and increased human sensitivity to noise during the quieter periods of the day. The Day-Night Sound Level (Ldn), like CNEL, measures noise exposure over a 24-hour period and adds a penalty based on the time of day, although only for late night/early morning hours (10 dBA penalty from 10:00 p.m. to 7:00 a.m.). Thus, the Ldn measurement is slightly less sensitive than CNEL, but it results in very similar noise ratings for most community settings, usually differing by less than 1 dBA.

Railroad operations are generally classified into either line operations or yard operations. Line operations consist of the movements of trains of various types over the main line and local tracks; yard operations are the various activities concentrated in a railway terminal. Yard operations generate noise through the disassembling and recoupling of cars to form new trains, and the maintenance and repair of cars and locomotives. For analytical purposes these may be considered as complex sources of stationary noise. Railroad operations are a much more common source of railroad noise than yard operations. The noise generated by train pass-bys is based on the type of vehicle in use, how it is operated, and the configuration of the track-bed relative to the surrounding terrain. The Federal Transit Authority (FTA) regulates noise generated by moving trains (e.g. whistles, warning signals, wheels on rails), rail maintenance yards, and activity associated with rail facilities.

The Department of Housing and Urban Development (HUD) prepared a Noise Guidebook, which addresses railroad noise, provides guidance on calculating noise levels from railroad operations, and includes a threshold of 3,000 feet between a railroad line and a noise-sensitive land use.

C. Screening Criteria

- Would project development result in a noise-sensitive land use being located within 3,000 feet of a railroad line?

- Would the project result in an increase in the number or length of non-commuter trains operating on existing tracks within 3,000 feet of a noise-sensitive land use?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Railroad Noise and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact from Railroad Noise from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, including information on railroad activities. Consult a map showing the location of noise-sensitive land uses within 3,000 feet of the project site. Noise-sensitive land uses include residences, schools, libraries, hospitals, day-care facilities, convalescent/retirement homes, and parks. Determine whether the project would result in railroad noise being generated within 3,000 feet of a noise-sensitive land use.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact with regard to exterior noise levels resulting from railroad operations if the project causes noise measured at the property line of a noise sensitive receptor to increase by 3 dBA in CNEL, to or within the "normally unacceptable" or "clearly unacceptable" category, or any 5 dBA or greater noise increase (see the chart below).

Land Use	Community Noise Exposure CNEL, db			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 72

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: California Department of Health Services (DHS).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification of noise-sensitive land uses within 3,000 feet of the project site, including description, location and distance from the site; and

- Ambient noise levels (existing and future) measured in CNEL.

One of the following methodologies can be used to determine ambient noise levels:

- Field measurements involving the use of a noise meter at and surrounding the project site;

- "Presumed Ambient Noise Levels", as set forth in the Los Angeles Municipal Code (LAMC), Section 111.03 (see Exhibit I.1-1[1]); and

- A noise measurement program performed according to the procedures in the LAMC, Section 111.02 and 112.05. This involves taking measurements at selected locations to establish ambient background noise levels.

Project Impacts

Review the project description and identify the proposed number and type of rail operations per day. Use a map showing existing land uses to determine the location of, and distance between, sensitive receptors and railroad noise sources.

Guidance in the HUD Noise Guidebook can be used to calculate the resulting Ldn and, thus, CNEL levels. Using Exhibits I.3-1 and I.3-2, and based on the receptor distance from the railroad track, locate the appropriate distance on the horizontal axis (Effective Distance) and vertical axis (Average Daily Number of Operations). At the point of intersection of these two measurements, the diagonal axis will show the Ldn level.

HUD Methodology Assumptions:

- A clear line of sight exists between the railway track and the sensitive receptor;
- There are 50 cars per train;

[1] *See I.1. CONSTRUCTION NOISE.*

- The average train speed is 30 miles per hour; and

- Nighttime operations represent 15 percent of the 24-hour total.

With diesel locomotives:

- There are two locomotives per train; and

- The site is not near a grade crossing requiring prolonged use of the train's horn or whistle.

With rapid transit and passenger trains:

- Rails are welded together.

If the project characteristics vary substantially from the HUD methodology assumptions, consult a qualified noise specialist for a more detailed analysis, as necessary. For diesel locomotives, the model described in *Assessment of Noise Environment Around Railroad Operations* may be utilized.[2] It includes variables not included in the HUD model, such as attenuation due to barrier shielding, duration in time of a train pass-by, correction for the presence of additional helper locomotives on an upgrade, and accounting for welded rails, bridges, and grade crossings. In addition, this model has several graphs for use in conjunction with the formula. These graphs include the decibel volume for the duration of a train pass-by depending on distance from the source, the noise level of rail cars based on the speed they are traveling, and the attenuation of sound levels due to a shielding barrier.

Establish the change in noise level from the project. Subtract the projected noise level without the project's railroad operations from the projected noise level with the project's railroad operations. Compare this information to the Significance Threshold.

Cumulative Impacts

As feasible, identify the type and amount of railroad activity expected as a result of related projects. Consider noise-sensitive land uses within 3,000 feet of the proposed and related projects(s). Add the increase in noise at the sensitive receptors from the related projects to that from the proposed project to determine the cumulative impact.

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2 *Wyle Laboratories, Assessment of Noise Environments Around Railroad Operations, pages 3-24 - 3-37, 1973.*

Sample Mitigation Measures

Potential mitigation measures include the following:

Railroad Lines and Vehicles

- Use continuous welded rail instead of jointed rail on the steel wheel/rail interface;
- Utilize lightweight trucks to minimize unsprung weight;
- Use special grinding (truing) equipment to ensure smooth wheel/rail interaction;
- Use resilient rail fasteners instead of fixed rail fasteners for track fixation;
- Utilize resiliently supported ties where resilient rail fasteners are inadequate; and
- Provide sound barrier walls or insulation.

Rail Yards

- Enclose rail yards with solid fencing or walls;
- Insulate buildings; and
- Include sound attenuators on fans and ducts.

3. DATA, RESOURCES, AND REFERENCES

American Public Transit Association, Guidelines and Principles for Design of Rapid Transit Facilities, 1983.

T.J. Schultz, W.J. Galloway, Office of Policy Development and Research, HUD, Noise Assessment Guidelines - Technical Background, 1980.

U.S. DOT, Los Angeles Rail Rapid Transit Project Final Environmental Impact Statement (EIS), 1983.

EPA, Background Document for Railroad Noise Emission Standards, 1975.

HUD, Noise Guidebook.

Wilson, Ihrig and Associates, Inc., Noise and Vibration Study for the Metro Rail Project, Final Report, 1982.

Wyle Laboratories, Assessment of Noise Environments Around Railroad Operations, 1973 (prepared for Southern Pacific Transportation Co., Union Pacific Railroad, the Atchison, Topeka and Santa Fe Railway Company, the Association of American Railroads.)

See also I.2. OERATIONAL NOISE.

Railroad Operations and Characteristics

There are three major railroad companies with regular freight traffic operating in the City of Los Angeles: Southern Pacific, Santa Fe, and Union Pacific. The Southern Pacific has an active rail yard in the Boyle Heights area within the City of Los Angeles. The Santa Fe and Union Pacific rail yards are located outside the City of Los Angeles, in the cities of Vernon and Commerce, respectively. In addition, such rapid transit systems as Amtrak, light rail trains (Blue Line), and commuter trains (MetroLink) serve the City of Los Angeles.

There are three general types of railroad vehicles: locomotives, rail cars, and rapid transit vehicles. These vehicles, either in combination with one of the other types or by themselves, form three general train categories. These are freight trains, conventional passenger trains, and rapid transit trains. A freight train consists of one or more locomotives, usually diesel, pulling a combination of various types of freight cars. A conventional passenger train is similar to a freight train in that it consists of one or more locomotives pulling several coaches, but one important difference is that the locomotive may either be diesel-electric or all electric (there are also gas turbine locomotives, but these are few in numbers). The third type, rapid transit trains, differs from the others in that there is not a centralized source of propulsion pulling a series of cars, but rather electric motors on the axles of each car.

A diesel locomotive utilizes a diesel engine driving an electrical alternator or generator, which in turn drives electric traction motors on the wheels. An all-electric locomotive, on the other hand, obtains its electrical power from an external source; normally an overhead line or third rail, to drive its traction motors. Having no propulsion system, freight cars and passenger coaches generate noise mainly by the rolling of the wheels on the rails. The magnitude of the noise depends heavily on the condition of the wheels and track, and on the type of vehicle suspension. In regards to rail cars, modern passenger coaches with auxiliary hydraulic suspension systems in addition to normal springs can be about 10 dBA quieter than older passenger coaches or freight cars which have only springs. The noise of rapid transit trains, even though there are electric motors on each axle that are sources of noise, is also predominantly generated by the interaction of the wheels upon the rails. In fact,

because rapid transit vehicles are usually newer and have better suspension systems, they are generally quieter than freight cars or passenger coaches. Exhibit I.3-4 shows average noise levels for locomotives, locomotives with mufflers and railcars.

Evidence indicates that jointed tracks exceed noise levels produced by welded tracks by up to 8 dBA. Railway traffic noise can be affected by several other sources, including jointed tracks, as indicated in Exhibit I.3-5. Rail yard noise is usually not an issue due to the size of rail yards and their location in less noise sensitive industrial areas. However, Exhibit I.3-6 includes some average noise levels for different sources of rail yard noise.

Selected Legislation

Federal

Section 17 of the Federal Noise Control Act requires that the EPA set noise emission standards for the equipment and facilities of interstate railroad carriers and establishes that the Secretary of Transportation will enforce them. In order to ensure safety considerations and technological availability, any standard or revision to a standard may be issued only after consulting with the Secretary of Transportation. These standards apply to the equipment's use and maintenance. On December 31, 1975, the EPA issued its first railroad noise regulation. This regulation set noise emission standards for locomotives and rail cars operated by interstate rail carriers. The regulation, which became effective December 31, 1976, set the following noise emission standards for locomotives measured from a distance of 100 feet:

73 dBA at idle;
93 dBA stationary at all other throttle settings; and
96 dBA moving at any speed.

The standards established for rail cars were:

88 dBA up to 46 miles per hour; and
93 dBA greater than 45 miles per hour.

For new locomotives in service after December 31, 1979, the standards set were:

70 dBA at idle;
87 dBA stationary at all other throttle settings; and
90 dBA moving.

In January 1980, the EPA published final noise emission regulations for four railroad noise sources. The regulations, which took effect in January 1984, set additional noise emission standards for rail yard operations and equipment, such as switcher locomotives, retarders, and car coupling.

Local

The Noise Element includes the following guidelines:

- Ensure that any steel track rapid transit system serving the City considers the use of welded rails in preference to jointed rails in order to reduce track vibration noise; and

- Develop a program to encourage railroads to provide noise-attenuating buffers along railroad rights-of-way (ROW) in residential areas.

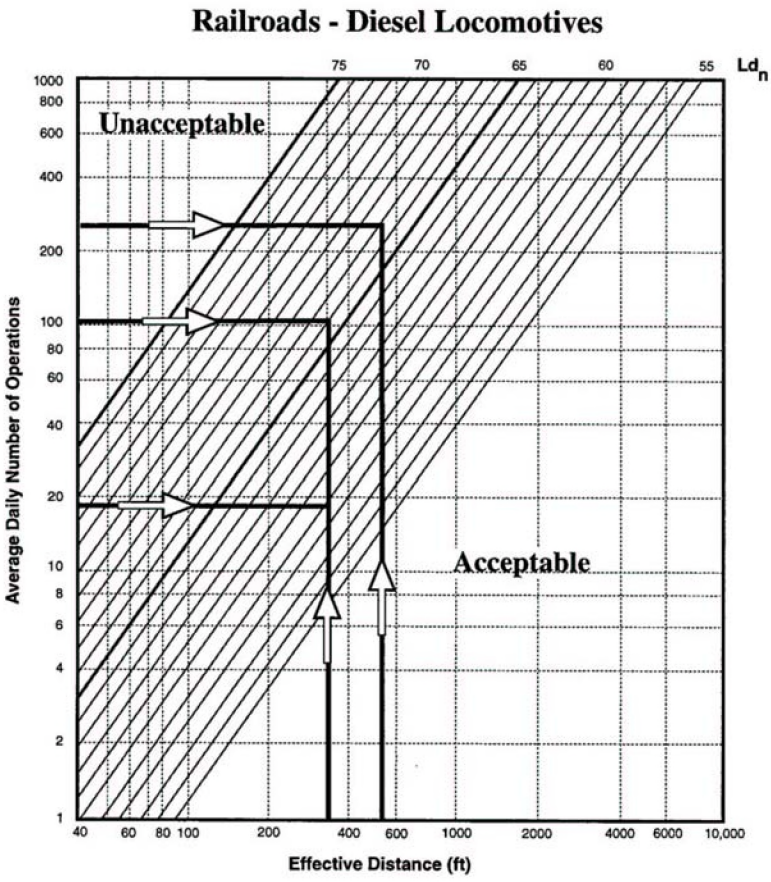

Exhibit I.3-1

Planning
Consultants
Research

FIGURE 1
DIESEL LOCOMOTIVES NOISE
Source: U.S. Department of Housing and Urban Development

Railroads - Rapid Transit and Railway Cars

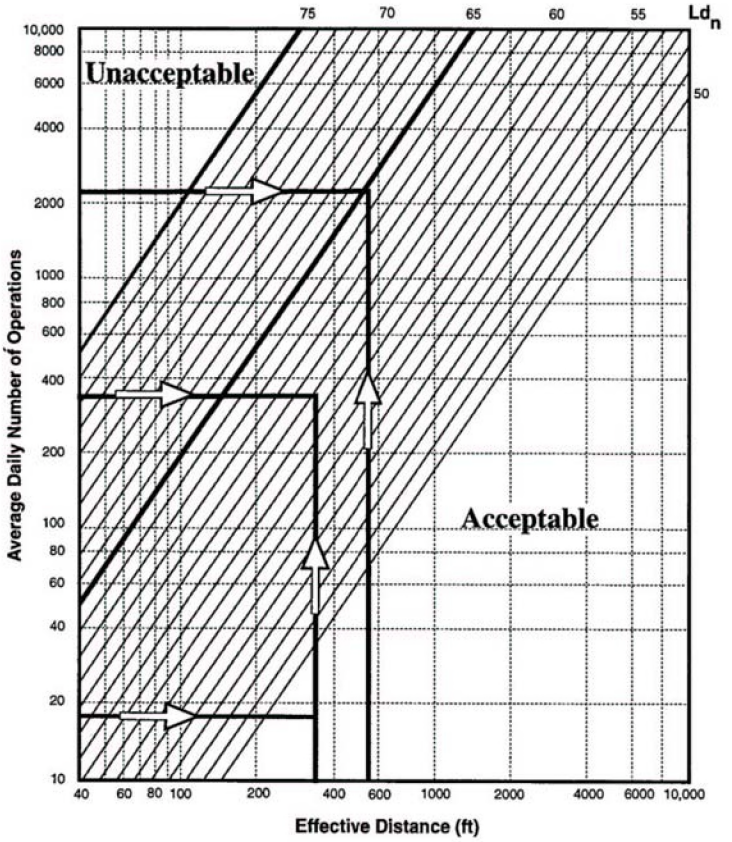

Exhibit I.3-2

Planning
Consultants
Research

FIGURE 2
ELECTRIC RAPID TRANSIT NOISE
Source: U.S. Department of Housing and Urban Development

Exhibit I.3-3
AVERAGE LOCOMOTIVE, RAILCAR, AND RAPID TRANSIT NOISE LEVELS

Type	Overall Maximum[a] (dBA)
Locomotive	93
Locomotive with Exhaust Muffler	87
Railcar -less than 45 miles per hour (mph)	88
Railcar - over 45 mph	93
Rapid Transit	85

[a] At a distance of 100 feet

Source: EPA, Background Document for Railroad Noise Emission Standards, pages 2-2 to 2-4.

Exhibit I.3-4
VARIABLES AFFECTING RAILCAR WHEEL/RAIL NOISE EMISSION

Variable	Noise Emission[a]
Jointed Rails (vs. Welded)	4 to 8 dBA
Grade Crossings	6 to 8 dBA
Wheel Irregularities – Flat Spots or Built-up Tread	Up to 15 dBA
Bridges	
a. Light Steel Structure	Up to 30 dBA
b. Heavy Steel Structure	Up to 15 dBA
c. Concrete Structure	0 to 12 dBA
Short Radius Curves	
a. Less than 600 foot radius	15 to 25 dBA
b. 600 to 900 foot radius	5 to 15 dBA

[a] These factors are assumed to act individually. When in combinations of two or more, the net increase will not be equal to the sum of each component, but most likely the largest individual factor.

Source: Wyle Laboratories, Assessment of Noise Environments Around Railroad Operations, page 2-3.

Exhibit I.3-5
AVERAGE RAIL YARD NOISE LEVELS

Noise Source	Level (dBA)[a]
Switcher Movement	76 - 80
Car Impact	91
Retarder	94 - 109
Public Address Systems	90 - 95
Engine Load Tests	92
Locomotive Service Racks	79.5
Mechanical Refrigerator Car - Engine Side	71
Mechanical Refrigerator Car - Condenser Side	64
Idling Locomotive	73
Idling Locomotive with Exhaust Muffler	70

[a] At a distance of 100 feet

Source: Wyle Laboratories, Assessment of Noise Environments Around Railroad Operations, pages 4-1 to 4-29.

I.4. AIRPORT NOISE

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XI.a): Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

XI.b): Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

XI.c): A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

XI.d): A substantial temporary or periodic increase in ambient noise levels in the project vicinity above the existing without the project?

XI.e): For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

XI.f): For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

B. Introduction

New or modified airport and heliport operations and associated aircraft activities may increase existing noise levels and may adversely affect noise-sensitive land uses. The California Department of Transportation's (Caltrans) Division of Aeronautics has developed a set of noise regulations, based on the Federal Aviation Administration's (FAA) Federal Aviation Regulations (FAR), which set noise limits for specific aircraft and provide guidance for land-use compatibility around airports. The effects of airport noise depends on factors such as characteristics of the equipment and operations; distance and pathway between the generator and receptor; and weather. Noise generated due to aircraft flyovers depends upon such variables as type and size of the aircraft (e.g. 2- or 3-engine turbofan versus 4-engine widebody turbofan) and its operating characteristics (primarily its thrust level).

The four airports operated by the City of Los Angeles include Los Angeles International (LAX), Van Nuys, Palmdale, and Ontario. The Burbank-Pasadena-Glendale Airport, due to its proximity to the City, influences the noise environment in some areas of Los Angeles. Noise levels generated by the operation of two other airports within or near the City of Los Angeles, Santa

Monica Municipal Airport and Whiteman Airport, generally do not exceed 65 decibels within the Community Noise Equivalency Level (CNEL) contours, and as such do not strongly influence the City's noise environment.

Environmental noise is measured in decibels (dB). To better approximate the range of sensitivity of the human ear to sounds of different frequencies, the A-weighted decibel scale (dBA) was devised. Because the human ear is less sensitive to low frequency sounds, the A-scale de-emphasizes these frequencies by incorporating frequency weighting of the sound signal. When the A-scale is used, the decibel levels are represented by dBA. On this scale, the range of human hearing extends from about 3 dBA to about 140 dBA. A 10-dBA increase is judged by most people as a doubling of the sound level.

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. CNEL represents an energy average of the A-weighted noise levels over a 24-hour period with 5dBA and 10 dBA penalties added for nighttime noise between the hours of 7:00 p.m. and 10:00 p.m. and 10:00 p.m. to 7:00 a.m., respectively. The penalties were selected to account for reduced ambient noise levels during these time periods and increased human sensitivity to noise during the quieter periods of the day. The Day-Night Sound Level (Ldn), like CNEL, measures noise exposure over a 24-hour period and adds a penalty based on the time or day, although only for late night/early morning hours (10 dBA penalty). Thus, the Ldn measurement is slightly less sensitive than CNEL, but it results in very similar noise ratings for most community settings, usually differing by less than 1 dBA.

For the purpose of airport noise impact analyses, CNEL levels are described as contours. A contour is an interpolation of noise levels drawn to connect all points of a similar level. These contours are displayed on maps and appear similar to topographical contours, forming "footprints" surrounding a noise source.

The FAA regulates noise levels for aircraft at all United States airports. In 1969, FAR Part 36 certified noise levels for specific aircraft. FAR Part 150, Airport Noise Compatibility Planning, which became effective in 1981, provides guidance for land-use compatibility around airports. This FAR established a voluntary program, which provides that airport noise impacts are quantified and made public and that noise compatibility plans and mitigation measures are subject to public review and FAA approval. Part 150 states that in general, residential uses are not compatible within the 65 or above dBA Ldn contour and that all types of land uses are compatible in areas below 65 dBA Ldn. In addition, the FAA's Airport Environmental Handbook indicates that its threshold of significance is a 1.5 dBA Ldn increase in noise in any sensitive area located within the 65 dBA Ldn contour.

The Division of Aeronautics is responsible for granting variances from compliance with state noise laws for airports in California. The Division of Aeronautics has also developed noise regulations, adopted in 1970, which are based in part on the FAR Part 150 guidelines. These regulations state that the aircraft noise level in a residential setting should be no greater than 65 dB CNEL. One of the objectives of the Division of Aeronautics is to create an urban development pattern in which all land included within the 65 dB CNEL contour is devoted to either airport or non-sensitive land uses.

C. Screening Criteria

- If the proposed project includes the construction or expansion of an airport or heliport and has the potential to expose noise-sensitive land uses to high noise levels (through proximity of such land uses to the flight path, etc.), would the project result in an incompatible land use existing within the 65 dB CNEL contour of an airport or heliport?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Airport Noise and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact from Airport Noise from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, including information on airport activities. Consult a map showing the 65 dB CNEL contour and surrounding land uses. Consider whether potential incompatible land uses have acoustical insulation, an avigation agreement with the airport operator, etc. Operations at commercial airports involving turboprop or piston engine aircraft under 70,000 lbs. have reduced potential to expose sensitive land uses to high noise levels because of the quieter noise levels generated by these aircraft. Compare this information with the screening criteria to determine whether incompatible uses would be located within the 65 dB CNEL contour.

Incompatible land uses include the following[1]:

- Residences, including but not limited to, detached single-family dwellings, multi-family dwellings, high-rise apartments, condominiums and mobile homes, unless:

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1 *Division of Aeronautics, Noise Standards (Title 21, Subchapter 6, Article 1) 1990, pages 225-226.*

- An avigation easement[2] for aircraft noise, has been acquired by the airport proprietor;

- A dwelling unit which was in existence at the same location prior to January 1, 1989, and has adequate acoustic insulation to ensure an interior CNEL of 45 dB or less due to aircraft noise in all habitable rooms;

- A residence is a high rise apartment or condominium having an interior CNEL of 45 dB or less in all habitable rooms due to aircraft noise, and an air circulation or air conditioning system, as appropriate;

- A residence exposed to an exterior CNEL less than 80 dB (75 dB if the residence has an exterior normally occupiable private habitable area) where the airport proprietor has made a genuine effort to acoustically treat the residence or acquire avigation easements for the residence involved, or both, but the property owner has refused to take part in the program; or

- A residence which is owned by the airport proprietor;

- Public and private schools of standard construction for which an avigation easement for noise has not been acquired by the airport proprietor, or that do not have adequate acoustic performance to ensure an interior CNEL of 45 dB or less in all classrooms due to aircraft noise;

- Hospitals and convalescent homes for which an avigation easement for noise has not been acquired by the airport proprietor, or that do not have adequate acoustic performance to provide an interior CNEL of 45 dB or less due to aircraft noise in all rooms used for patient care; and

- Churches and other places of worship for which an avigation easement for noise has not been acquired by the airport proprietor or that do not have adequate acoustic performance to ensure an interior CNEL of 45 dB or less due to aircraft noise.

[2] *An avigation easement is a legal agreement to purchase the right to fly over a property owner's land without penalty.*

2 DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A significant impact on ambient noise levels would normally occur if noise levels at a noise sensitive use attributable to airport operations exceed 65 dB CNEL and the project increases ambient noise levels by 1.5 dB CNEL or greater.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following:

- Identification of ambient noise levels (existing and future) measured in CNEL. Use the 65 dB CNEL contour map or mathematical models to assess existing (at the expected time of project implementation) noise conditions. Model future noise levels by establishing parameters and assumptions, including aircraft fleet compositions at the airport for which a project is being analyzed, fleet forecasts, appropriate aircraft substitutions, departure profiles, tracks, thrusts settings, operational time of day (day, evening, or night), airport configurations (runway length and location, departure and landing thresholds, etc), and the algorithms used to calculate individual aircraft noise profiles. Use a recognized aircraft noise model, such as one of the following:

  - The Integrated Noise Model (INM), developed by the FAA and used extensively for commercial airports, produces noise contours to geographically demonstrate the location and level of average, weighted noise impacts;

  - The Area Equivalent Method (AEM), developed by the FAA, produces the aggregate area of noise impact without demonstrating the location of specific noise levels; it can be used as a screening tool to determine whether the more sophisticated and time consuming INM is warranted;

  - The Helicopter Noise Model (HNM), developed by the FAA, is used for projects which primarily involve helicopter operations; and

  - The Noise Map, developed by the United States Air Force (USAF), is primarily used to analyze military operations.

- Characterization of noise-sensitive land uses within the 65-dBA contour of airport operations, including the description and location within the contour. Identify noise attenuation devices, avigation easements, and other relevant features of the land uses; and

Project Impacts

Use the information from the Evaluation of Screening Criteria and Environmental Setting and one of the aircraft noise models described above to develop future noise contours. Results from the INM are preferred for commercial airports because of the level of sophistication and detail provided. Identify noise sensitive uses at which noise levels exceed 65 dB CNEL as a result of airport operations. Calculate the increase in ambient noise levels due to project operations at these locations. Compare this information to the Significance Threshold.

Cumulative Impacts

The projection of future baseline ambient noise levels incorporates background increases in noise and airport-related noise from the related projects. Therefore, no new analysis is required.

Sample Mitigation Measures

Possible mitigation measures include the following:

- Redirect air traffic over the ocean (for coastal airports) or over less populated areas;*

- Acquire noise-impacted land. The FAA's Uniform Relocation Assistance and Real Property Acquisition rules and provisions govern land acquisition and relocation assistance;

- Purchase avigation easements;

- Reduce the number of flights during evening and nighttime hours;*

- Increase takeoff angles within safety parameters or reducing thrust settings, depending on proximity and configuration of surrounding land uses;*

- Plan runway utilization schedules to take into account adjacent residential areas, noise characteristics of aircraft, and noise-sensitive time periods;*

- Employ shielding to obstruct the noise path to incompatible uses, using natural terrain, buildings, and other obstructions to noise; and

- Develop compatible land uses within the noise boundary through rezoning, or application of acoustical insulation.

* ***Strategies marked with * require FAA approval***

3. DATA, RESOURCES, AND REFERENCES

Los Angeles World Airports, Van Nuys Airport Noise Control Regulation EIR, 1992.

Los Angeles World Airports, Draft Van Nuys Airport Master Plan, 1995.

Division of Aeronautics, Noise Standards, 1990.

FAA, Airport Environmental Handbook, 1985.

See also I.2. OPERATIONAL NOISE.

Selected Legislation

Federal

FAR, Part 36

Establishes noise standards and provisions for issuing certificates for various types of aircraft. Also, the aircraft must meet the airworthiness regulations constituting the type certification basis of the aircraft under the conditions in which compliance with this part is shown.

FAR, Part 150

Describes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. Makes matching funds available for abatement programs.

State

California Airport Noise Standards Act, 1970 (CAC, Title 4)

Implements the FAA airport standards, administered by the State Division of Aeronautics. Requires civilian airports to meet FAA noise standard of 65 dB CNEL at airport boundaries.

CCR, Title 21 (Business Regulations)

Requires airports to monitor noise impacts and report to the County Airport Land Use Commission and State Division of Aeronautics on a quarterly basis.

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J. POPULATION AND HOUSING

J.1. POPULATION AND HOUSING GROWTH

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XII.a): Would the project induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

XII.b): Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

B. Introduction

The quantity and distribution of population and households in the City affects the environment, use of infrastructure, and the demand for public services. Thus, in order to respond to and plan for future population and households, the General Plan, including the Framework and Housing Elements, and the Southern California Association of Government (SCAG) Regional Comprehensive Plan and Guide (RCP&G) include forecasts of population and housing trends.[1] Because the projections are used to plan the infrastructure and level of service required to support the future population, actual growth in excess of the projections can lead to deficiencies. According to the CEQA Guidelines Section 15064(e): "Economic and social changes resulting from a project shall not be treated as significant effects on the environment. Economic or social changes may be used, however, to determine that a physical change shall be regarded as a significant effect on the environment." Population and housing growth are examples of economic and social changes.

Population refers to the occupants of housing projects, population indirectly associated with workers of proposed non-residential projects, or changes in the amount and distribution of

[1] *The City of Los Angeles uses two different estimates of its population. The first is prepared by the California Department of Finance (DOF) and provided to SCAG. For purposes of conformity with the requirements of these other agencies, the City uses this estimate when and where appropriate. The City Planning Department prepares an estimate of its population based on a number of locally derived factors including: building and demolition permits issued, school enrollments, and the percentage of active electric meters. The City Planning Department estimates are used for planning purposes in the City of Los Angeles. It should be noted that both sets of numbers are estimates and, therefore, only close approximations of the actual population. Every 10 years these estimates are reconciled by the U.S. Census.*

population and employment permitted by adoption or revision to a land use plan. Important areas include changes in the number, characteristics, geographic distribution, and timing of new residents directly or indirectly resulting from a proposed project, and the degree to which project-related changes are consistent with City, regional or other adopted population growth policies. Other issues are the degree to which project-related population is already present in the area under analysis (i.e., already residing or working in the area), or whether they represent in-migrants (i.e., likely to relocate into the area from some other more distant location as a result of the project).

Housing impacts may result directly from projects, which include housing units, or indirectly from, for example, revisions to the Housing Element or changes in housing demand associated with new non-residential development projects. Important issues include changes in the number, characteristics (including rent level or purchase price), geographic distribution, and timing of new housing units associated with a proposed project, supply-demand relationships, and the degree to which project-related changes are consistent with City, regional or other adopted housing growth policies.

C. Screening Criteria

- Would the project include a General Plan amendment, which could result in an increase in population over that projected in the adopted Community Plan or General Plan?

- Would the project induce substantial growth on the project site or surrounding area?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Population and Housing Growth, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Population and Housing Growth from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and the surrounding area. Determine whether the project includes a General Plan amendment, and identify the potential to induce substantial growth. General Plan amendments which could result in an increase in population are those for which the population in the planning subregion containing the project site would exceed the population forecast in the Framework Element after buildout to the maximum amount permitted under the General Plan amendment. The potential to induce substantial growth may be indicated by the introduction of a project in an undeveloped area or the extension of major infrastructure. As

necessary, contact the City Planning Department Demographics and Framework Monitoring Sections for current analysis, data, and department policy. Examples of major infrastructure systems include: major roads, highways, or bridges; major utility or service lines; major drainage improvements; or grading which would make accessible a previously inaccessible area. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The degree to which the project would cause growth (i.e., new housing or employment generators) or accelerate development in an undeveloped area that exceeds projected/ planned levels for the year of project occupancy/buildout, and that would result in an adverse physical change in the environment;

- Whether the project would introduce unplanned infrastructure that was not previously evaluated in the adopted Community Plan or General Plan; and

- The extent to which growth would occur without implementation of the project.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Recent population and housing growth trends for the planning subregion containing the project site (e.g., past 10 years);

- Forecast or projection of population and housing growth for the planning subregion containing the project site; and

- Summary of population and/or housing growth policies that affect or regulate the project site. These may include, for example, the Community Plan, General Plan

(including the Framework and Housing Elements), redevelopment plan, the City's Housing and Urban Development (HUD) Consolidated Plan, or SCAG's RCP&G.

Project Impacts

Determine the amount of growth from the project by calculating the number of housing units included as part of the project and the occupancy of the units. Occupancy is related to design and the number of bedrooms per unit (i.e., for seniors, large families, etc.). For non-residential uses, estimate the population associated with employees based on the type of use and the corresponding type of employment (e.g., degree of skill required, wage levels, likelihood of causing in-migration). To evaluate the degree to which the project would exceed adopted population or housing projections for the planning subregion containing the project site, consider forecasts found in, for example, the applicable specific plan, General Plan, Framework Element, Community Plan, redevelopment plan, or RCP&G. A physical change in the environment would affect the land, air, water, flora, fauna, noise conditions, minerals, objects of historic or aesthetic significance, etc.

If the project is in an area that is currently undeveloped or unserved by major infrastructure, and the project would introduce infrastructure or accelerate development, then non-contiguous "leapfrog" or other undesirable or inefficient development patterns may result if project growth is not consistent with adopted projections and policies. Consider whether the proposed infrastructure has been analyzed or planned for in the Community Plan. Examples of major infrastructure systems include: major roads, highways, or bridges; major utility or service lines; major drainage improvements; or grading which would make accessible a previously inaccessible area.

Evaluate the extent to which growth would occur without implementation of the project by determining the amount, timing, and location of growth contemplated for the project site and surrounding area in the adopted population and housing projections. Compare this to the growth anticipated with the proposed project and determine whether potential impacts are significant.

Cumulative Impacts

Determine the increase in housing units, occupancy and population associated with the related projects in the same manner as described above under Project Impacts. Compare the combined effect of the growth from the project and the related projects to the amount, timing and location of growth forecast for the project site and surrounding area in the adopted population and housing projections. If the area is currently underdeveloped or the project

introduces new major infrastructure, also note whether the project or related projects would introduce infrastructure or accelerate development.

Sample Mitigation Measures

As noted in the Introduction, population and housing growth are not considered significant effects on the environment. Secondary or indirect impacts, such as increased traffic or noise, may be significant and may be physical changes caused by population and housing growth. Thus, mitigating these secondary impacts may mitigate the effects of population and housing growth.

3. DATA, RESOURCES, AND REFERENCES

City of Los Angeles: For adopted housing policies, see the Housing and Framework Elements and the City's HUD Consolidated Plan. The HUD Consolidated Plan is updated annually in July, and is available from the Community Development Department (CDD) at 215 West Sixth Street, Los Angeles, California 90014; Telephone: (213) 485-4682. For current population and housing estimates, see Population and Housing Estimates, 1999 (updated periodically), City Planning Department, Demographical Research Unit, 200 N. Spring St., 7th Floor, Los Angeles, California 90012; Telephone: (213) 978-1416; Internet: www.lacity.org/PLN (click on *Statistical Info).*

SCAG: RCP&G, Chapter 3: Growth Management. SCAG's regional growth forecast to the year 2025 is available in a Small Area Forecast edition, which includes employment, households and population (including limited characteristics) at the census tract level for the entire six-county SCAG region. Available at SCAG offices, 818 West Seventh Street, 12th Floor, Los Angeles, California 90017; Telephone: (213) 236-1800; Internet: www.scag.ca.gov.

Center for the Continuing Study of the California Economy (CCSCE): This research center based in Palo Alto, California, publishes an annual five-year forecast of economic and population growth at the county level. See for example, California County Projections, which includes data on population growth, household growth, and income growth, for each county in the state, including Los Angeles County. CCSCE is located at 610 University Avenue, Palo Alto, CA 94301; Telephone: (650) 321-8550.

U.S. Census of Population and Housing: The Bureau of the Census is generally regarded as the most authoritative source of population and housing data, although its estimates are only prepared every 10 years. Summary Tape Files 1 and 3 provide the most commonly used data, at a scale as small as a census block. Available at public libraries.

J.2. POPULATION AND HOUSING DISPLACEMENT

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XII.b): Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

XII.c): Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

B. Introduction

Within the City of Los Angeles, the supply of and demand for housing, especially affordable housing, indicates that the existing stock should be preserved, maintained, and expanded in order to provide for the population. The CEQA Guidelines Section 15064(e) states "economic and social changes resulting from a project shall not be treated as significant effects on the environment. Economic or social changes may be used, however, to determine that a physical change shall be regarded as a significant effect on the environment."

A recent study prepared for the Housing Department[1] explored some of the current housing problems in the City of Los Angeles, including:

- Lack of growth in the supply of housing despite an increasing number of households;
- Household-housing type mismatch because average unit size is small and declining, while average household size is large and increasing;
- Overcrowding; and
- Increasing rent burden such that more than 30 percent of income goes for rent. This situation is related to household size, income, ethnicity, as well as the age of the head of the household.

[1] *Housing Department, 1994 Housing Study, prepared by Hamilton, Rabinovitz & Alschuler, Inc., December 1995.*

Adopted City programs and policies, designed to increase and conserve the supply of housing, particularly the supply of housing affordable to lower-income households, are contained in the Housing and Framework Elements, the Housing and Urban Development (HUD) Consolidated Plan, redevelopment plans, and the Rent Stabilization Ordinance. Examples of these policies and other regulations include:

- Housing Element, which discourages the demolition of affordable housing and encourages the replacement of affordable housing; obligates the City to provide relocation services to persons who are displaced as a result of City actions; and mandates mitigation of relocation and displacement hardships caused by housing demolitions, conversions or neighborhood gentrification;

- Comprehensive Housing Affordability Study (CHAS) -- a component of the HUD Consolidated Plan -- which contains a description of current housing policy, particularly with respect to low-income housing needs;

- The Rent Stabilization Ordinance, which includes requirements for relocation payments to tenants under "no-fault" evictions;

- State redevelopment law which specifies actual relocation assistance, in addition to payments, for displaced households and requires replacement of all lost units that occur within or as a result of redevelopment projects subject to a written agreement with the redevelopment agency or where financial assistance is provided by the redevelopment agency; and

- Federal law that mandates relocation payments and assistance when displacement results from a project supported with federal funds (e.g., HUD financing).

C. Screening Criteria

- Would the project result in a net loss of housing equal to or greater than a one-half block equivalent of habitable housing units through demolition, conversion, or other means? (One-half block is generally equivalent to 15 single-family or 25 multi-family dwelling units.)

- Would the project result in the net loss of any existing housing units affordable to very low- or low-income households (as defined by federal and/or City standards), through demolition, conversion, or other means?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Population and Housing Displacement, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Population and Housing Displacement from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and determine the number and type of housing units, which will be eliminated and added as a result of the proposed project. Calculate the net change in the number of habitable housing units, as well as units affordable to very low- or low-income households (See Exhibit J.2-1). Affordable units can be lost through conversion to market rate units. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The total number of residential units to be demolished, converted to market rate, or removed through other means as a result of the proposed project, in terms of net loss of market-rate and affordable units;

- The current and anticipated housing demand and supply of market rate and affordable housing units in the project area;

- The land use and demographic characteristics of the project area and the appropriateness of housing in the area; and

- Whether the project is consistent with adopted City and regional housing policies such as the Framework and Housing Elements, HUD Consolidated Plan and CHAS policies, redevelopment plan, Rent Stabilization Ordinance, and the Regional Comprehensive Plan and Guide (RCP&G).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of existing land uses on the project site and in the surrounding area;

- Recent (e.g., past 10 years) housing supply and demand trends, as well as housing supply characteristics (e.g., vacancy patterns, tenure, rent and sale price levels) for the project site and surrounding area;

- Housing supply and demand forecasts for the project site and surrounding area; and

- Summary of housing displacement policies applicable to the project. These may include policies in the Framework and Housing Elements, HUD Consolidated Plan, redevelopment plans, and the Rent Stabilization Ordinance.

Project Impacts

Review the description of the proposed project and identify the net change in the number of habitable housing units, as well as units affordable to low- and very-low income households, from the Evaluation of Screening Criteria.

To determine current and anticipated housing demand and supply in the project area, use the Population Estimate and Housing Inventory prepared by the City Planning Department, field research, published reports, or market research studies, as appropriate.

In evaluating the characteristics of the project area, survey the land uses and zoning designations for parcels in the surrounding area. Determine the character of the area and any recent housing trends, and consider the appropriateness of housing in that location in light of applicable housing policies and plans. Land use compatibility is addressed in H.2 LAND USE COMPATIBILITY.

Identify adopted housing projects in, for example, the applicable redevelopment plans, the Framework Element, HUD Consolidated Plan, Rent Stabilization Ordinance, or RCP&G. If necessary, consult with the City Planning Department, Housing Department, or Community Redevelopment Agency (CRA) of the City of Los Angeles.

Evaluate whether the project would be consistent with these policies.

Cumulative Impacts

Determine the number and type of housing units to be eliminated and added as a result of the related projects in the same manner as described above for Project Impacts. Compare the combined effect of the displacement from the project and the related projects to the current and anticipated housing demand and supply in the project area and adopted housing policies.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Exceed the statutory requirements for relocation assistance; and

- Increase the number of housing units affordable to lower income households.

3. DATA, RESOURCES, AND REFERENCES

Population and Housing Estimates are available from the City Planning Department, Citywide Demographics Unit, 200 N. Spring Street, 7th Floor, Los Angeles, California 90012; Telephone: (213) 978-1416; Internet: www.lacity.org/PLN (click on *Statistical Info).*

Redevelopment plans are available from the CRA, 354 South Spring Street, Suite 800, Los Angeles, California 90013; Telephone: (213) 977-1600.

Rent Stabilization Ordinance, City of Los Angeles, adopted 1979 (periodically updated and revised). Available at the Housing Department's Public Counter, 3550 Wilshire Boulevard, 15th floor, Los Angeles, California 90010, open Monday through Friday from 8:00 a.m. to 4:30 p.m., or call toll free (866) 557-7368.

Housing Department, 1994 Rental Housing Study, prepared by Hamilton, Rabinovitz & Alschuler, Inc., December 1995.

See also J.1. POPULATION AND HOUSING GROWTH.

Selected Legislation

Federal

24 CFR Part 970.5

Tenants who are to be displaced as a result of demolition or disposition must be relocated to other decent, safe, sanitary, and affordable housing (at rents no higher than permitted under the Uniform Relocation Assistance and Real Property Acquisition Policies Act). The new housing, to the maximum extent practicable, should be housing of the tenants' choice, on a nondiscriminatory basis, without regard to race, color, religion (creed), national origin, handicap, age, or sex, in compliance with applicable Federal and State laws.

In addition to provision of relocation housing, assistance to all displaced tenants includes assistance in finding other suitable housing, including payment of actual, reasonable moving costs, and counseling and advisory services to assure that full choices and real opportunities exit for tenants displaced from public housing scheduled for demolition or other disposition to select relocation housing in a full range of neighborhoods in which suitable relocation housing may be found, in and outside areas of minority concentration.

Exhibit J.2-1

MAXIMUM AFFORDABLE RENT FOR VERY LOW- AND LOW-INCOME HOUSEHOLDS IN THE CITY OF LOS ANGELES, FY 2003

Household Income Category as Percent of Median Family Income (MFI)	Household Size					
	1-Person	2-Persons	3-Persons	4-Persons	5-Persons	6-Persons
Very Low-Income (up to 50% of MFI)						
Maximum Household Income[a]	$19,740	$22,560	$25,380	$28,200	$30,456	$32,712
Maximum Monthly Rent[b]	494	564	635	705	761	818
Low-Income (51-80% of MFI)						
Maximum Household Income (73% of MFI)[a]	$28,820	$32,938	$37,055	$41,172	$44,466	$47,760
Maximum Monthly Rent[b]	720	823	926	1,029	1,112	1,194

[a] Per Department of HUD.

[b] Assumes 30% of monthly income for rent, rounded to nearest dollar.

Source: Department of HUD; Hamilton, Rabinowitz & Alschuler, Inc., 1996 and the City of Los Angeles Housing Department, 2003.

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K. PUBLIC SERVICES

K.1. POLICE PROTECTION

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XIII.a.ii): Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?

B. Introduction

Public protection service and law enforcement are provided by the Los Angeles Police Department (LAPD) which operates 18 stations (also called areas) citywide within four Bureaus (Central, South, West, and Valley). Statistical data is compiled by Reporting Districts, smaller units within the stations.

Service needs are related to the size of the population and geographic area served, the number and type of calls for service, and other community characteristics. Projects that affect these factors may increase the demand for service from the LAPD.

The effect of increased traffic congestion on response times for police protection and other emergency services is discussed in K.2. FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES.

C. Screening Criteria

- Would the proposed project result in a net increase of 75 residential units, 100,000 square feet (sf) of commercial floor area, or 200,000 sf of industrial floor area?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Police Protection, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Police Protection from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and determine the type of land use(s) proposed (i.e., commercial, industrial, residential), and the size of the project (i.e., number of units, square footage). Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The population increase resulting from the proposed project, based on the net increase of residential units or square footage of non-residential floor area;

- The demand for police services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to LAPD services (facilities, equipment, and officers) and the project's proportional contribution to the demand; and

- Whether the project includes security and/or design features that would reduce the demand for police services.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Name and characteristics of the station and Reporting District in which the project is located. If the Bureau, station, and Reporting District are unknown, refer to Exhibits K.1-1 through K.1-19; and

- Description of scheduled improvements to LAPD services (facilities, equipment, and officers) at the station serving the project site.

Project Impacts

Consider the description and location of the project. Determine the net population increase resulting from the project. The population conversion factors below may be used.

Based on consultation with LAPD, evaluate the demand for police services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (facilities, equipment, and officers) and the project's proportional contribution to the demand.

Evaluate project security features (e.g., security cameras, officers, lights, fencing, gates, etc.) if any, and any other project features, which would reduce the expected demand for police service.

POLICE SERVICE POPULATION CONVERSION FACTORS

Land Use	Conversion Factor
Residential	
Single, one-, two-bedroom units	3 persons/unit
Three-, four-bedroom units	4 persons/unit
Office	4 persons/1,000 sf
Retail	3 persons/1,000 sf
Hotel	1.5 persons/room/day

Cumulative Impacts

Identify the related projects, which would be served by the same LAPD facilities as the proposed project. Consider the characteristics of the related projects in terms of size, location, and types of land uses. Determine the net population increase resulting from the related projects. Based on consultation with LAPD, evaluate the cumulative demand for police services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (facilities, equipment, and officers) to the relevant LAPD facilities. As feasible, evaluate known security features (e.g., security cameras, officers, lights, fencing, gates, etc.) and any other features, which will reduce

the expected cumulative demand for police service. Consider the combined impact of the proposed and related projects and the project's proportional contribution to the cumulative demand.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Require the project applicant to consult with the LAPD's Crime Prevention Section on the design and implementation of a security plan for the proposed project. Consider the following elements:

  - use of private security guards to monitor and patrol the project site during project construction and operation;

  - design entryways, elevators, lobbies and parking areas with lighting that eliminates areas of concealment;

  - eliminate areas of dead space;

  - provide solid core doors with deadbolt locks to all offices, shops, and hotel units; and

  - provide walls and fencing around parking areas.

3. DATA, RESOURCES, AND REFERENCES

LAPD, Crime Prevention Section, Telephone: (213) 485-3134.

Safety Element

Environmental and Public Facilities Maps (1996):

- Police Department Facilities; and
- Police Department Community Outreach Centers.

Exhibit K.1-1
Location of Los Angeles Police Department Bureaus and Areas

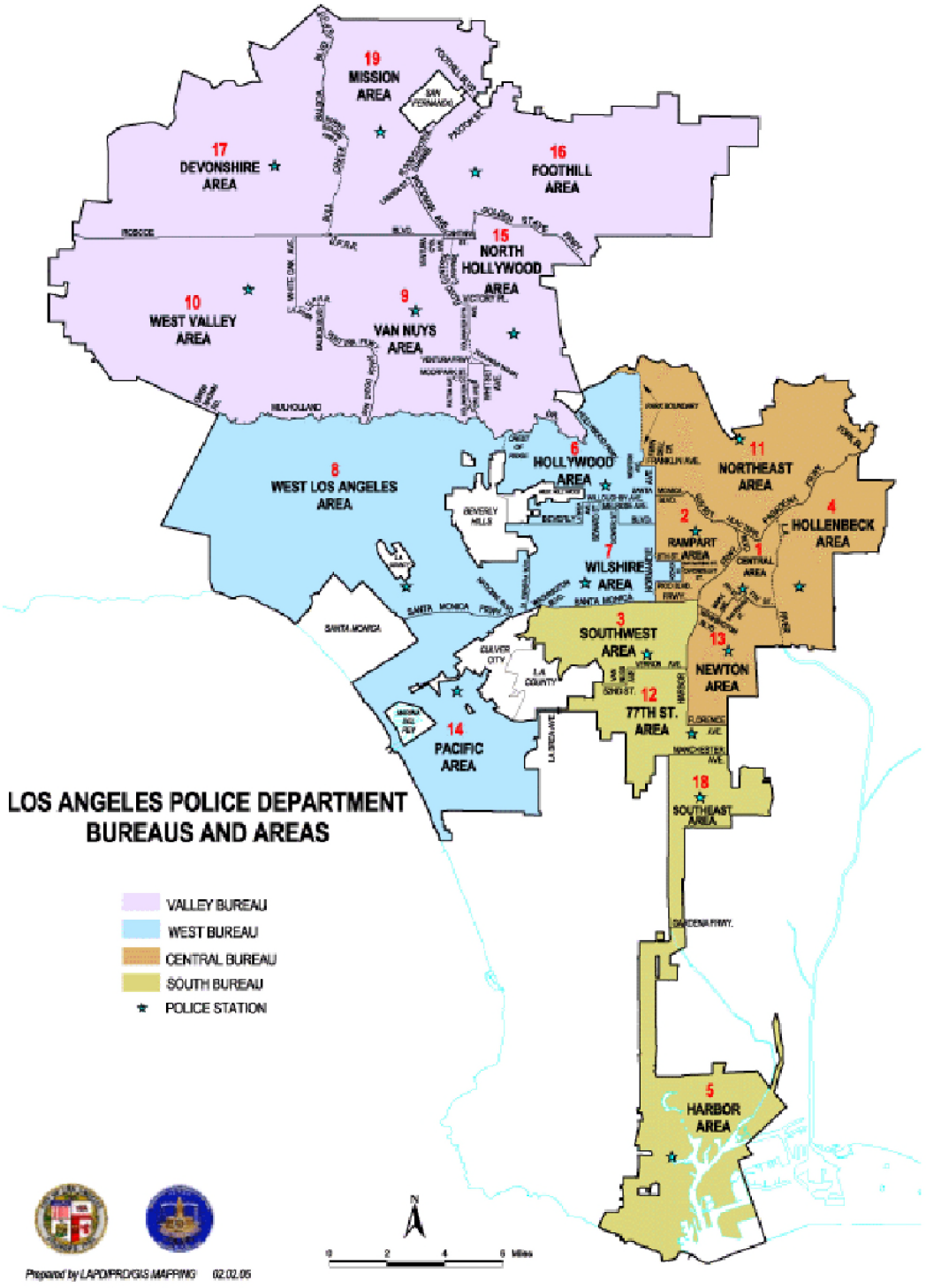


Exhibit K.1-1, continued
KEY TO LOCATION OF LOS ANGELES POLICE BUREAUS/AREAS

CENTRAL BUREAU

251 E. 6th Street, LA, CA 90014
(213) 485-3101

Central Area
251 E. 6th Street, LA, CA 90014
(213) 485-3294

Rampart Area
2710 W. Temple Street, LA, CA 90026
(213) 485-4061

Hollenbeck Area
2111 E. First Street, LA, CA 90033
(213) 485-2942

Northeast Area
3353 San Fernando Road, LA, CA 90065
(213) 485-2563

Newton Area
3400 South Central, LA, CA, 90011
(323) 846-6524

WEST BUREAU

4849 West Venice, Suite 213, LA, CA 90019
(213) 473-0277

Hollywood Area
1358 N. Wilcox Avenue,
Hollywood, CA. 90028
(213) 485-4302

Wilshire Area
4861 Venice Boulevard, LA, CA. 90019
(213) 485-4022

West Los Angeles Area
1663 Butler Avenue, LA, CA. 90025
(310) 575-8404

Pacific Area
12312 Culver Boulevard, LA, CA. 90066
(310) 202-4502

VALLEY BUREAU

6240 Sylmar Avenue, Van Nuys, CA 91401
(818) 756-8303

Van Nuys Area
6240 Sylmar Avenue, Van Nuys, CA 91401
(818) 756-8343

West Valley Area
19020 Vanowen Street, Reseda, CA 91335
(818) 756-8542

North Hollywood Area
11640 Burbank Blvd., North Hollywood, CA 91601
(818) 756-8861

Mission Area
11121 Sepulveda Blvd, Mission Hills, CA 91345
(818) 838-9800

Foothill Area
12760 Osborne Street, Pacoima, CA 91331
(818) 756-8861

Devonshire Area
10250 Etiwanda Avenue, Northridge, CA 91325
(818) 756-8285

SOUTH BUREAU

7600 S. Broadway, LA, CA 90003
(213) 485-4251

Southwest Area
1546 Martin Luther King Jr. Boulevard, LA, CA 90062
(213) 485-2582

SOUTH BUREAU(cont.)

Exhibit K.1-1, continued
KEY TO LOCATION OF LOS ANGELES POLICE BUREAUS/AREAS

Harbor Area
2175 John S. Gibson Boulevard
(310) 548-7605

77th Street Area
7600 S. Broadway, LA, CA 90003
(213) 485-4164

Southeast Area
145 W. 108th Street
(213) 485-6914

OTHER FACILITIES

Parker Center
150 N. Los Angeles Street
Los Angeles, CA 90012
(213) 485-3266

Air Support Division
555 E. Ramirez Street
Los Angeles, CA 90012
(213) 485-2600

LAX SubStation
802 World Way
Los Angeles, CA 90045
310-646-2255
Airport Substation
(213) 485-5299

Jail Division
150 N. Los Angeles Street
Los Angeles, CA 90012
(213) 485-2547

Juvenile Division
150 N. Los Angeles Street
Los Angeles, CA 90012
(213) 485-2801

Metropolitan Division

Central Facilities Building
251 E. 6th Street, Room 221
Los Angeles, CA 90014
(213) 485-4091

Motor Transport Division
151 N. San Pedro Street
Los Angeles, CA 90012
(213) 485-3495

Police Training and Education
1880 N. Academy Drive
Los Angeles, CA 90012
(213) 847-3000

Ahmanson Recruit Training Center
5651 W. Manchester Boulevard
Los Angeles, CA 90045
(213) 342-3010

The Edward M. Davis EVOC
Firearms/Tactics Training Facility
12001 Blucher Avenue
Granada Hills, CA 91344
818-832-3700

Supply Division
555 E. Ramirez Street
Los Angeles, CA 90012
(213) 485-2909

Exhibit K.1-2

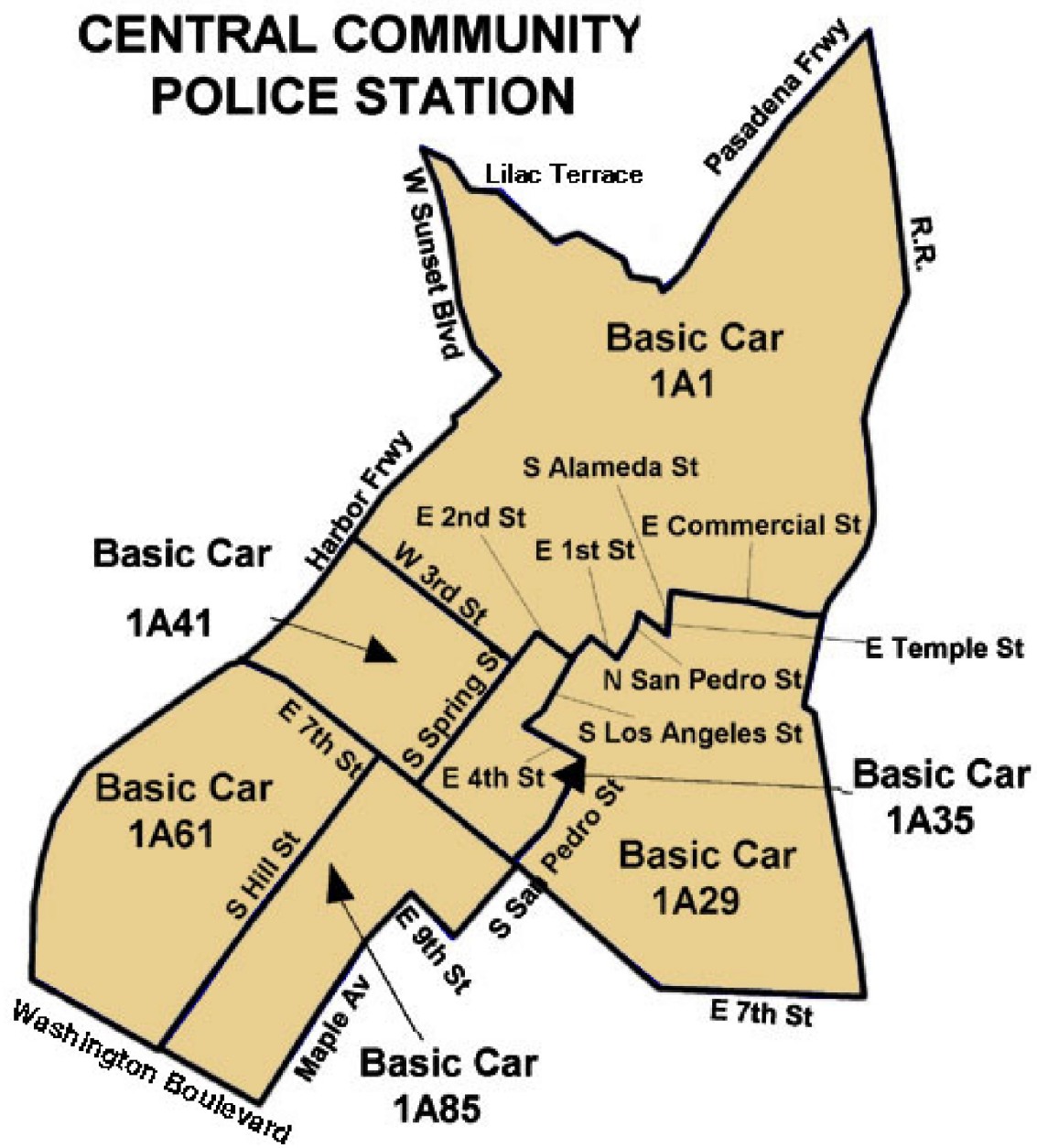

CENTRAL COMMUNITY POLICE STATION
Pasadena Frwy
Lilac Terrace
W Sunset Blvd
R.R.
Basic Car 1A1
Harbor Frwy
S Alameda St
E 2nd St
E Commercial St
E 1st St
Basic Car 1A41
W 3rd St
E Temple St
N San Pedro St
S Spring St
E 7th St
S Los Angeles St
Basic Car 1A61
E 4th St
Basic Car 1A35
S Hill St
S San Pedro St
Basic Car 1A29
E 9th St
E 7th St
Maple Av
Washington Boulevard
Basic Car 1A85

Exhibit K.1-3

RAMPART COMMUNITY POLICE STATION

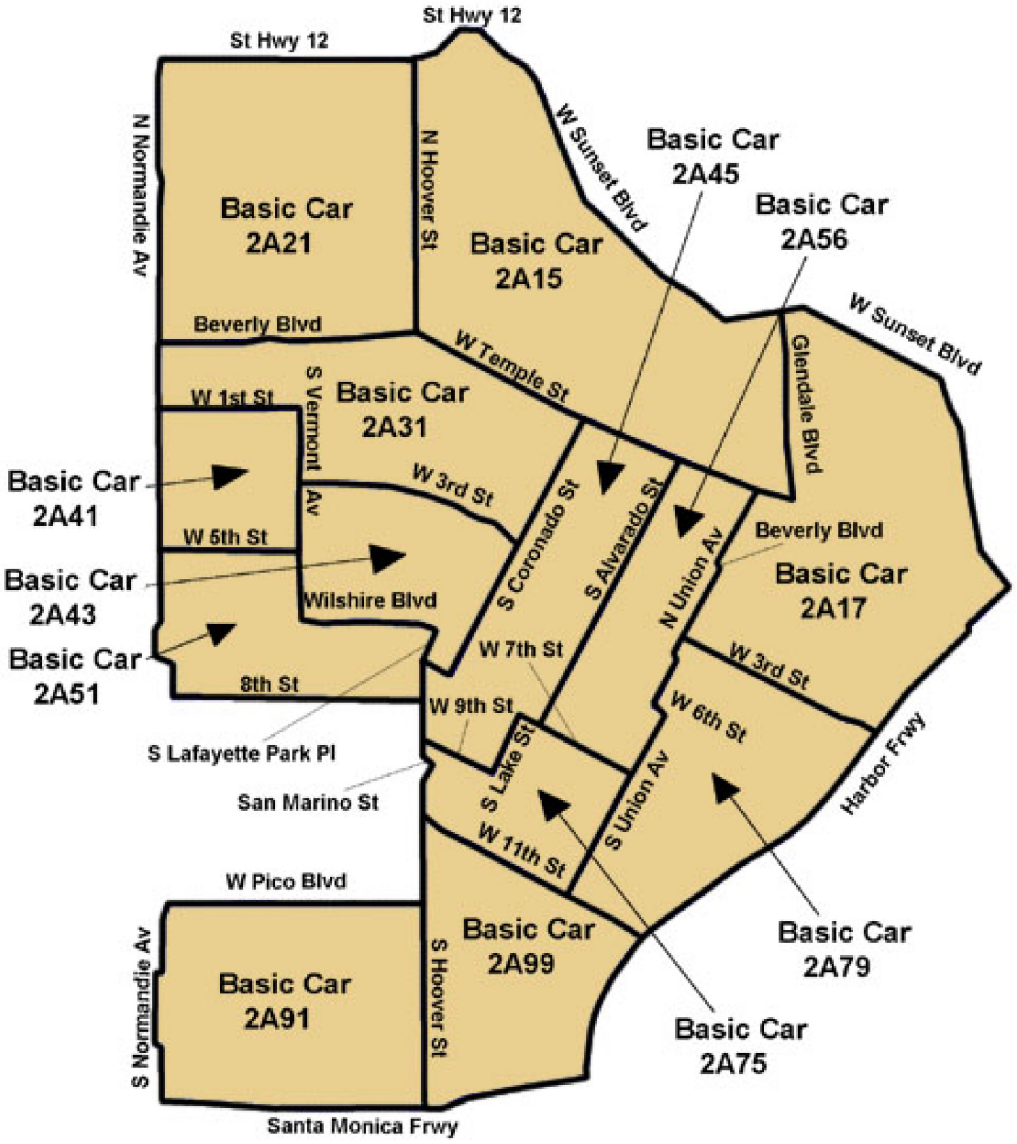


Exhibit K.1-4


HOLLENBECK COMMUNITY POLICE STATION
South Pasadena
Alhambra
Vernon
Basic Car 4A3
Basic CAr 4A9
Basic Car 4A15
Basic Car 4A59
Basic Car 4A53
Basic Car 4A71
Basic Car 4A97
Pasadena Frwy
Kendall Av
Collis Av
Cudahy St
Hartman Av
Montecito Dr
Reynolds Av
St Hwy 110
Radio St
Mercury Av
Collis Av
Unnamed St
E Avenue 28
Pyrites St
Huntington Dr S
Daly St
N Broadway
R.R.
Klamath St
N Eastern Av
Valley Blvd
N State St
San Bernardino
I-10
Wabash Av
Santa Ana Frwy
Pleasant Av
S State St
E 4th St
E 1st St
N Evergreen Av
S Soto St
E 4th St
R.R.
N Indiana St
S Soto St
Eastlid Av
E 6th St
Santa Ana Frwy
Santa Monica Frwy
S Grande Vista
R.R.
R.R.
Woland Av
R.R.

Exhibit K.1-5

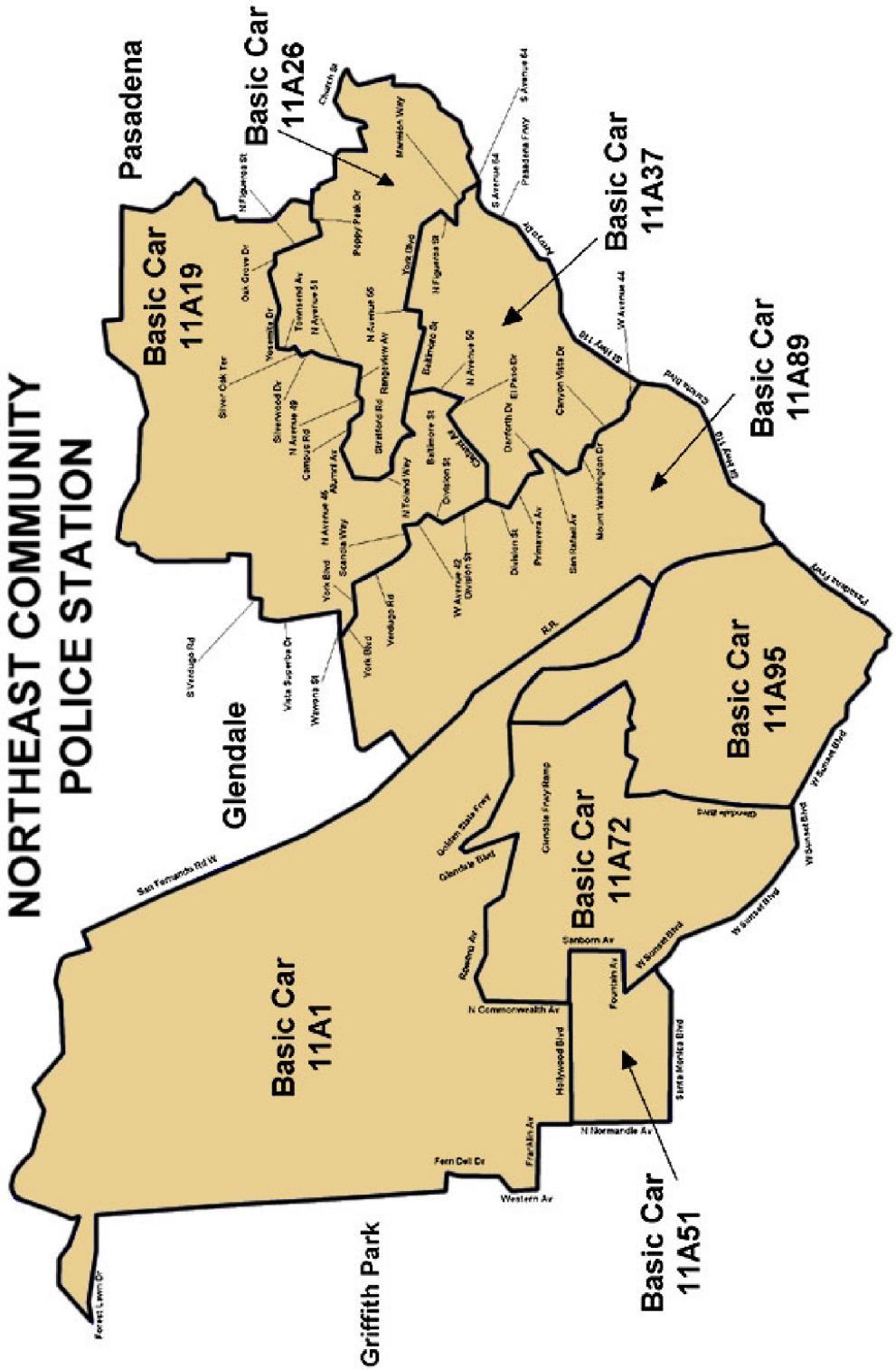

NORTHEAST COMMUNITY
POLICE STATION
Pasadena
Basic Car
11A26
Basic Car
11A19
Basic Car
11A37
Basic Car
11A89
Basic Car
11A95
Basic Car
11A72
Basic Car
11A1
Basic Car
11A51
Glendale
Griffith Park

Exhibit K.1-6

NEWTON COMMUNITY POLICE STATION

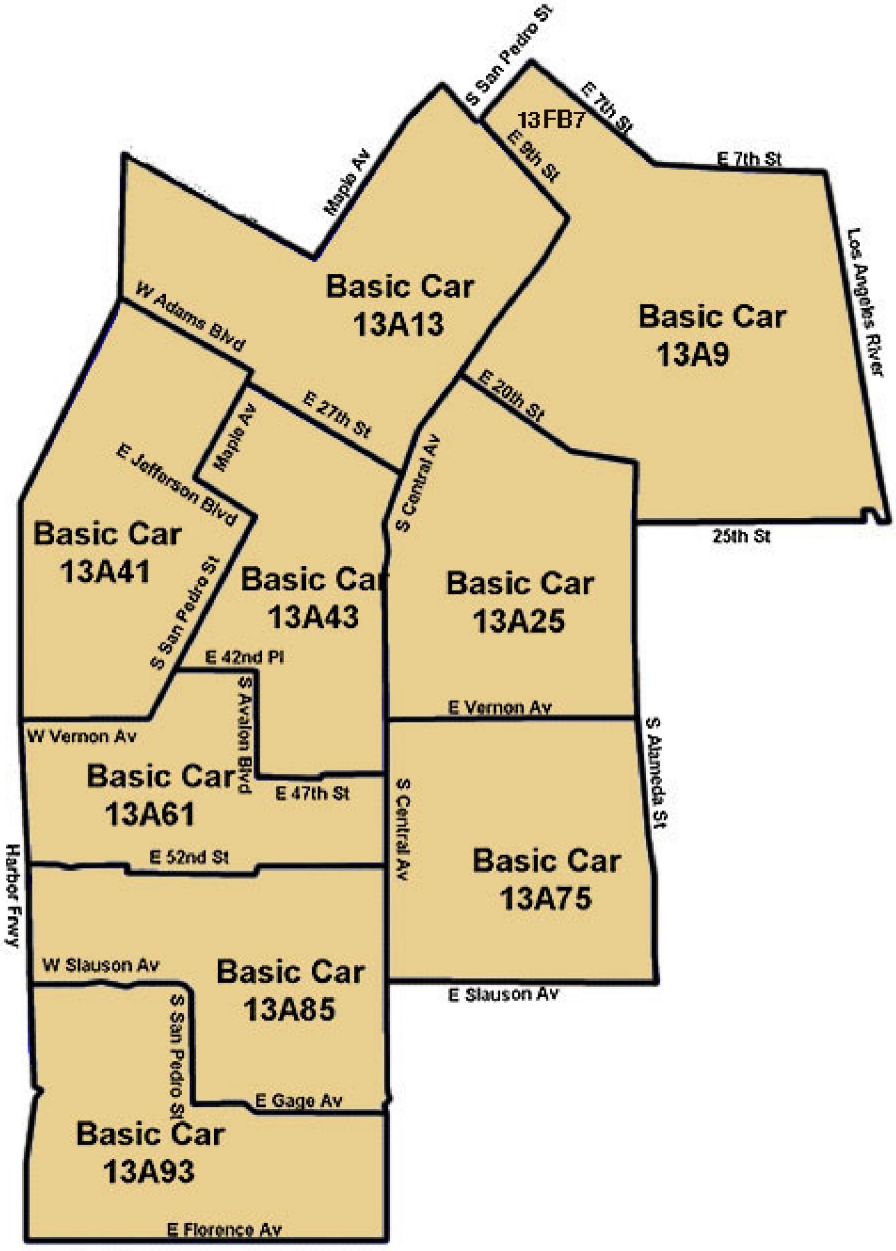


Exhibit K.1-7

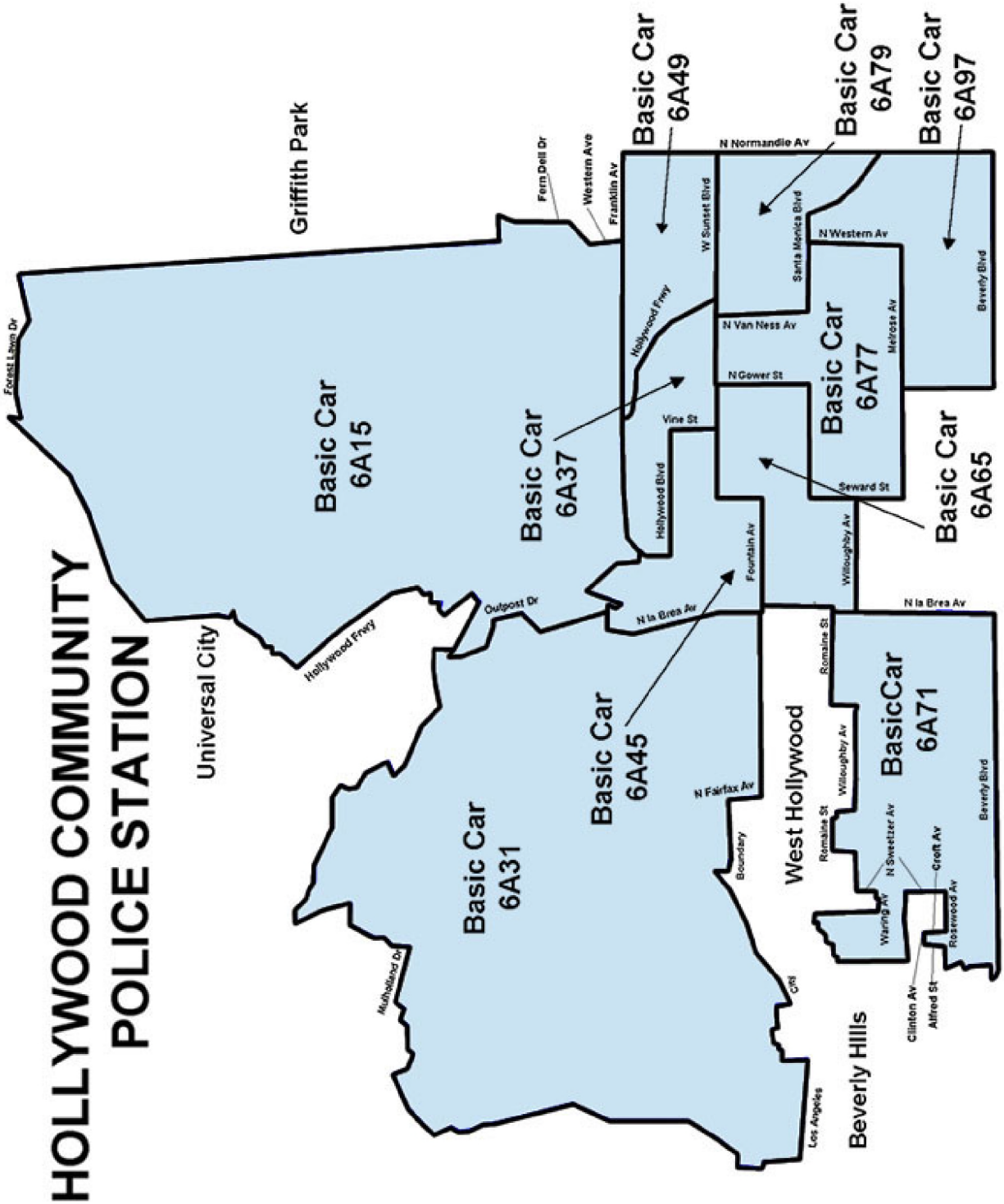

HOLLYWOOD COMMUNITY
POLICE STATION
Griffith Park
Universal City
Basic Car
6A15
Basic Car
6A37
Basic Car
6A49
Basic Car
6A79
Basic Car
6A97
Basic Car
6A77
Basic Car
6A65
Basic Car
6A45
Basic Car
6A31
BasicCar
6A71
West Hollywood
Beverly Hills
Forest Lawn Dr
Fern Dell Dr
Western Ave
Franklin Av
N Normandie Av
W Sunset Blvd
Santa Monica Blvd
N Western Av
Beverly Blvd
Hollywood Fwy
N Van Ness Av
Melrose Av
N Gower St
Vine St
Hollywood Blvd
Seward St
Willoughby Av
Fountain Av
Outpost Dr
N la Brea Av
Romaine St
N Fairfax Av
Boundary
Mulholland Dr
Clinton Av
Alfred St
Waring Av
N Sweetzer Av
Croft Av
Rosewood Av
Los Angeles
City

Exhibit K.1-8

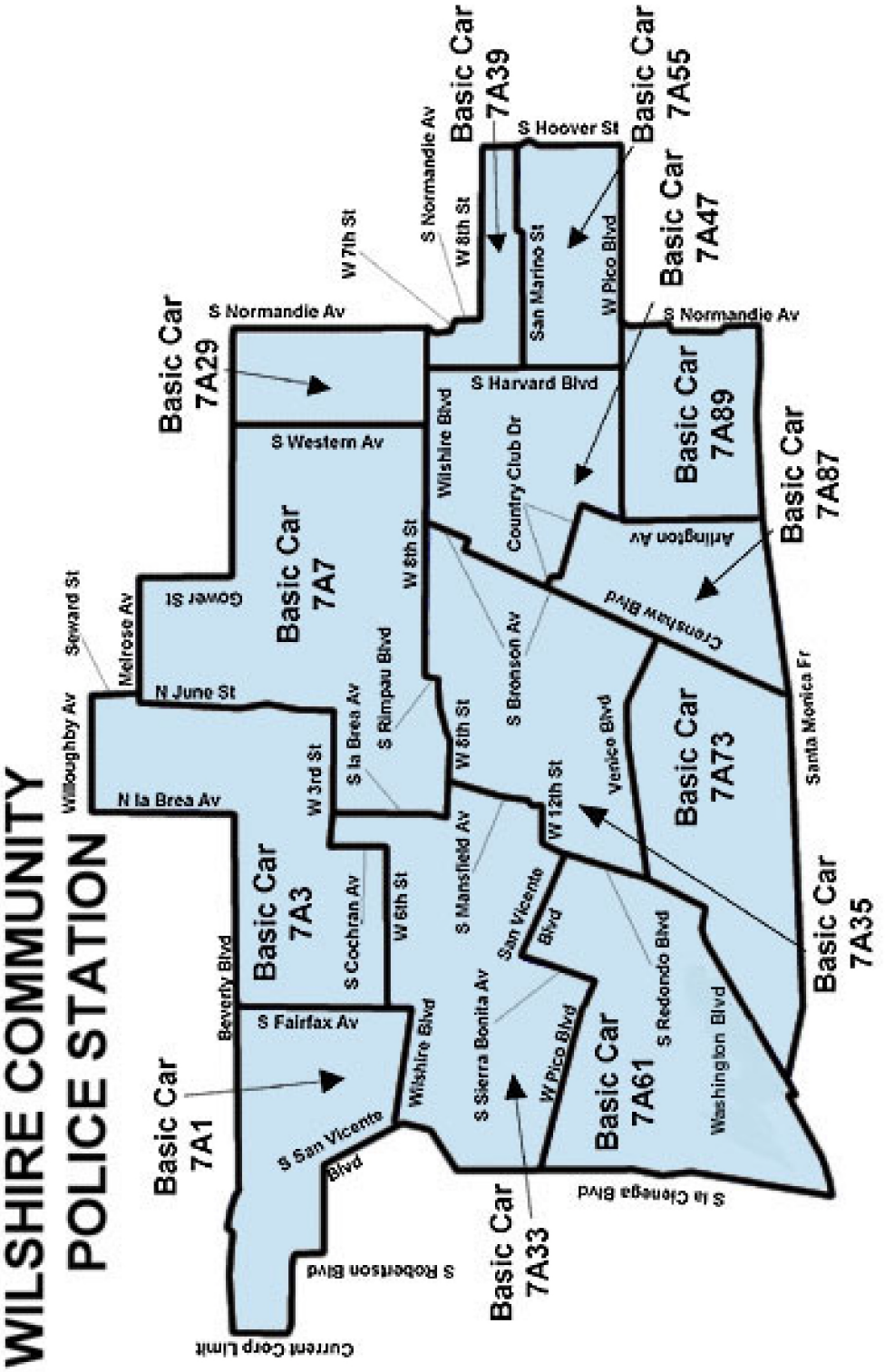

WILSHIRE COMMUNITY
POLICE STATION
Basic Car 7A1
Basic Car 7A3
Basic Car 7A7
Basic Car 7A29
Basic Car 7A33
Basic Car 7A35
Basic Car 7A39
Basic Car 7A47
Basic Car 7A55
Basic Car 7A61
Basic Car 7A73
Basic Car 7A87
Basic Car 7A89
S Normandie Av
S Hoover St
S Western Av
S Harvard Blvd
W 7th St
W 8th St
W 6th St
W 3rd St
N June St
N la Brea Av
Seward St
Willoughby Av
Melrose Av
Gower St
S la Brea Av
S Rimpau Blvd
S Bronson Av
S Mansfield Av
S Cochran Av
S Fairfax Av
Beverly Blvd
Wilshire Blvd
S Sierra Bonita Av
San Vicente Blvd
W Pico Blvd
S Redondo Blvd
Washington Blvd
Venice Blvd
W 12th St
Santa Monica Fr
Crenshaw Blvd
Arlington Av
Country Club Dr
San Marino St
S la Cienega Blvd
S Robertson Blvd
Current Corp Limit

Exhibit K.1-9

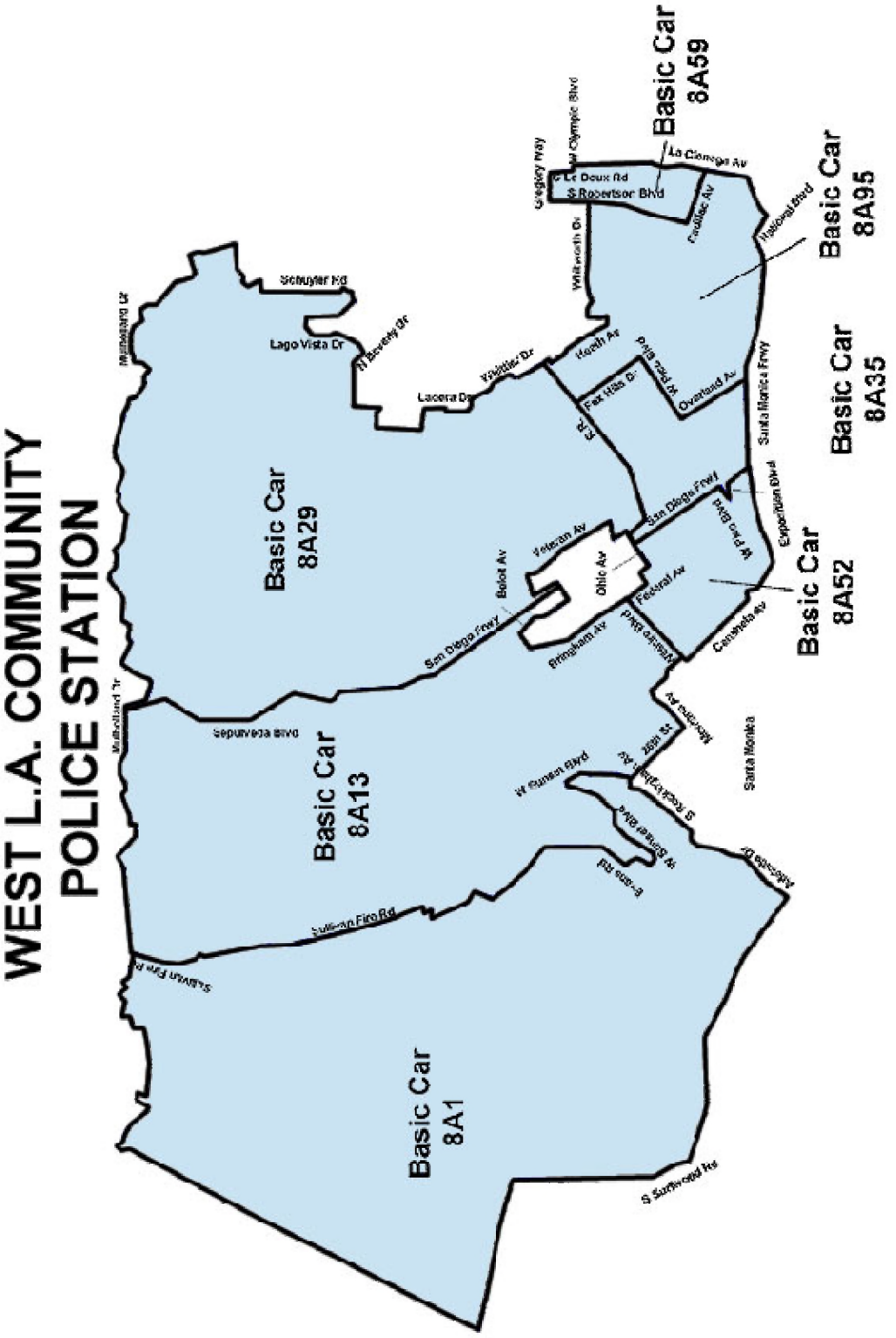

WEST L.A. COMMUNITY
POLICE STATION
Basic Car
8A59
Basic Car
8A95
Basic Car
8A35
Basic Car
8A52
Basic Car
8A29
Basic Car
8A13
Basic Car
8A1
Schuyler Rd
Lago Vista Dr
Lacera Dr
Whittier Dr
Heath Av
Fox Hills Dr
Overland Av
Santa Monica Frwy
Exposition Blvd
San Diego Frwy
Veteran Av
Ohio Av
Federal Av
Bolot Av
Pringham Av
Cenahela Av
Sepulveda Blvd
W Sunset Blvd
Santa Monica
Sullivan Fire Rd
S Sullivan Rd
Gregory Way
S Robertson Blvd
La Cienega Av
Cadillac Av
Whitworth Dr
Multiland Dr

Exhibit K.1-10

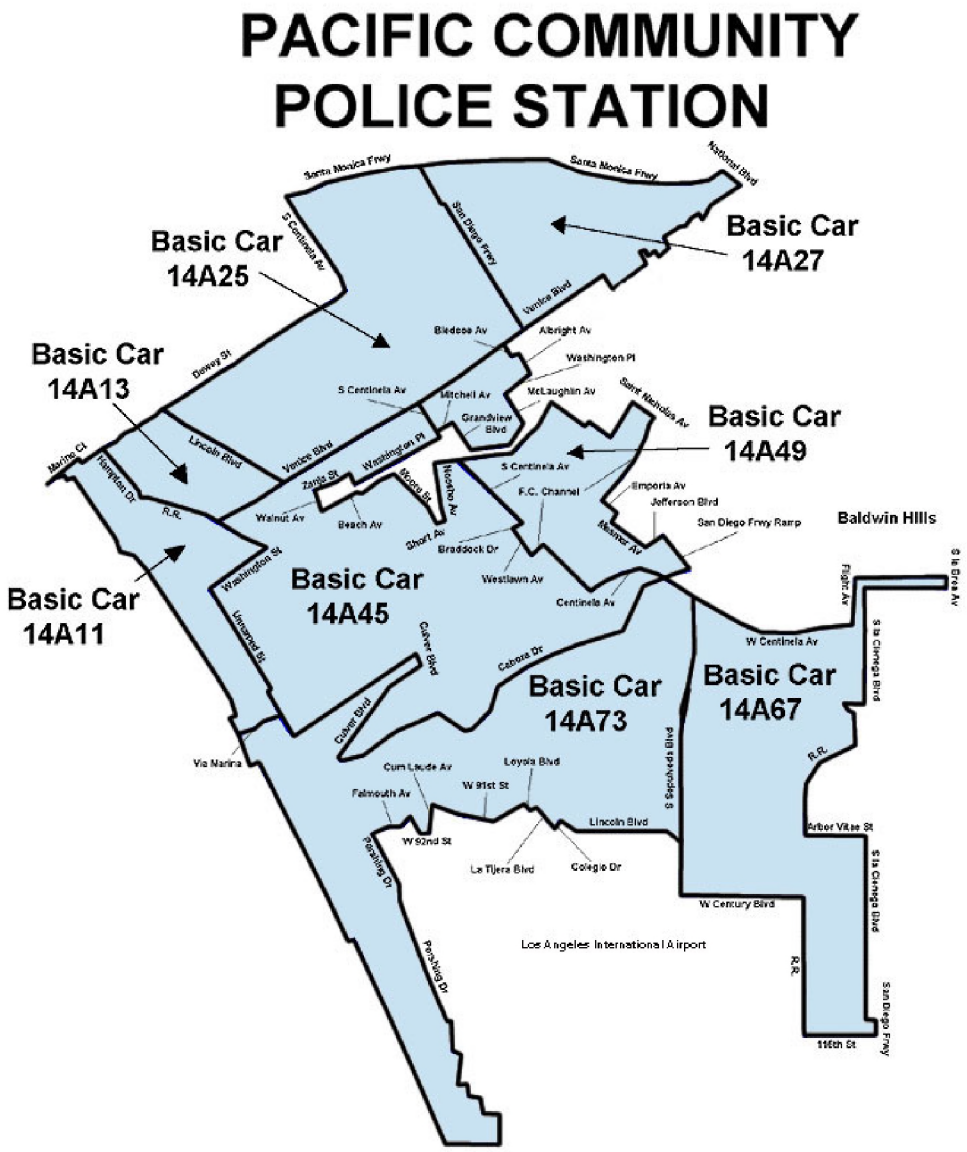


Exhibit K.1-11

VAN NUYS COMMUNITY POLICE STATION

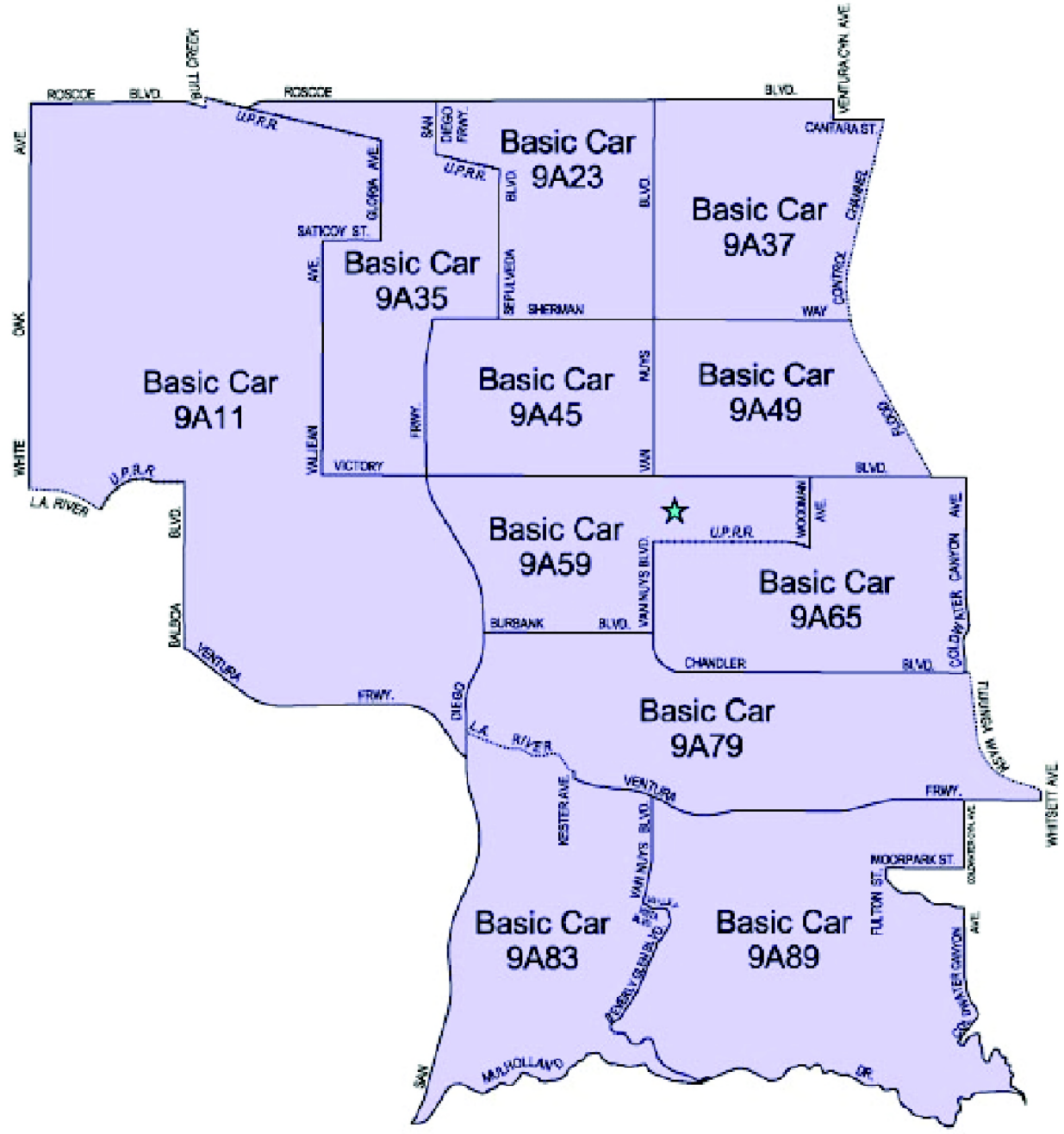


Exhibit K.1-12

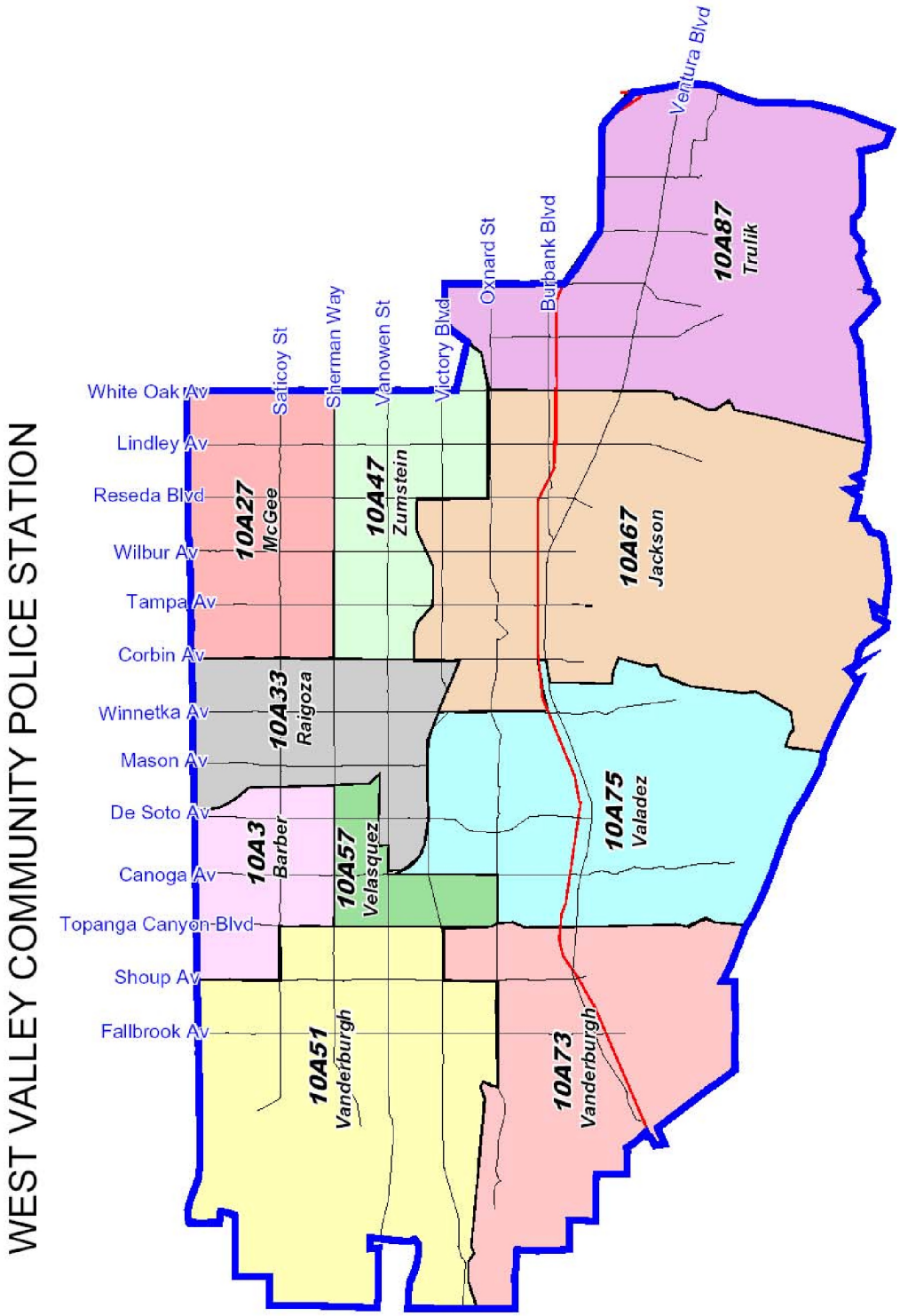


Exhibit K.1-13

NORTH HOLLYWOOD COMMUNITY POLICE STATION

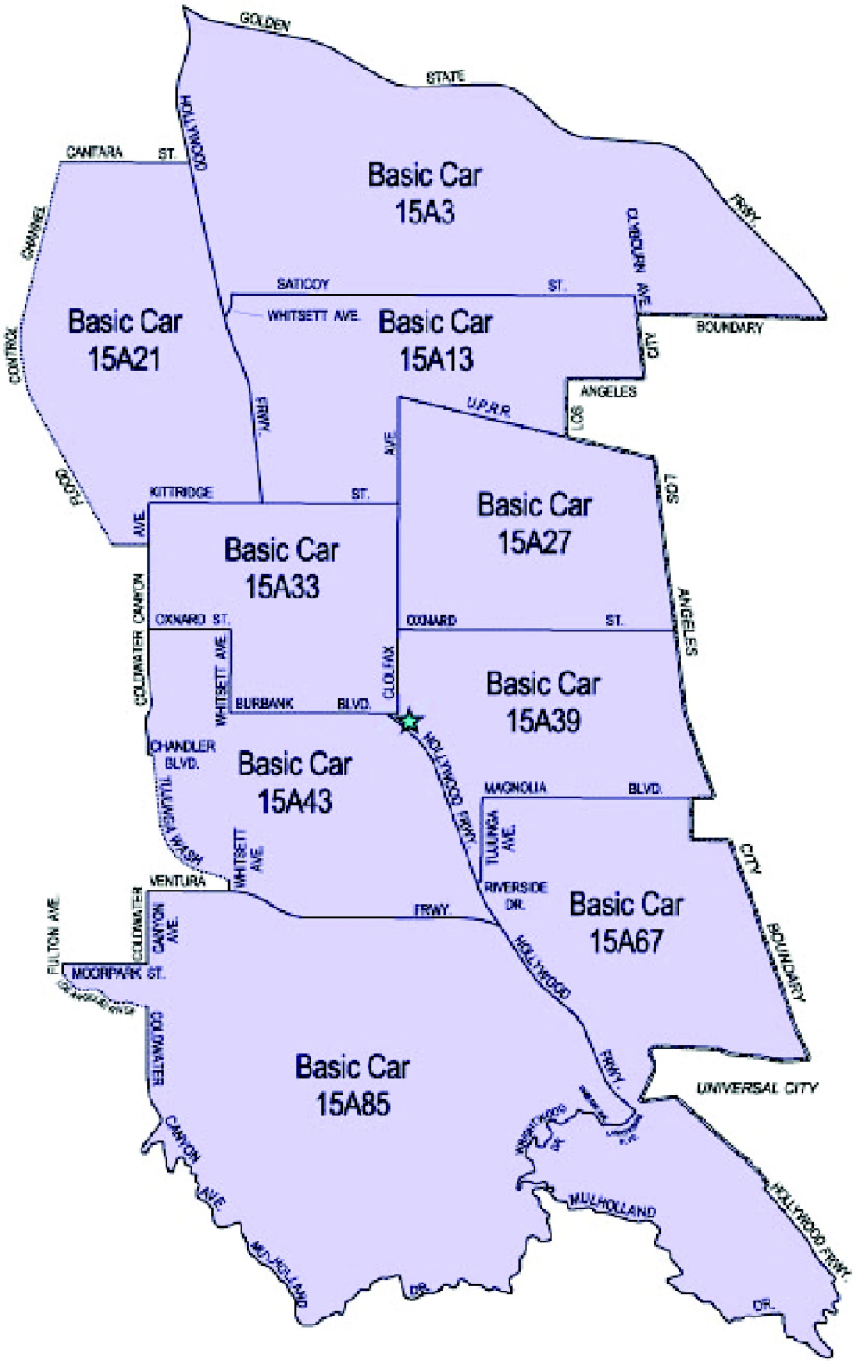
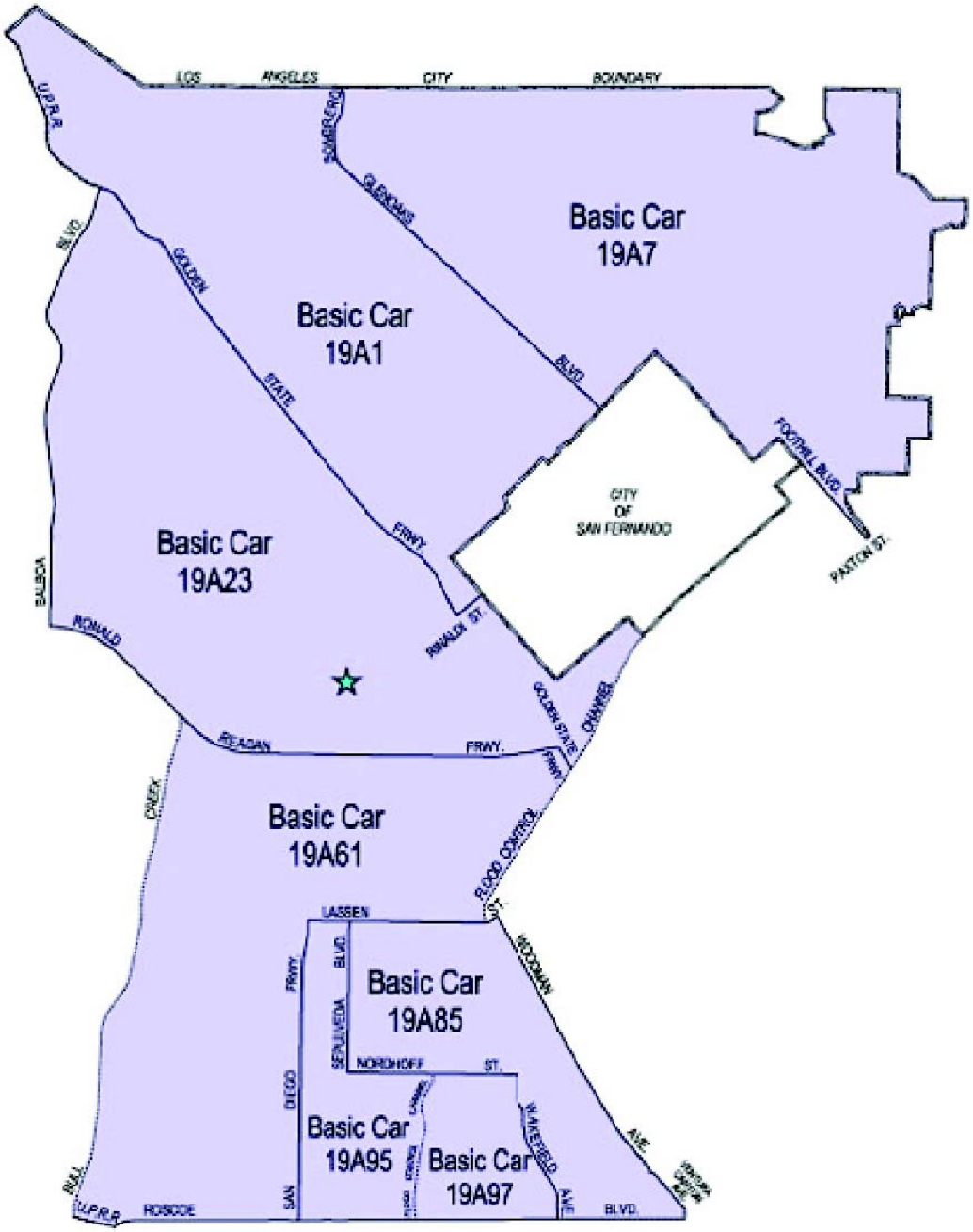


Exhibit K.1-14

MISSION COMMUNITY POLICE STATION



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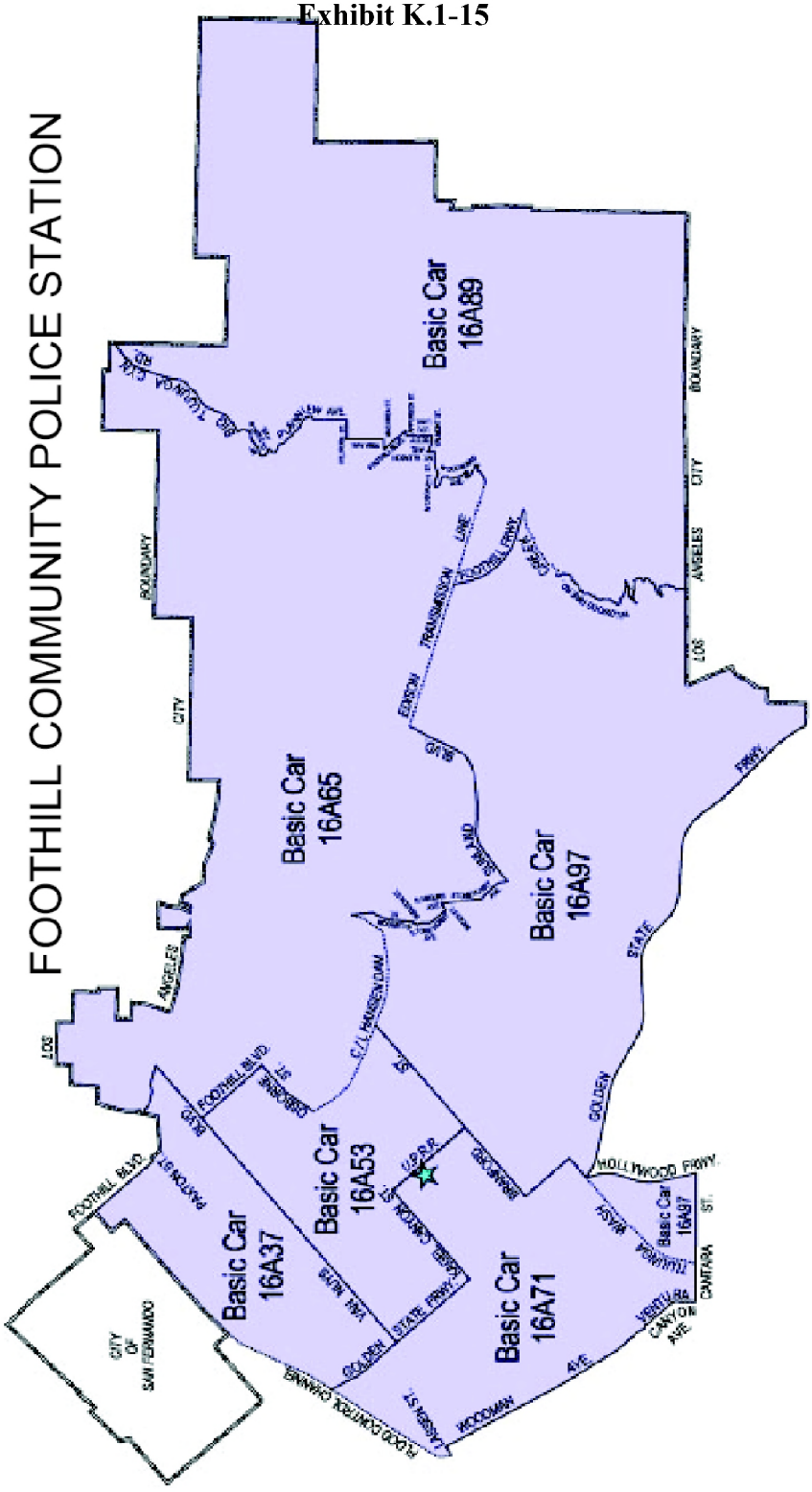


Exhibit K.1-16

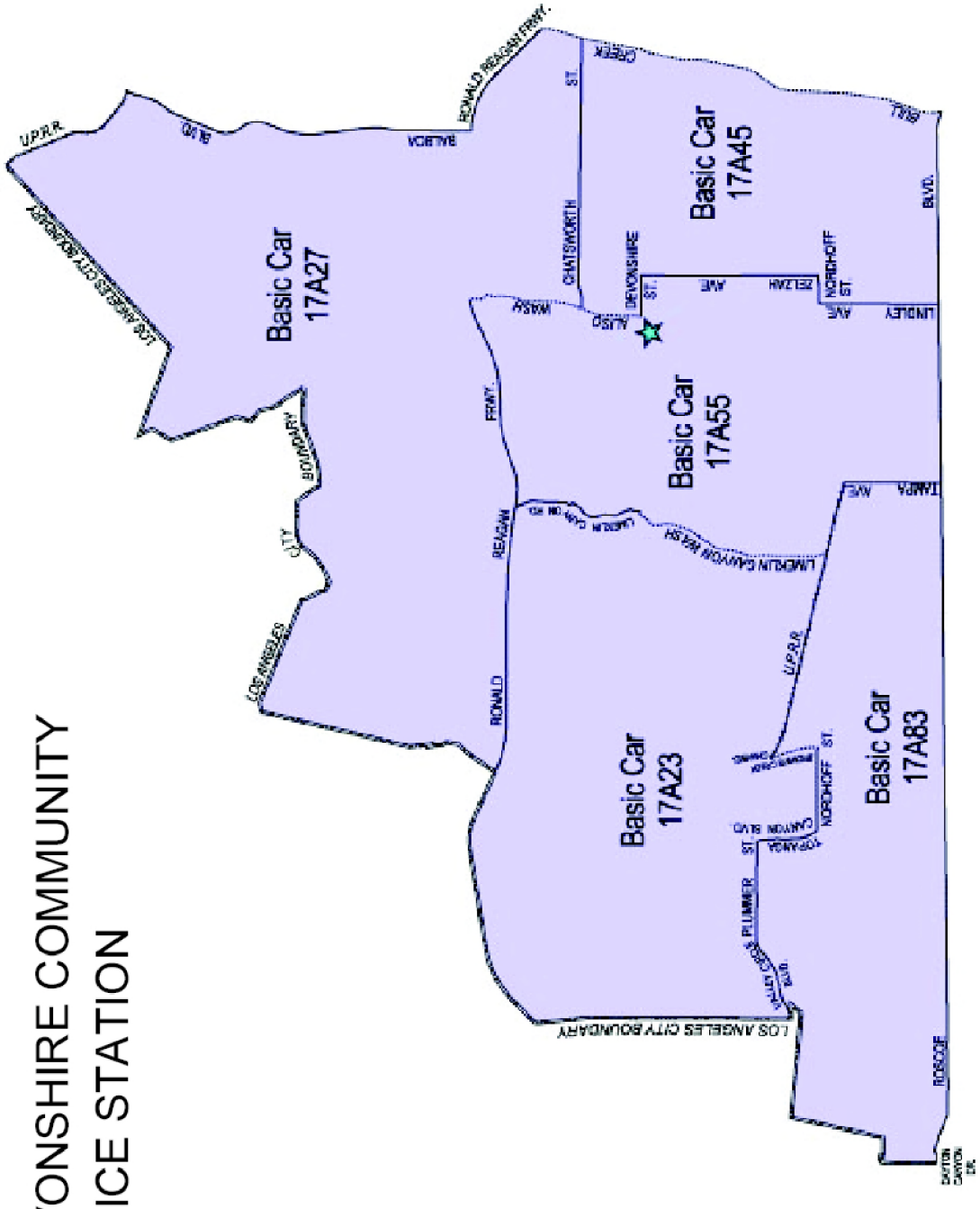


Exhibit K.1-17

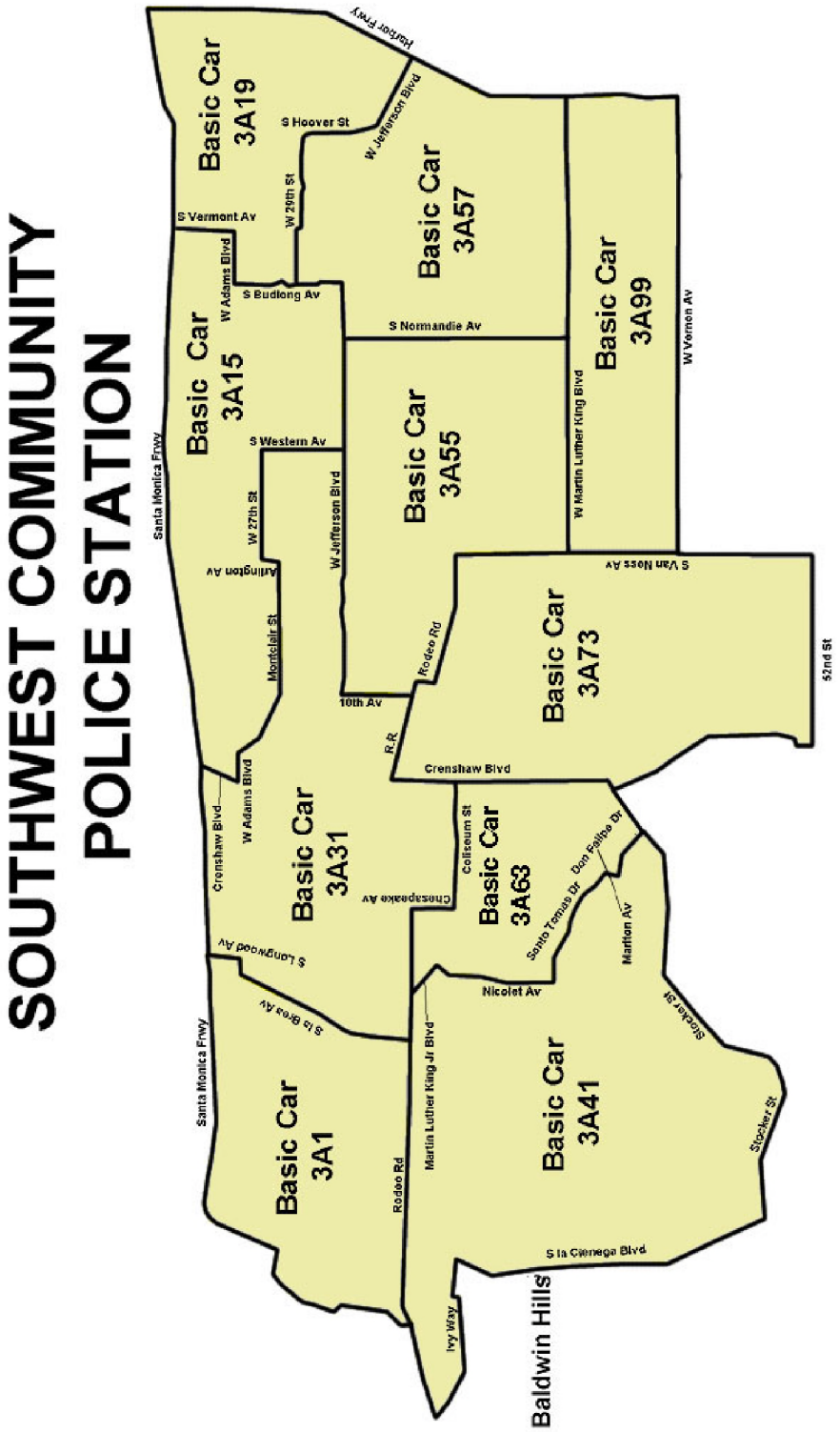


Exhibit K.1-18



Exhibit K.1-19

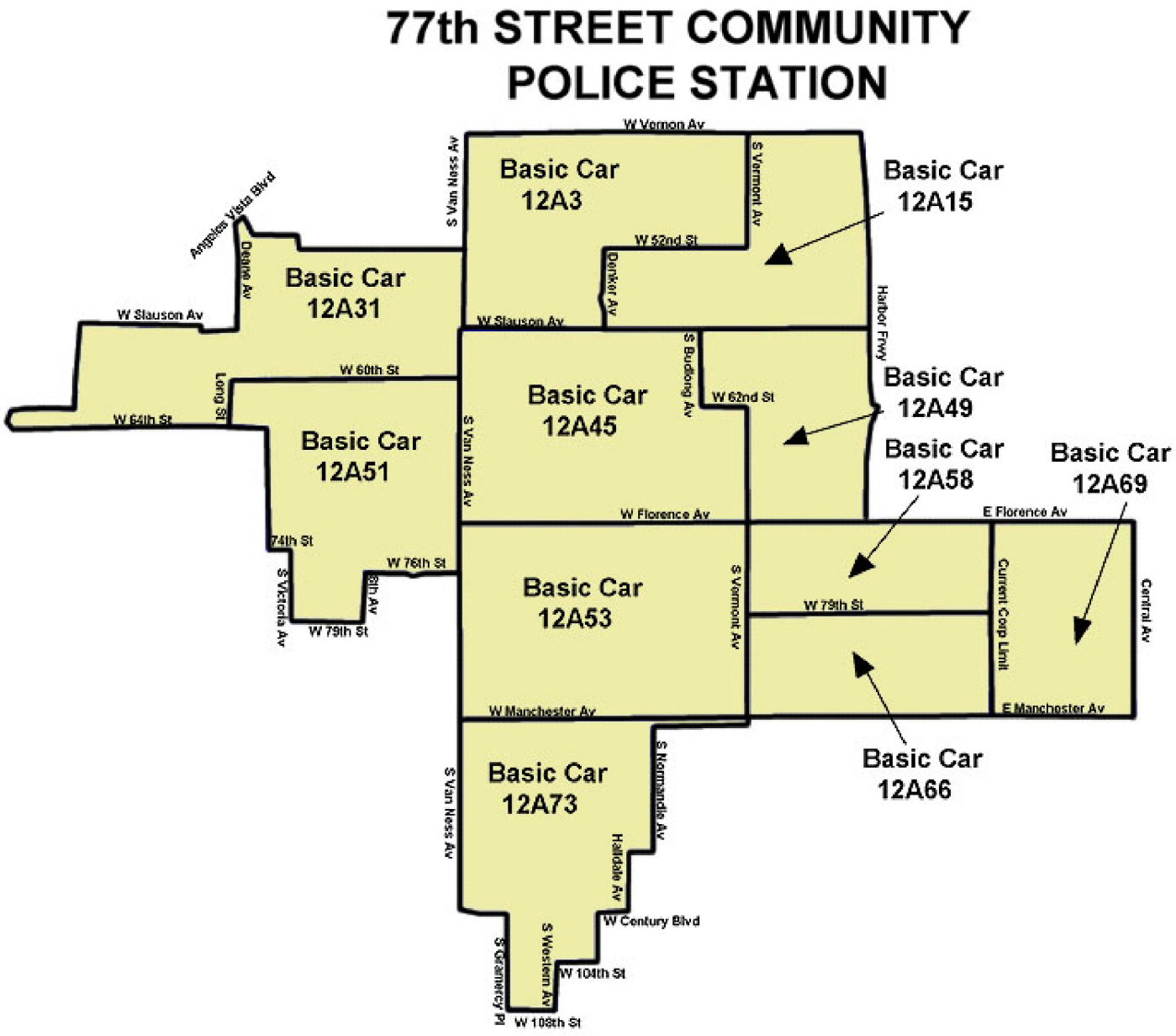
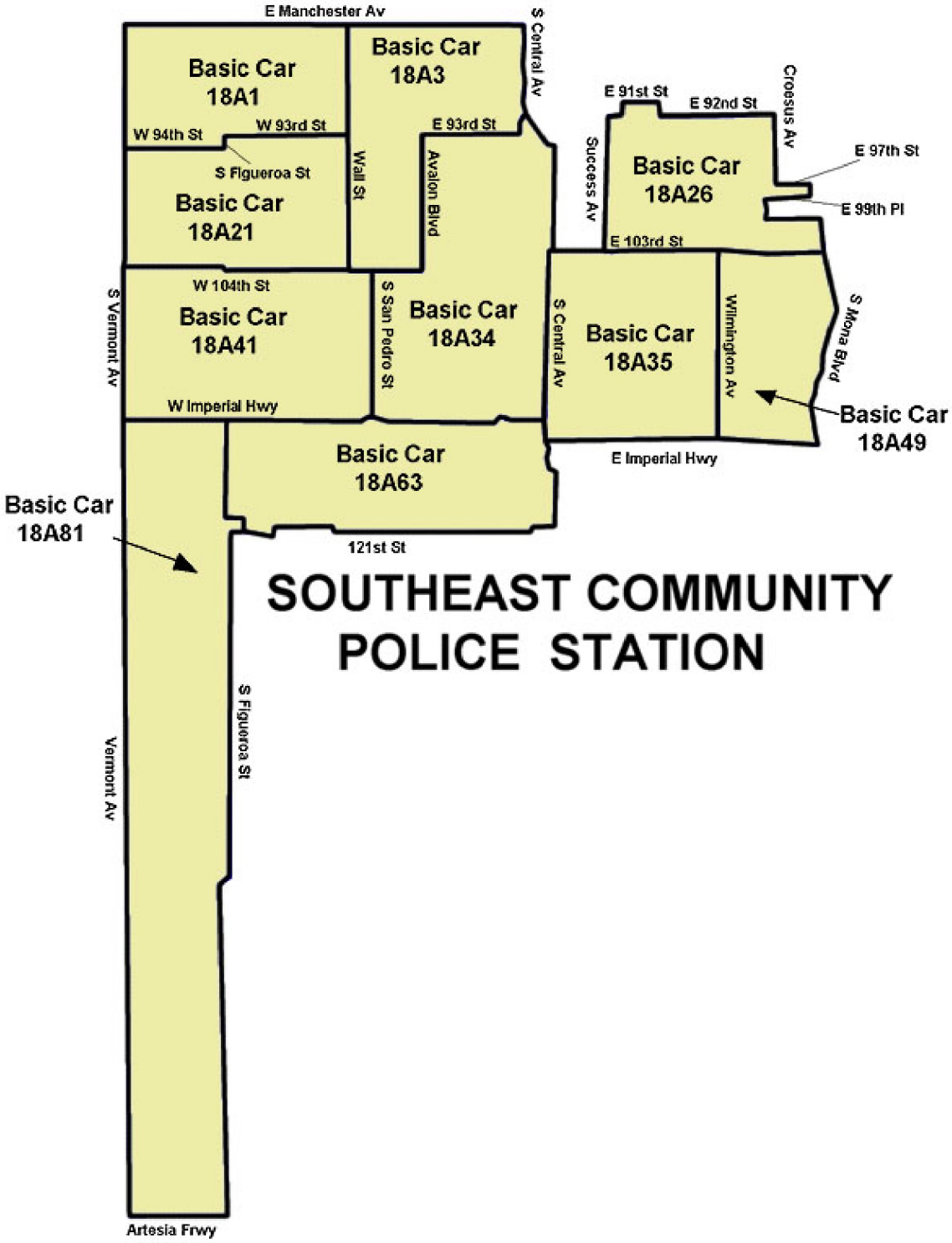


Exhibit K.1-20



K.2. FIRE PROTECTION & EMERGENCY MEDICAL SERVICES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VII.e): For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

VII.f): For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area?

VII.g): Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

VII.h): Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

XIII.a.i): Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

B. Introduction

Within the City of Los Angeles, fire prevention and suppression services and emergency medical services are provided by the Los Angeles Fire Department (LAFD). The LAFD operates more than 100 fire stations grouped into 18 battalions and three divisions. Equipment includes engines, trucks, paramedic engines, crash units, hazardous materials response and decontamination units, foam carriers, rescue ambulances, helicopters, and boats.

New development projects in the City may increase the demand for fire protection and emergency medical services. The LAFD evaluates new project impacts on a project-by-project basis. Beyond the standards in the Los Angeles Fire Code, consideration is given to project size and components, required fire-flow, response time and distance for engine and truck companies, fire hydrant sizing and placement standards, access, and potential to use or store hazardous

materials. Risk of upset impacts due to potentially hazardous or explosive materials are discussed in F.1. RISK OF UPSET/EMERGENCY PREPAREDNESS.

C. Screening Criteria

- Would the project be located farther from an engine or truck company than the maximum response distances, based on the project's proposed land use(s), as indicated in the following chart?

Land Use	Maximum Response Distance (miles)	
	Engine Company	Truck Company
Neighborhood Land Uses		
Low Density Residential/High Density Residential/Neighborhood	1.50	1.50
Regional Land Uses		
Commercial Industrial/Commercial	1.00	1.50
Commercial and Industrial Centers		
High Density Commercial/High Density Industrial	0.75	1.00

Source: Los Angeles Fire Code, Los Angeles Municipal Code (LAMC), Section 57.09.07.

- Is the project located in a brush fire hazard area, hillside, or area with inadequate fire hydrant service or street access?

- Does the project involve the use, manufacture or storage of toxic, readily-combustible, or otherwise hazardous materials?

- Would the project's location provide for adequate LAFD access (e.g., adequate street/fire lane width--minimum 20 feet clear and unobstructed with an approved turn around, grade not exceeding 15 percent, dead-ends not exceeding 700 feet)?

- Are there any street intersections with a level of service (LOS) of E or F near the project site that would adversely impact response time?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Fire Protection and Emergency Medical Services, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Fire Protection and Emergency Medical Services from the proposed project.

D. Evaluation of Screening Criteria

Review the project description, site characteristics, Exhibit K.2-1 and the following Environmental and Public Facilities Maps:

- Fire Department Truck and Engine Company Service Areas for Neighborhood Land Uses, Regional Land Uses, and Commercial and Industrial Centers in the City of Los Angeles;
- Brush Fire Hazard Areas;
- Selected Wildfire Hazard Areas; and
- Inadequate Fire Hydrant Service Areas.

To calculate the response distance to the nearest engine and truck companies, begin by using the maps to locate the fire stations nearest to the project site. The response distance is the actual travel distance, which would be required, not the direct distance point-to-point. All stations listed in Exhibit K.2-1 are engine companies or Task Forces. All Task Force stations include an engine company and a truck company.

Intersection LOS can be determined through a traffic study (see L.1. INTERSECTION CAPACITY) or through consultation with the Los Angeles Department of Transportation (LADOT). Consider intersections on the path between the fire station and project site, focusing on intersections that provide access to the project.

Also, determine areas with inadequate access in consultation with the LAFD, City Planning Department, and Bureau of Engineering. Finally, check the project description for evidence of use, manufacture or storage of toxic, readily combustible, or otherwise hazardous materials.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on fire protection if it requires the addition of a new fire station or the expansion, consolidation or relocation of an existing facility to maintain service.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description (including response distances) and map of LAFD facilities that serve the project (for assistance, see Exhibit K.2-1). Identify intersections at LOS E or F that provide access to the project;

- Discussion of fire hydrants and fire-flow levels serving the project site (for assistance, contact the Los Angeles Department of Water and Power (DWP)); and

- Description of existing brush fire potential and existing street facilities (e.g., substandard street width).

Project Impacts

Consider the description of the proposed land use, fire-related needs (e.g., use of hazardous materials), any project design features which would reduce or increase the demand for fire protection services, and whether the project site meets the recommended response time and distance requirements. Also, evaluate the site conditions and surrounding area for substandard street width, adequacy of fire hydrant service, brush fire hazard areas, and hillside conditions. Consult with LAFD's Construction Services Unit to determine the project's effect on fire protection and emergency medical services. Specifically evaluate the need for a new fire station or expansion, relocation, or consolidation of an existing facility to accommodate increased demand.

Cumulative Impacts

Identify the related projects, which would be served by the same LAFD facilities as the proposed project. Consider the characteristics of the related projects in terms of: land uses; response time and distance for fire companies; toxic, readily combustible, or otherwise hazardous materials; and site location (substandard street width, adequacy of fire hydrant service, brush fire hazard areas, and hillside conditions). Based on consultation with LAFD's Construction Services Unit, determine the cumulative effect on fire protection and emergency medical services. Specifically evaluate the need for a new fire station or expansion, relocation, or consolidation of an existing facility to accommodate increased demand.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Provide and maintain fire-retardant landscaping and/or an irrigated buffer zone;

- Prohibit structures in fire hazard areas;

- Use construction and design features, which reduce fire potential and/or promote containment (e.g., increased spacing between buildings, fire-resistant landscaping); and

- Develop an emergency response plan.

3. DATA, RESOURCES, AND REFERENCES

City of Los Angeles Fire Department, Construction Services Unit, 200 North Main Street, Room 1000, Los Angeles, California 90012; Telephone: (213) 977-6354.
Los Angeles Fire Code. www.lafd.org/code.htm

Environmental and Public Facilities Maps (1996):

- Fire Department Truck and Engine Company Service Areas for Neighborhood Land Uses, Regional Land Uses, and Commercial and Industrial Centers in the City of Los Angeles;
- Brush Fire Hazard Areas;
- Selected Wildfire Hazard Areas; and
- Inadequate Fire Hydrant Service Areas.

Exhibit K.2-1
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
1	2230 Pasadena Avenue Los Angeles, CA 90031	Task Force, Rescue Ambulance, Food Services	1	7
2	1962 E. Cesar Chavez Avenue Los Angeles, CA 90033	Task Force, Paramedic Ambulance	1	7 HQ
3	108 N. Freemont Avenue Los Angeles, CA 90012	Task Force, Rescue Ambulance, Bus, Light Utility, Hazardous Materials Response Unit	1 HQ	1
4	800 N. Main Street Los Angeles, CA 90012	Task Force, Squad, Rescue Ambulance, Command Post Utility	1	1
5	8900 S. Emerson Avenue Los Angeles, CA 90045	Task Force, Paramedic Ambulance	2	4 HQ
6	326 N. Virgil Avenue Los Angeles, CA 90004	Engine Company, Paramedic Ambulance, Rescue Ambulance	1	11 HQ
8	11351 Tampa Avenue Northridge, CA 91234	Assessment Engine, Paramedic Engine, Brush Patrol	3	15
9	430 E. 7th Street Los Angeles, CA 90014	Engine Company, Task Force, Rescue Ambulance	1	1 HQ
10	1335 S. Olive Street Los Angeles, CA 90015	Task Force, Rescue Ambulance, Paramedic Ambulance, Food Services	1	1
11	1819 W. 7th Street Los Angeles, CA 90057	Task Force, Paramedic Ambulance, Rescue Ambulance	1	11
12	5921 N. Figueroa Street Los Angeles, CA 90042	Task Force, Paramedic Ambulance	1	2
13	1206 S. Vermont Avenue Los Angeles, CA 90006	Engine Company, Rescue Ambulance	1	11
14	3401 S. Central Avenue Los Angeles, CA 90011	Task Force, Paramedic Ambulance, Rescue Ambulance	2	3
15	915 W. Jefferson Boulevard Los Angeles, CA 90007	Task Force, Rescue Ambulance	2	3
16	2011 N. Eastern Avenue Los Angeles, CA 90032	Assessment Engine, Rescue Ambulance	1	7
17	1601 S. Santa Fe Avenue Los Angeles, CA 90021	Engine Company, Light Force, Paramedic Ambulance, Foam Tender, Hazardous Materials Decontamination Unit	1	1

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
18	12050 Balboa Boulevard Los Angeles, CA 91344	Assessment Engine, Rescue Ambulance	3	15
19	12229 Sunset Boulevard Los Angeles, CA 90049	Engine Company, Paramedic Ambulance, Rescue Ambulance	1	9
20	2144 Sunset Boulevard Los Angeles, CA 90026	Task Force, Paramedic Ambulance	1	11
21	1187 E. 52nd Street Los Angeles, CA 90011	Engine Company, Paramedic Ambulance	2	3
23	17281 Sunset Boulevard Pacific Palisades, CA 90272	Assessment Engine, Paramedic Ambulance, Brush Patrol	1	9
24	9411 Wentworth Street Sunland, CA 91040	Assessment Engine. Paramedic Ambulance, Brush Patrol	3	12
25	2927 Whittier Boulevard Los Angeles, CA 90023	Assessment Engine, Rescue Ambulance, Arson Unit, Tunnel Utility	1	7
26	2009 S. Western Avenue Los Angeles, CA 90018	Task Force, Paramedic Ambulance, Rescue Ambulance	2	3
27	1327 N. Cole Avenue Los Angeles, CA 90028	Task Force, Paramedic Ambulance, Rescue Ambulance, Urban Search & Rescue	1	5 HQ
28	11641 Corbin Avenue Porter Ranch, CA 91326	Assessment Light Force, Rescue Ambulance, Brush Patrol	3	15
29	4029 W. Wilshire Boulevard Los Angeles, CA 90010	Task Force, Paramedic Ambulance, Rescue Ambulance, Decon Tender	1	11
33	6406 S. Main Street Los Angeles, CA 90003	Task Force, Paramedic Ambulance, Rescue Ambulance	2 HQ	13
34	3661 7th Avenue Los Angeles, CA 90018	Engine Company, Paramedic Ambulance, Rescue Ambulance	2	3
35	1601 N. Hillhurst Avenue Los Angeles, CA 90027	Task Force, Paramedic Ambulance, Rescue Ambulance, Brush Patrol	1	5
36	Under Construction 1005 N. Gaffey Street, San Pedro, CA 90732		2	6
37	1090 Veteran Avenue Los Angeles, CA 90024	Task Force, Paramedic Ambulance	1	9 HQ

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
38	124 E. "I" Street Wilmington, CA 90744	Task Force, Paramedic Ambulance, Haz-Mat Tender	2	6
39	14415 Sylvan Street Van Nuys, CA 91401	Engine Company, Assessment Light Force, Paramedic Ambulance	3	10 HQ
40	330 Ferry Street Terminal Island, CA 90731	Assessment Engine, Rescue Ambulance, Rehab Air Tender	2	6
41	1439 N. Gardner Street Los Angeles, CA 90046	Engine Company, Paramedic Ambulance, Rescue Ambulance, Brush Patrol	1	5
42	2021 Colorado Boulevard Los Angeles, CA 90041	Assessment Engine, Rescue Ambulance	1	2
43	10234 National Boulevard Los Angeles, CA 90034	Engine Company, Paramedic Ambulance	2	18
44	1410 Cypress Avenue Los Angeles, CA 90065	Assessment Engine, Rescue Ambulance, Brush Patrol, Swift Water Rescue, Bicycle Medic	1	2
46	4370 S. Hoover Street Los Angeles, CA 90037	Engine Company, Paramedic Ambulance, Rescue Ambulance,	2	3 HQ
47	4575 Huntington Dr South Los Angeles, CA 90032	Task Force, Paramedic Engine, Brush Patrol	1	7
48	1601 S. Grand Avenue San Pedro, CA 90731	Assessment Engine, Light Force, Rescue Ambulance, Haz-Mat Squad	2	6
49	400 Yacht Street, Berth 194 Wilmington, CA 90744	Assessment Engine, Rescue Ambulance, Fireboats 3 & 4	2	6 HQ
50	3036 Fletcher Drive Los Angeles, CA 90065	Assessment Engine, Light Force, Rescue Ambulance	1	2
51	10435 Sepulveda Boulevard Los Angeles, CA 90045	Assessment Engine, Paramedic Ambulance	2	4
52	4957 Melrose Avenue Los Angeles, CA 90029	Engine Company, Paramedic Ambulance	1	5
55	4455 E. York Boulevard Eagle Rock, CA 90041	Engine Company, Paramedic Ambulance	1	2 HQ
56	2759 Rowena Avenue Los Angeles, CA 90039	Assessment Engine, Paramedic Ambulance, Heavy Rescue	1	2

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
57	7800 S. Vermont Avenue Los Angeles, CA 90044	Engine Company, Paramedic Ambulance, Rescue Ambulance	2	13 HQ
58	1556 S. Robertson Boulevard Los Angeles, CA 90035	Task Force, Paramedic Ambulance	2	18
59	11505 Olympic Boulevard Los Angeles, CA 90064	Assessment Engine, Paramedic Ambulance, Rehab Air Tender	1	9
60	5320 Tujunga Avenue North Hollywood, CA 91601	Task Force, Paramedic Ambulance, Rescue Ambulance, Foam Tender	3	14 HQ
61	5821 W. 3rd Street Los Angeles, CA 90036	Task Force, Paramedic Ambulance, Rescue Ambulance	2	18
62	3631 Centinela Avenue Los Angeles, CA 90066	Assessment Engine, Paramedic Ambulance, Swift Water Rescue	2	4
63	1930 Shell Avenue Venice, CA 90291	Task Force, Paramedic Ambulance	2	4
64	118 W. 108th Street Los Angeles, CA 90061	Task Force, Paramedic Ambulance, Rescue Ambulance	2	13
65	1801 E. Century Boulevard Los Angeles, CA 90002	Engine Company, Paramedic Ambulance	2	13
66	1909 W. Slauson Boulevard Los Angeles, CA 90047	Task Force, Paramedic Ambulance, Rescue Ambulance	2	13
68	5023 W. Washington Blvd Los Angeles, CA 90016	Engine Company, Paramedic Ambulance, Rescue Ambulance	2	18 HQ
69	15045 Sunset Boulevard Pacific Palisades, CA 90272	Task Force, Paramedic Ambulance	1	9
70	9861 Reseda Boulevard Northridge, CA 91324	Engine Company, Assessment Light Force, Paramedic Ambulance, Haz-Mat Squad	3	15 HQ
71	107 S. Beverly Glen Blvd Los Angeles, CA 90024	Assessment Engine, Paramedic Ambulance	1	9
72	6811 De Soto Avenue Canoga Park, CA 91303	Task Force, Paramedic Ambulance	3	17 HQ
73	7419 Reseda Boulevard Reseda, CA 91335	Engine Company, Assessment Light Force, Paramedic Ambulance	3	17

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
74	7777 Foothill Boulevard Tujunga, CA 91042	Engine Company, Assessment Light Force, Paramedic Ambulance, Brush Patrol	3	12
75	15345 San Fernando Mission Mission Hills, CA 91340	Engine Company, Assessment Light Force, Paramedic Ambulance, Haz-Mat Tender	3	12
76	3111 N. Cahuenga Boulevard Los Angeles, CA 90068	Assessment Engine, Rescue Ambulance	1	5
77	8943 Glenoaks Boulevard Sun Valley, CA 91352	Assessment Engine, Rescue Ambulance	3	12
78	4230 Coldwater Canyon Ave Studio City, CA 91604	Assessment Engine, Paramedic Ambulance	3	14
79	18030 S. Vermont Avenue Gardena, CA 90247	Assessment Engine, Paramedic Ambulance	2	13
80	6911 World Way West Los Angeles, CA 90045	Airport Crash Rescue, Airport Foam	2	4
81	14123 Nordhoff Street Arleta, CA 91331	Assessment Engine, Paramedic Ambulance, Rescue Ambulance	3	12
82	1800 N. Bronson Avenue Los Angeles, CA 90028	Assessment Engine, Paramedic Ambulance	1	5
83	5001 Balboa Boulevard Encino, CA 91316	Assessment Engine, Paramedic Ambulance, Brush Patrol, Water Tender, Emergency Lighting Trailer, Medical Supply Trailer	3	10
84	5340 Canoga Avenue Woodland Hills, CA 91364	Assessment Engine, Paramedic Ambulance, Brush Patrol	3	17
85	1331 W. 253rd Street Harbor City, CA 90710	Task Force, Paramedic Ambulance, Urban Search & Rescue, Medical Supply Trailer, Emergency Lighting Trailer	2	6
86	4305 Vineland Avenue North Hollywood, CA 91602	Assessment Engine, Paramedic Ambulance, Urban Search & Rescue, Swift Water Rescue, Water Tender	3	14
87	10241 Balboa Boulevard Northridge, CA 91324	Assessment Engine, Paramedic Ambulance	3	15
88	5101 N. Sepulveda Boulevard Sherman Oaks, CA 91403	Task Force, Paramedic Ambulance, Urban Search & Rescue, Tractor Company, Command Post Vehicle	3 HQ	10

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
89	7063 Laurel Canyon Blvd North Hollywood, CA 91605	Task Force, Paramedic Ambulance, Rescue Ambulance, Rehab Air Tender, Urban Search & Rescue	3	14
90	7921 Woodley Avenue Van Nuys, CA 91406	Task Force, Paramedic Ambulance	3	10
91	14430 Polk Street Sylmar, CA 91342	Assessment Engine, Paramedic Ambulance, Rescue Ambulance	3	12
92	10556 W. Pico Boulevard Los Angeles, CA 90064	Engine Company, Assessment Light Force, Paramedic Ambulance	2	18
93	19059 Ventura Boulevard Tarzana, CA 91356	Task Force, Paramedic Ambulance	3	17
94	4470 Coliseum Street Los Angeles, CA 90016	Task Force, Paramedic Ambulance, Rescue Ambulance, Brush Patrol	2	18
95	10010 International Road Los Angeles, CA 90045	Task Force, Paramedic Ambulance, Haz-Mat Squad	2	4
96	21800 Marilla Street Chatsworth, CA 91311	Engine Company, Assessment Light Force, Paramedic Ambulance	3	15
97	8021 Mulholland Drive Los Angeles, CA 90046	Assessment Engine, Paramedic Ambulance	3	14
98	13035 Van Nuys Boulevard Pacoima, CA 91331	Engine Company, Assessment Light Force, Paramedic Ambulance, Rescue Ambulance, Decon Tender	3	12 HQ
99	14145 Mulholland Drive Beverly Hills, CA 90210	Assessment Engine, Paramedic Ambulance, Brush Patrol, Arson Investigation Unit	3	10
100	6751 Louise Avenue Van Nuys, CA 91406	Engine Company, Paramedic Ambulance, Foam Tender, Swift Water Rescue	3	17
101	1414 25th Street San Pedro, CA 90732	Engine Company, Paramedic Ambulance, Foam Tender	2	6
102	13200 Burbank Boulevard Van Nuys, CA 91401	Light Force, Paramedic Ambulance	3	14
103	18143 Parthenia Street Northridge, CA 91324	Assessment Engine, Paramedic Ambulance	3	15
104	8349 Winnetka Avenue Canoga Park, CA 91306	Engine Company, Paramedic Ambulance	3	15

Exhibit K.2-1, continued
LOS ANGELES FIRE DEPARTMENT STATION LOCATIONS

Fire Station	Address	Equipment	Division	Battalion
105	6345 Fallbrook Avenue Woodland Hills, CA 91364	Engine Company, Assessment Light Force, Paramedic Ambulance	3	17
106	23004 Roscoe Boulevard West Hills, CA 91304	Assessment Engine, Rescue Ambulance, Fuel Tender	3	17
107	20225 Devonshire Street Chatsworth, CA 91311	Engine Company, Paramedic Ambulance	3	15
108	12520 Mulholland Drive Beverly Hills, CA 90210	Assessment Engine, Rescue Ambulance	3	14
109	16500 Mulholland Drive Los Angeles, CA 90049	Assessment Engine, Rescue Ambulance, Brush Patrol	3	10
110	2945 Miner St. Berth 44-A San Pedro, CA 90731	Fireboats & SCUBA Operations	2	6
111	954 S. Seaside Avenue, Berth 260 San Pedro, CA 90731	Fireboat	2	6
112	444 South Harbor Blvd. San Pedro, CA 90731	Engine Company, Paramedic Ambulance, Fireboats	2	6
114	8060 Balboa Place Van Nuys, CA 91406	Air Operations, Crash Rescue, Airport Foam	3	10

HQ means Headquarters
Source: LAFD, 1994 & 2003. 2006.

K.3. PUBLIC SCHOOLS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XIII.c): Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?

B. Introduction

Within the City of Los Angeles, the Los Angeles Unified School District (LAUSD) provides public education for over 900,000 total students in all programs. The school district educates students in grades K-12 at 557 schools. There are 429 elementary schools; 76 middle schools; and 52 high schools.[1] The LAUSD also offers a number of other schools and centers. Additionally, the LAUSD provides public education partially or entirely within 26 incorporated Los Angeles County cities.

School service needs are related to the size of the residential population, the geographic area served, and community characteristics. Projects that affect these factors (e.g. by increasing residential population in an area) may increase the demand for public school facilities.

C. Screening Criteria

Would the project result in a net increase of at least 75 residential units, 100,000 square feet (sf) of commercial floor area or 200,000 sf of industrial floor area?

A "yes" response to the preceding question indicates further study in an expanded Initial Study,

[1] *For an accounting of the number see LAUSD website at www.lausd.k12.ca/lausd/offices/office-of-Communications/and look for fingertip facts. LAUSD, fingertip facts: 2002-2003, December 2002*

Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Public Schools, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Public Schools from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and determine the type of land use(s) proposed (i.e., commercial, industrial, residential), and the size of the project (i.e., number of units, square footage). Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The population increase resulting from the proposed project, based on the increase in residential units or square footage of non-residential floor area;

- The demand for school services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to LAUSD services (facilities, equipment and personnel) and the project's proportional contribution to the demand;

- Whether (and the degree to which) accommodation of the increased demand would require construction of new facilities, a major reorganization of students or classrooms, major revisions to the school calendar (such as year-round sessions), or other actions which would create a temporary or permanent impact on the school(s); and

- Whether the project includes features that would reduce the demand for school services (e.g., on-site school facilities or direct support to LAUSD).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identify the name, location and description of schools serving the project site (including capacity, enrollment and operating characteristics). Use Exhibits K.3-1 through K.3-9, or contact LAUSD Master Planning & Demographics Branch, Office of the Chief Facilities Executive for assistance and to confirm the accuracy of data; and

- Describe the population and geographic area served, as well as community characteristics.

Project Impacts

Review the description of the project and surrounding area. Determine the net population increase resulting from the project, and identify the public schools that would be used by the project residents. LAUSD has prepared student generation factors in order to estimate the number of students expected from various residential development (reproduced in Exhibit K.3-10). Evaluate the demand for public schools anticipated at the time of project buildout, compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion, or addition) to schools serving the project and the project's proportional contribution to the demand. As necessary, consult with the LAUSD. Evaluate project features, which would reduce the demand for services (e.g., on-site school facilities or direct support to the LAUSD).

Cumulative Impacts

Identify the related projects, which would be served by the same schools as the proposed project. Consider the characteristics of the related projects in terms of size, location, and type of land uses. Determine the net population increase resulting from the related projects. As above, evaluate the cumulative demand for services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion, or addition). As necessary, consult with LAUSD. As feasible, evaluate known features of the related projects (e.g., on-site school facilities or direct support to the LAUSD), which would reduce the expected cumulative demand for public

education services. Consider the combined impact of the proposed and related projects and the project's proportional contribution to the cumulative demand for public education services.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Provide on-site school amenities; and
- Provide direct support to the LAUSD, including land, equipment, funding, etc. Facilities Office of the Chief Executive Master Planning & Demographics Branch.

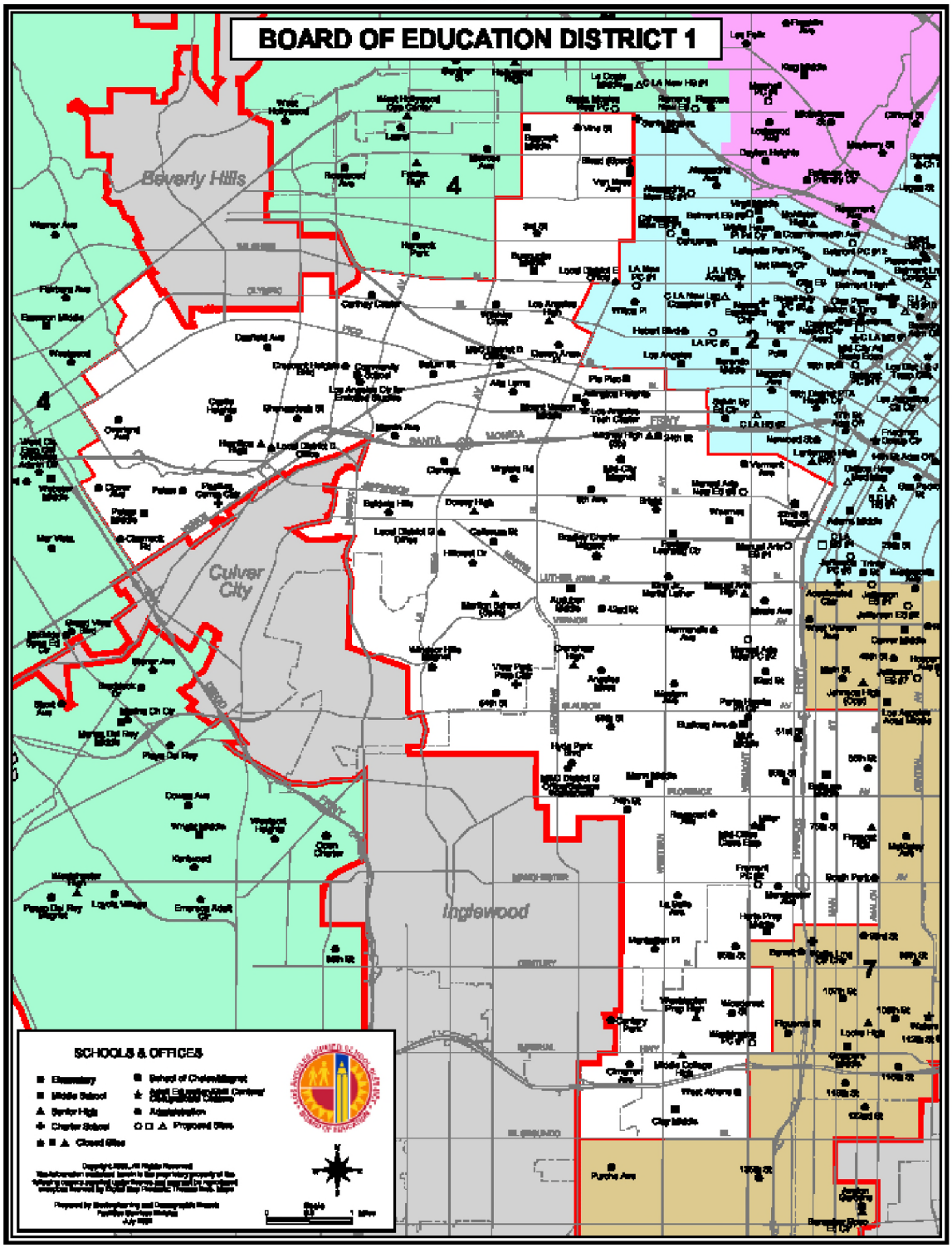
3. DATA, RESOURCES, AND REFERENCES

LAUSD, 355 S. Grand Ave., 31st FLR. Los Angeles, 90012; can be contacted at: (213) 633-7606 or http://www.lausd.net.

Environmental and Public Facilities Maps (1996):

- Elementary Schools;
- Middle Schools; and
- High Schools.

Exhibit K.3-1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Beverly Hills
Culver City
Inglewood
SCHOOLS & OFFICES

Exhibit K.3-2

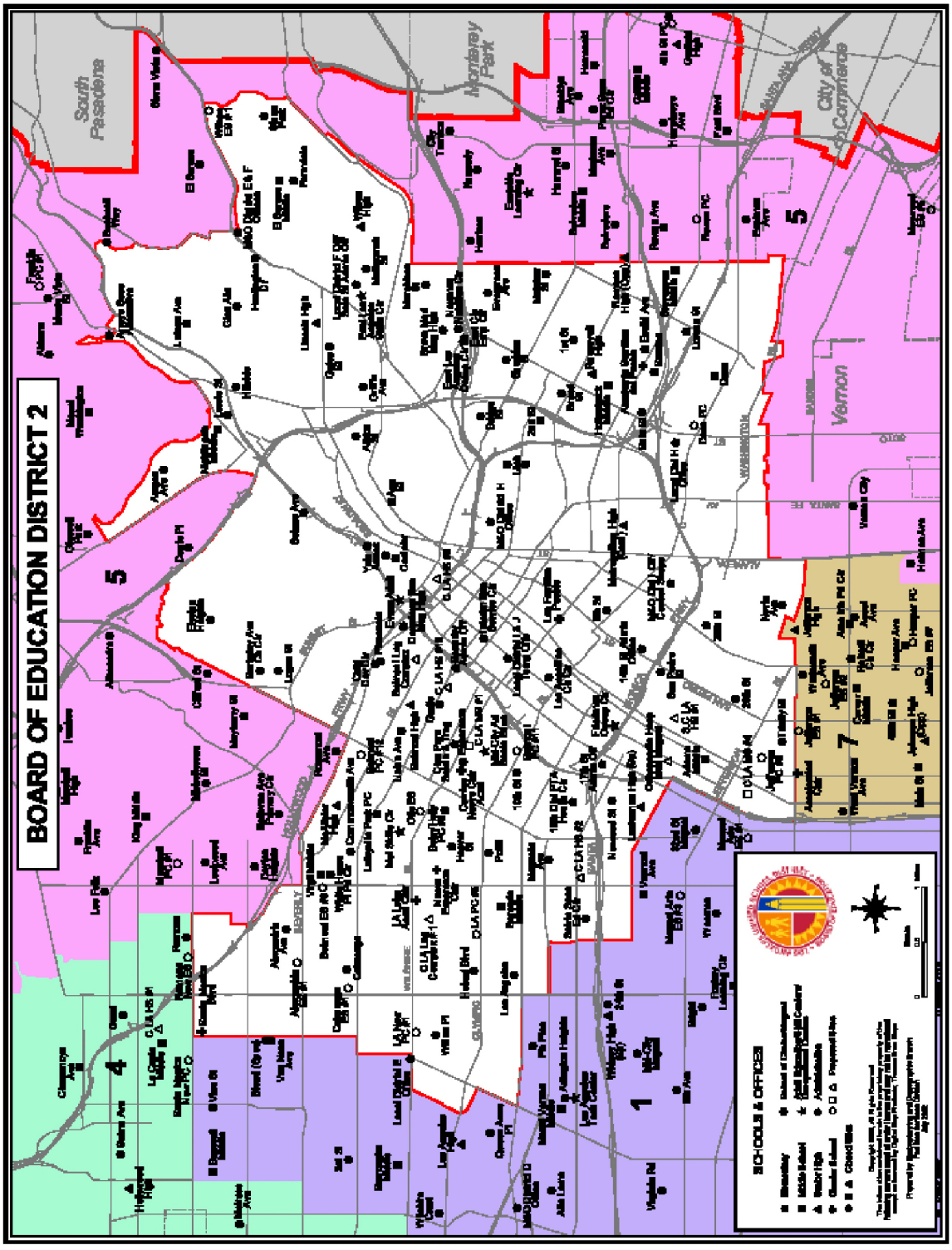
BOARD OF EDUCATION DISTRICT 2
South Pasadena
Monterey Park
City of Commerce
Vernon
SCHOOLS & OFFICES

Exhibit K.3-3

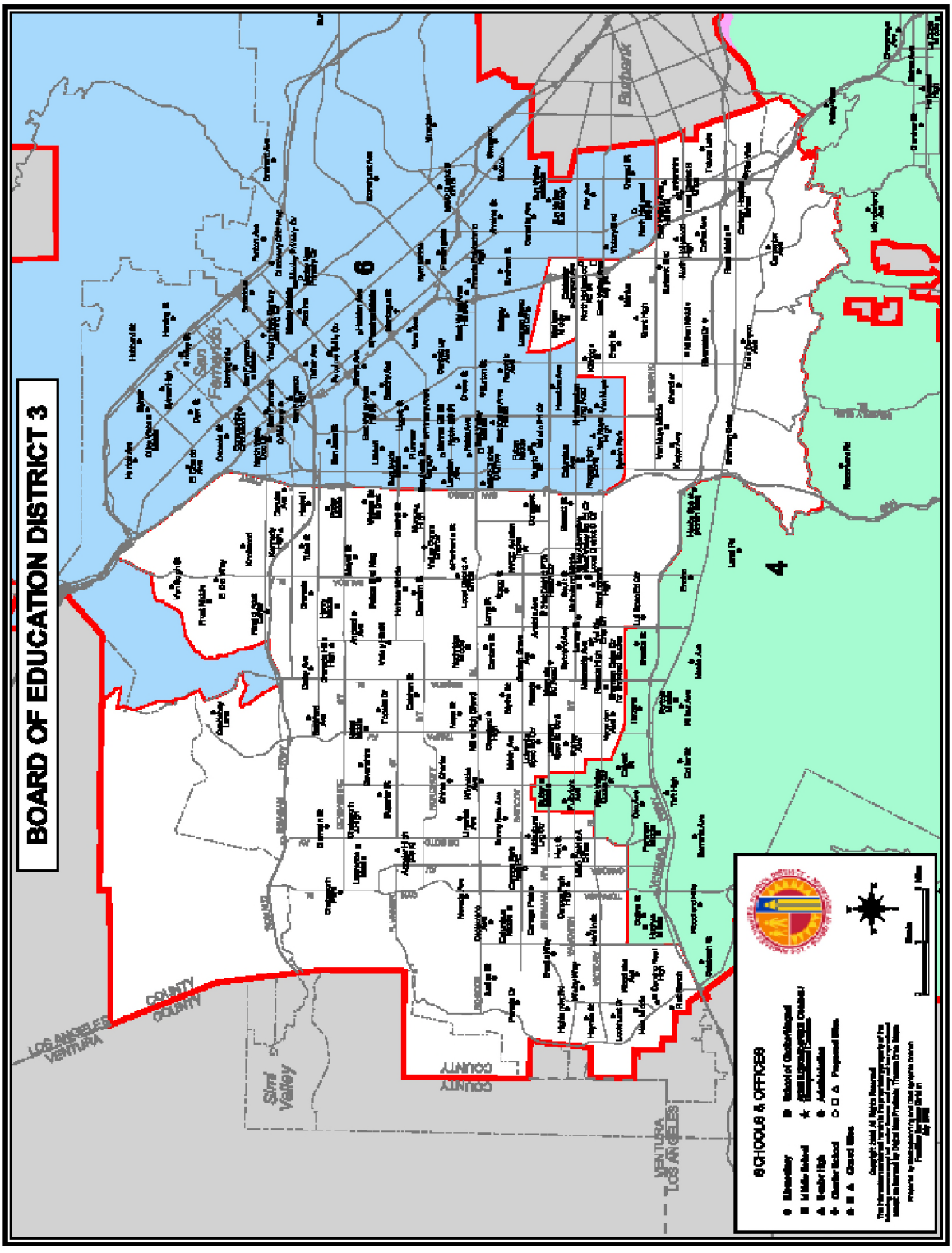
BOARD OF EDUCATION DISTRICT 3
6
4
Burbank
San Fernando
Simi Valley
LOS ANGELES COUNTY
VENTURA COUNTY
SCHOOLS & OFFICES

Exhibit K.3-4

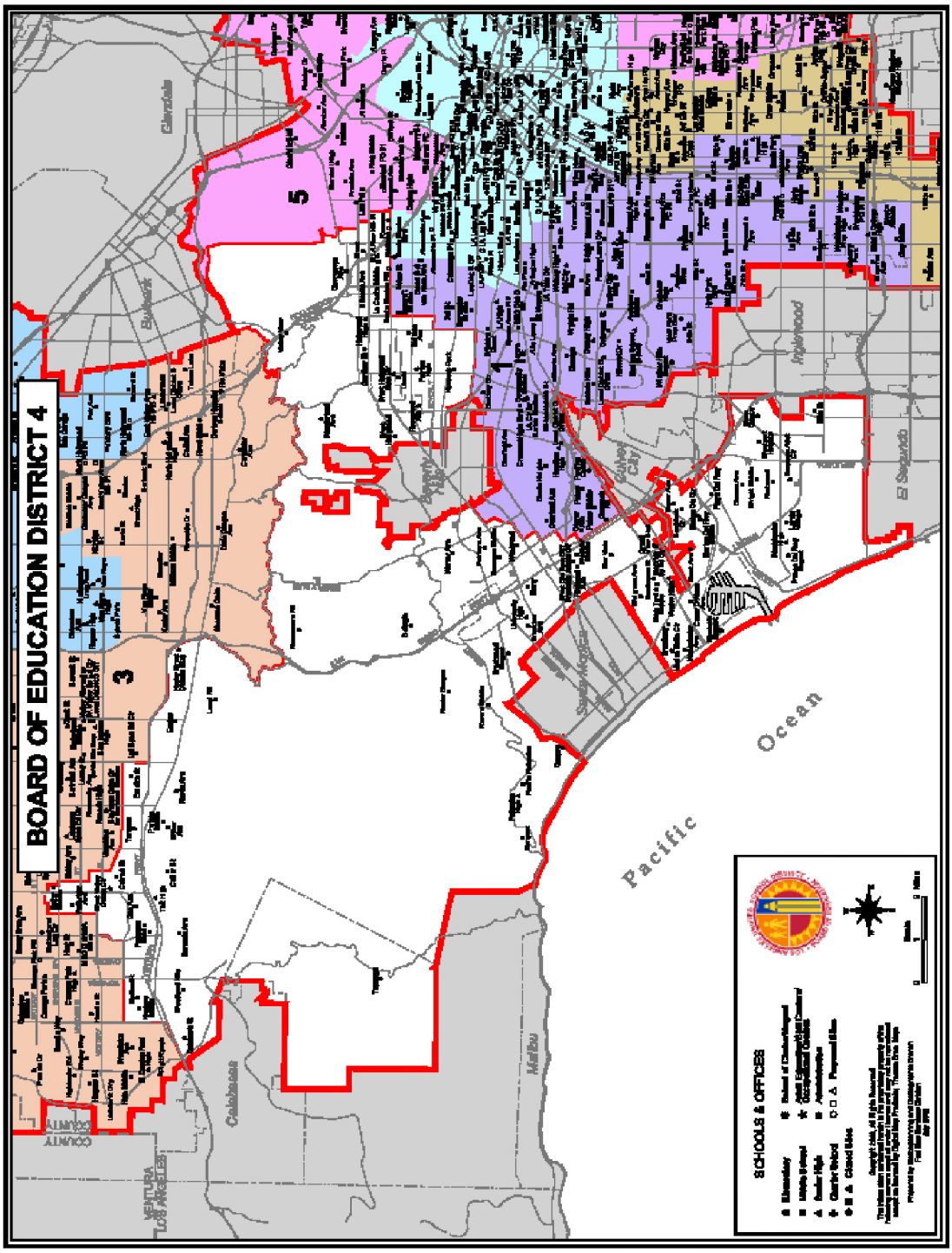
BOARD OF EDUCATION DISTRICT 4
5
3
Pacific
Ocean
SCHOOLS & OFFICES

Exhibit K.3-5

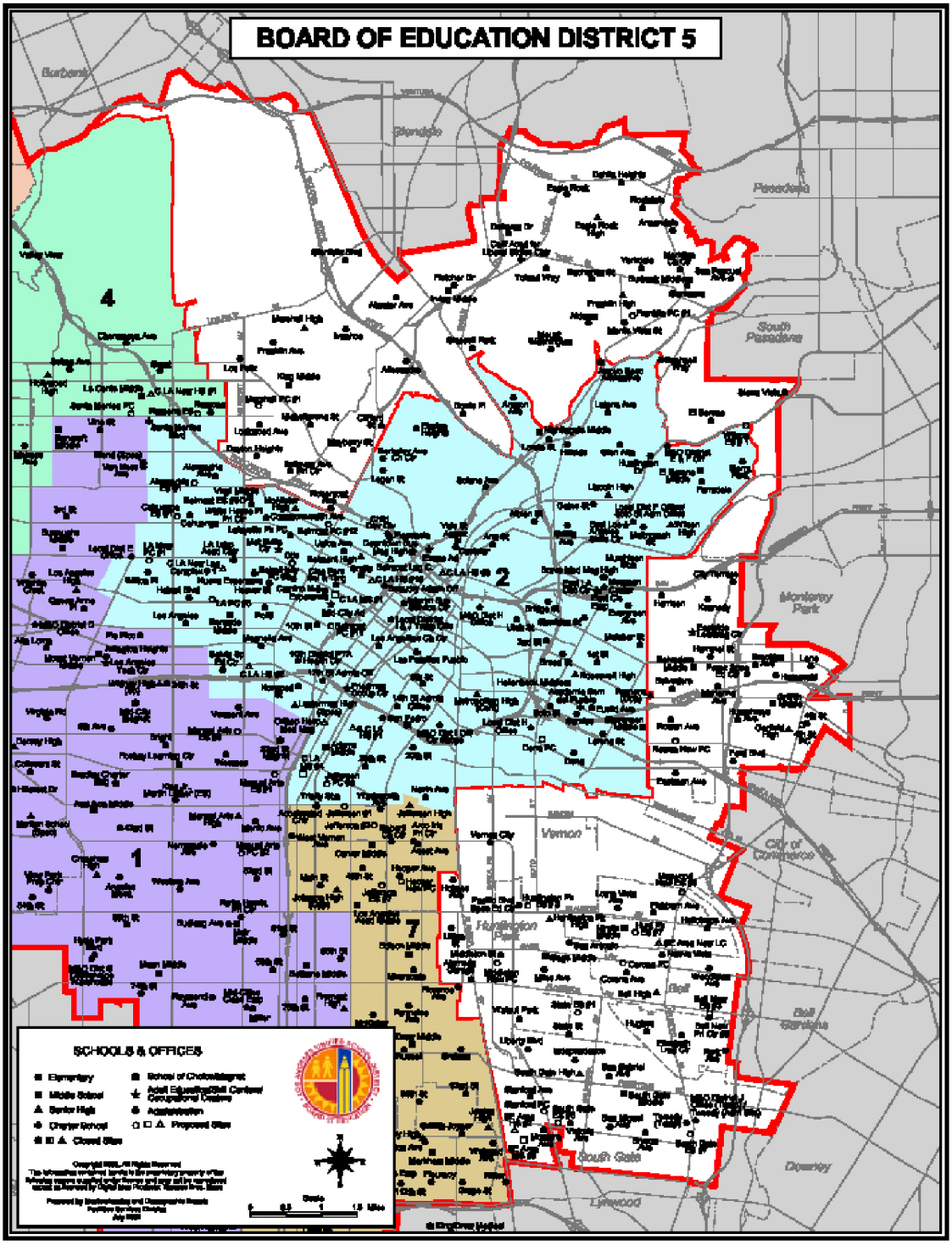
BOARD OF EDUCATION DISTRICT 5
SCHOOLS & OFFICES
Burbank
Glendale
Pasadena
South Pasadena
Monterey Park
Vernon
City of Commerce
Huntington Park
Bell
Bell Gardens
South Gate
Downey
Lynwood
1
2
4
7

Exhibit K.3-6

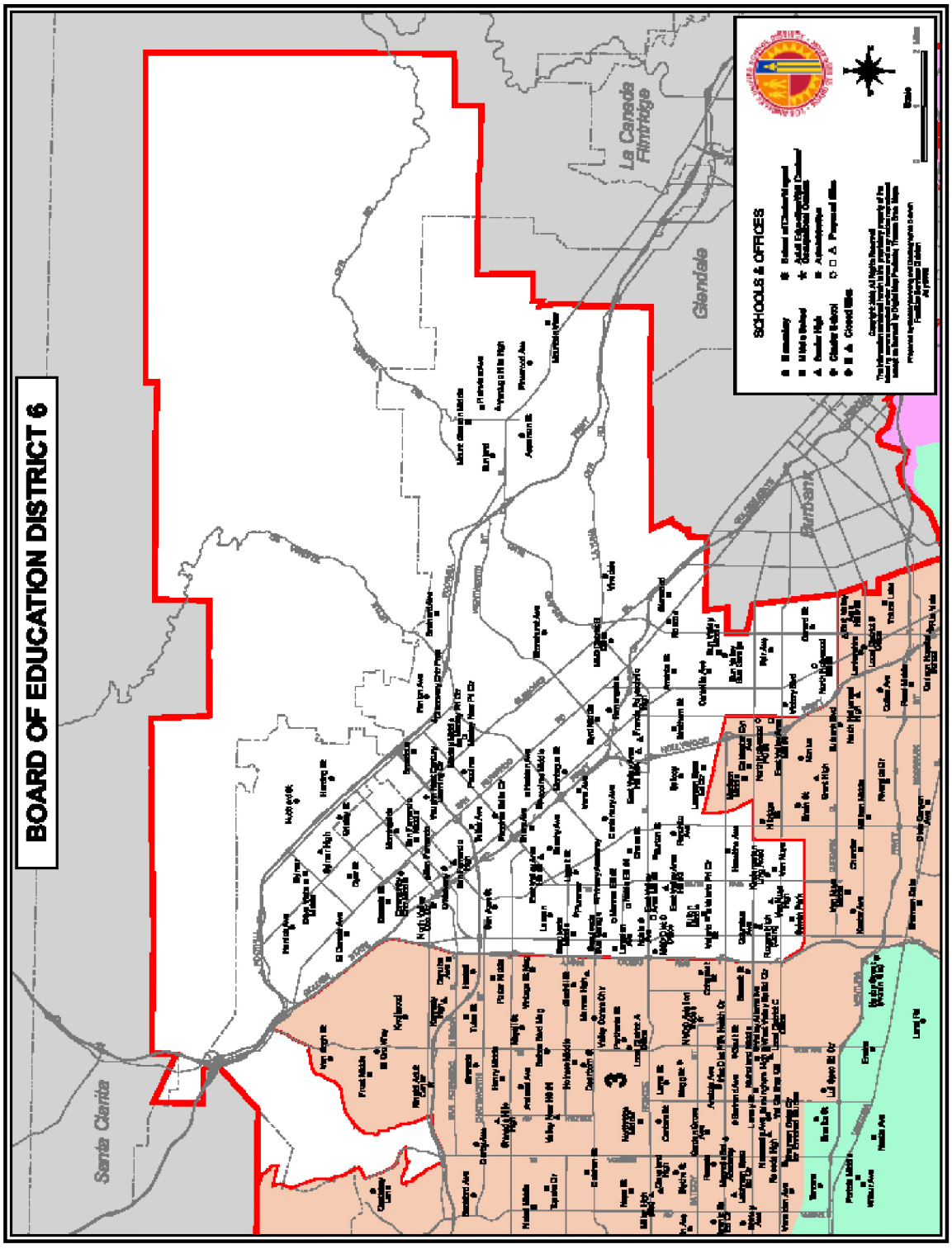
BOARD OF EDUCATION DISTRICT 6
SCHOOLS & OFFICES
La Canada Flintridge
Glendale
Burbank
Santa Clarita
3

Exhibit K.3-7

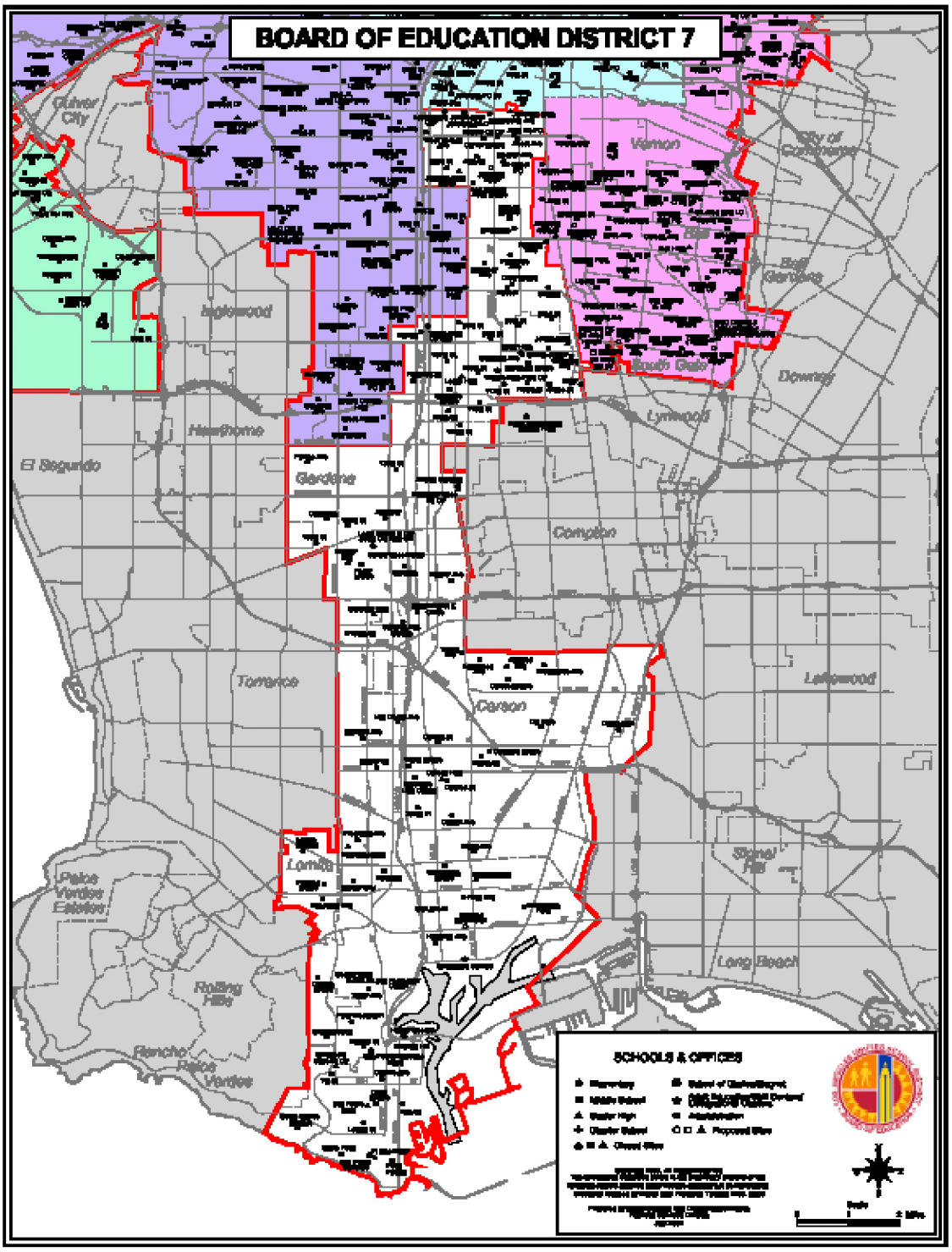
BOARD OF EDUCATION DISTRICT 7
Culver City
Vernon
City of Commerce
Bell Gardens
Huntington Park
South Gate
Downey
Lynwood
Hawthorne
El Segundo
Gardena
Compton
Torrance
Carson
Lakewood
Signal Hill
Lomita
Palos Verdes Estates
Rolling Hills
Rancho Palos Verdes
Long Beach
SCHOOLS & OFFICES

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
107TH ST EL	147 E 107TH ST LOS ANGELES, CA 90003	4 TRK	1047	1341
109TH ST EL	10915 S MC KINLEY AVE LOS ANGELES, CA 90059	1 TRK	540	540
10TH ST EL	1000 GRATTAN ST LOS ANGELES, CA 90015	3 TRK	1210	1768
112TH ST EL	1265 E 112TH ST LOS ANGELES, CA 90059	1 TRK	821	821
116TH ST EL	11610 STANFORD AVE LOS ANGELES, CA 90059	1 TRK	597	597
118TH ST EL	144 E 118TH ST LOS ANGELES, CA 90061	1 TRK	934	934
122ND ST EL	405 E 122ND ST LOS ANGELES, CA 90061	1 TRK	977	977
135TH ST EL	801 W 135TH ST GARDENA, CA 90247	3 TRK	721	1037
153RD ST EL	1605 W 153RD ST GARDENA, CA 90247	1 TRK	727	727
156TH ST EL	2100 W 156TH ST GARDENA, CA 90249	1 TRK	412	412
15TH ST EL	1527 S MESA ST SAN PEDRO, CA 90731	4 TRK	740	949
186TH ST EL	1581 W 186TH ST GARDENA, CA 90248	1 TRK	962	962
1ST EL	2820 E FIRST ST LOS ANGELES, CA 90033	1 TRK	874	874
20TH ST EL	1353 E 20TH ST LOS ANGELES, CA 90011	3 TRK	728	1063
232ND PL EL	23240 ARCHIBALD AVE CARSON, CA 90745	1 TRK	543	543
24TH ST EL	2055 W 24TH ST LOS ANGELES, CA 90018	3 TRK	1179	1662
28TH ST EL	2807 STANFORD AVE LOS ANGELES, CA 90011	3 TRK	1479	2179
2ND ST EL	1942 E SECOND ST LOS ANGELES, CA 90033	1 TRK	802	802
3RD ST EL	201 S JUNE ST LOS ANGELES, CA 90004	1 TRK	831	831
36th ST	1771 W. 36th ST LOS ANGELES, CA 90018		866	
42ND ST EL	4231 FOURTH AVE LOS ANGELES, CA 90008	1 TRK	807	807
49TH ST EL	750 E 49TH ST LOS ANGELES, CA 90011	3 TRK	1315	1947
4TH ST EL	420 S AMALIA AVE LOS ANGELES, CA 90022	3 TRK	849	1235
52ND ST EL	816 W 51ST ST LOS ANGELES, CA 90037	3 TRK	1071	1534
54TH ST EL	5501 S EILEEN AVE LOS ANGELES, CA 90043	4 TRK	567	703
59TH ST EL	5939 SECOND AVE LOS ANGELES, CA 90043	1 TRK	529	529
61ST ST EL	6020 S FIGUEROA ST LOS ANGELES, CA 90003	4 TRK	958	1207
66TH ST EL	6600 S SAN PEDRO ST LOS ANGELES, CA 90003	4 TRK	1124	1420
68TH ST EL	612 W 68TH ST LOS ANGELES, CA 90044	4 TRK	967	1243
6TH AVE EL	3109 SIXTH AVE LOS ANGELES, CA 90018	3 TRK	822	1138
74TH ST EL	2112 W 74TH ST LOS ANGELES, CA 90047	1 TRK	865	865
75TH ST EL	142 W 75TH ST LOS ANGELES, CA 90003	4 TRK	1475	1878
7TH ST EL	1570 W SEVENTH ST SAN PEDRO, CA 90732	1 TRK	580	580
92ND ST EL	9211 GRAPE ST LOS ANGELES, CA 90002	3 TRK	840	1181
93RD ST EL	330 E 93RD ST LOS ANGELES, CA 90003	4 TRK	1263	1609
95TH ST EL	1109 W 96TH ST LOS ANGELES, CA 90044	4 TRK	1249	1575

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
96TH ST EL	1471 E 96TH ST LOS ANGELES, CA 90002	1 TRK	1021	1021
98TH ST EL	5431 W 98TH ST LOS ANGELES, CA 90045	1 TRK	409	409
99TH ST EL	9900 S WADSWORTH AVE LOS ANGELES, CA 90002	1 TRK	799	799
9TH ST EL	820 TOWNE AVE LOS ANGELES, CA 90021	1 TRK	529	529
ALBION EL	322 S AVE 18 LOS ANGELES, CA 90031	1 TRK	585	585
ALDAMA EL	632 N AVE 50 LOS ANGELES, CA 90042	4 TRK	691	875
ALEXANDRIA EL	4211 OAKWOOD AVE LOS ANGELES, CA 90004	3 TRK	1277	1857
ALLESANDRO EL	2210 RIVERSIDE DR LOS ANGELES, CA 90039	3 TRK	437	619
ALTA LOMA EL	1745 VINEYARD AVE LOS ANGELES, CA 90019	3 TRK	790	1131
AMBLER EL	319 E SHERMAN DR CARSON, CA 90746	1 TRK	583	583
AMESTOY EL	1048 W 149TH ST GARDENA, CA 90247	1 TRK	915	915
ANATOLA EL	7364 ANATOLA AVE VAN NUYS, CA 91406	1 TRK	564	564
ANDASOL EL	10126 ENCINO AVE NORTHRIDGE, CA 91325	1 TRK	633	633
ANGELES MESA EL	2611 W 52ND ST LOS ANGELES, CA 90043	1 TRK	811	811
ANN EL	126 E BLOOM ST LOS ANGELES, CA 90012	1 TRK	408	408
ANNALEE EL	19410 S ANNALEE AVE CARSON, CA 90746	1 TRK	594	594
ANNANDALE EL	6125 POPPY PEAK DR LOS ANGELES, CA 90042	1 TRK	459	459
APPERSON EL	10233 WOODWARD AVE SUNLAND, CA 91040	1 TRK	604	604
ARAGON EL	1118 ARAGON AVE LOS ANGELES, CA 90065	3 TRK	615	887
ARLINGTON HTS EL	1717 SEVENTH AVE LOS ANGELES, CA 90019	4 TRK	868	1117
ARMINTA EL	11530 STRATHERN ST NO HOLLYWOOD, CA 91605	3 TRK	808	1181
ASCOT EL	1447 E 45TH ST LOS ANGELES, CA 90011	3 TRK	963	1391
ATWATER EL	3271 SILVER LAKE BLVD LOS ANGELES, CA 90039	1 TRK	573	573
AVALON GARDENS EL	13940 S SAN PEDRO ST LOS ANGELES, CA 90061	1 TRK	382	382
BALDWIN HILLS EL	5421 RODEO RD LOS ANGELES, CA 90016	1 TRK	616	616
BANDINI EL	425 N BANDINI ST SAN PEDRO, CA 90731	1 TRK	512	512
BARRETT EL	419 W 98TH ST LOS ANGELES, CA 90003	1 TRK	1295	1295
BARTON HILL EL	423 N PACIFIC AVE SAN PEDRO, CA 90731	4 TRK	713	897
BASSETT EL	15756 BASSETT ST VAN NUYS, CA 91406	4 TRK	1045	1361
BEACHY EL	9757 BEACHY AVE PACOIMA, CA 91331	4 TRK	766	927
BECKFORD EL	19130 TULSA ST NORTHRIDGE, CA 91326	1 TRK	661	661
BEETHOVEN EL	3711 BEETHOVEN ST LOS ANGELES, CA 90066	1 TRK	458	458
BELVEDERE EL	3724 E FIRST ST LOS ANGELES, CA 90063	4 TRK	1250	1621
BERTRAND EL	7021 BERTRAND AVE RESEDA, CA 91335	1 TRK	549	549
BLYTHE EL	18730 BLYTHE ST RESEDA, CA 91335	1 TRK	662	662
BONITA EL	21929 BONITA ST CARSON, CA 90745	1 TRK	787	787
BRADDOCK DRIVE EL	4711 INGLEWOOD BLVD CULVER CITY, CA 90230	1 TRK	722	722

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
BRAINARD EL	11407 BRAINARD AVE LAKE VIEW TERRACE, CA 91342	1 TRK	425	425
BREED EL	2226 E THIRD ST LOS ANGELES, CA 90033	1 TRK	855	855
BRIDGE EL	605 N BOYLE AVE LOS ANGELES, CA 90033	1 TRK	539	539
BRIGHT EL	1771 W 36TH ST LOS ANGELES, CA 90018	1 TRK	899	899
BROAD AVE EL	24815 BROAD AVE WILMINGTON, CA 90744	4 TRK	993	1269
BROADACRES EL	19424 S BROADACRES AVE CARSON, CA 90746	1 TRK	545	545
BROADOUS EL	12561 FILMORE ST PACOIMA, CA 91331	4 TRK	872	1076
BROADWAY EL	1015 LINCOLN BLVD VENICE, CA 90291	1 TRK	628	628
BROCKTON EL	1309 ARMACOST AVE LOS ANGELES, CA 90025	1 TRK	377	377
BROOKLYN AVE EL	4620 CESAR CHAVEZ AVE LOS ANGELES, CA 90022	1 TRK	774	774
BRYSON EL	4470 MISSOURI AVE SOUTH GATE, CA 90280	3 TRK	800	1175
BUCHANAN EL	5024 BUCHANAN ST LOS ANGELES, CA 90042	3 TRK	603	875
BUDLONG EL	5940 S BUDLONG AVE LOS ANGELES, CA 90044	1 TRK	1517	1517
BURBANK EL	12215 ALBERS ST NO HOLLYWOOD, CA 91607	4 TRK	509	625
BURTON EL	8111 CALHOUN AVE PANORAMA CITY, CA 91402	4 TRK	719	890
BUSHNELL WAY EL	5507 BUSHNELL WAY LOS ANGELES, CA 90042	1 TRK	711	711
CABRILLO EL	732 S CABRILLO AVE SAN PEDRO, CA 90731	4 TRK	574	730
CAHUENGA EL	220 S HOBART BLVD LOS ANGELES, CA 90004	3 TRK	885	1281
CALABASH EL	23055 EUGENE ST WOODLAND HILLS, CA 91364	1 TRK	421	421
CALAHAN EL	18722 KNAPP ST NORTHRIDGE, CA 91324	1 TRK	512	512
CALVERT EL	19850 DELANO ST WOODLAND HILLS, CA 91367	1 TRK	621	621
CAMELLIA EL	7451 CAMELLIA AVE NO HOLLYWOOD, CA 91605	3 TRK	1002	1450
CANFIELD EL	9233 AIRDROME ST LOS ANGELES, CA 90035	1 TRK	446	446
CANOGA PARK EL	7438 TOPANGA CYN BLVD CANOGA PARK, CA 91303	3 TRK	1004	1432
CANTARA EL	17950 CANTARA ST RESEDA, CA 91335	1 TRK	790	790
CANTERBURY EL	13670 MONTAGUE ST PACOIMA, CA 91331	1 TRK	997	997
CANYON EL	421 ENTRADA DR SANTA MONICA, CA 90402	1 TRK	429	429
CAPISTRANO EL	8118 CAPISTRANO AVE CANOGA PARK, CA 91304	1 TRK	590	590
CAROLDALE	22424 CAROLDALE AVE, CARSON CA 90745	1 TRK	987	987
CARPENTER EL	3909 CARPENTER AVE STUDIO CITY, CA 91604	1 TRK	971	971
CARSON EL	161 E CARSON ST CARSON, CA 90745	4 TRK	816	1004
CARTHAY CENTER EL	6351 W OLYMPIC BLVD LOS ANGELES, CA 90048	1 TRK	559	559
CASTELAR EL	840 YALE ST LOS ANGELES, CA 90012	1 TRK	937	937
CASTLE HTS EL	9755 CATTARAUGUS AVE LOS ANGELES, CA 90034	1 TRK	650	650
CASTLEBAY LN EL	19010 CASTLEBAY LN NORTHRIDGE, CA 91326	1 TRK	877	877
CATSKILL EL	23536 CATSKILL AVE CARSON, CA 90745	1 TRK	943	943
CENTURY PK EL	10935 S SPINNING AVE INGLEWOOD, CA 90303	1 TRK	942	942

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
CHANDLER EL	14030 WEDDINGTON ST VAN NUYS, CA 91401	1 TRK	652	652
CHAPMAN EL	1947 MARINE AVE GARDENA, CA 90249	1 TRK	526	526
CHARNOCK ROAD EL	11133 CHARNOCK RD LOS ANGELES, CA 90034	1 TRK	667	667
CHASE EL	14041 CHASE ST PANORAMA CITY, CA 91402	1 TRK	972	972
CHATSWORTH EL	22005 DEVONSHIRE ST CHATSWORTH, CA 91311	1 TRK	512	512
CHEREMOYA EL	6017 FRANKLIN AVE LOS ANGELES, CA 90028	4 TRK	457	598
CIENEGA EL	2611 S ORANGE DR LOS ANGELES, CA 90016	4 TRK	837	1041
CIMARRON EL	11559 CIMARRON AVE HAWTHORNE, CA 90250	1 TRK	600	600
CITY TERRACE EL	4350 CITY TERRACE DR LOS ANGELES, CA 90063	1 TRK	597	597
CLARA PRIM CENTER-	4504 ASCOT AVE, LOS ANGELES, CA 90011			
CLIFFORD EL	2150 DUANE ST LOS ANGELES, CA 90039	1 TRK	241	241
CLOVER EL	11020 CLOVER AVE LOS ANGELES, CA 90034	1 TRK	576	576
COEUR D ALENE EL	810 COEUR D'ALENE AVE VENICE, CA 90291	1 TRK	458	458
COHASSET EL	15810 SATICOY ST VAN NUYS, CA 91406	1 TRK	887	887
COLDWATER CYN EL	6850 COLDWATER CYN AVE NO HOLLYWOOD, CA	3 TRK	1016	1484
COLFAX EL	11724 ADDISON ST NO HOLLYWOOD, CA 91607	1 TRK	594	594
COLISEUM EL	4400 COLISEUM ST LOS ANGELES, CA 90016	1 TRK	450	450
COLUMBUS AVE EL	6700 COLUMBUS AVE VAN NUYS, CA 91405	4 TRK	571	732
COMMONWEALTH EL	215 S COMMONWEALTH AVE LOS ANGELES, CA 90004	3 TRK	609	871
COMPTON EL	1515 E 104TH ST LOS ANGELES, CA 90002	1 TRK	585	585
CORONA EL	3825 BELL AVE BELL, CA 90201	3 TRK	1337	1924
COWAN EL	7615 COWAN AVE LOS ANGELES, CA 90045	1 TRK	588	588
CRESCENT HEIGHTS	1661 S. CRESCENT HEIGHTS, LOS ANGELES, CA 90035	1 TRK	332	332
CRESTWOOD ST EL	1946 W CRESTWOOD ST RANCHO PALOS VERDES, CA 90275	1 TRK	559	559
DACOTAH	1314 DACOTAH ST, LOS ANGELES, CA 90023		NEW	NEW
DAHLIA HTS EL	5063 FLORISTAN AVE LOS ANGELES, CA 90041	1 TRK	434	434
DANUBE EL	11220 DANUBE AVE GRANADA HILLS, CA 91344	1 TRK	491	491
DARBY EL	10818 DARBY AVE NORTHRIDGE, CA 91326	1 TRK	649	649
DAYTON HEIGHTS EL	607 N WESTMORELAND AVE LOS ANGELES, CA 90004	4 TRK	847	1051
DEARBORN EL	9240 WISH AVE NORTHRIDGE, CA 91325	1 TRK	628	628
DEL AMO EL	21228 WATER ST CARSON, CA 90745	1 TRK	574	574
DELEVAN DRIVE EL	4168 W AVE 42 LOS ANGELES, CA 90065	1 TRK	588	588
DENA EL	1314 DACOTAH ST LOS ANGELES, CA 90023	3 TRK	805	1125
DENKER EL	1620 W 162ND ST GARDENA, CA 90247	4 TRK	945	1199
DIXIE CANYON EL	4220 DIXIE CANYON AVE SHERMAN OAKS, CA 91423	1 TRK	697	697
DOLORES EL	22526 DOLORES ST CARSON, CA 90745	1 TRK	916	916
DOMINGUEZ EL	21250 SANTA FE AVE LONG BEACH, CA 90810	1 TRK	767	767

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
DORRIS PLACE EL	2225 DORRIS PL LOS ANGELES, CA 90031	1 TRK	660	660
DYER EL	14500 DYER ST SYLMAR, CA 91342	4 TRK	954	1230
EAGLE ROCK EL	2057 FAIR PARK AVE LOS ANGELES, CA 90041	1 TRK	1045	1045
EASTMAN EL	4112 E OLYMPIC BLVD LOS ANGELES, CA 90023	1 TRK	1573	1573
EL DORADO EL	12749 EL DORADO AVE SYLMAR, CA 91342	1 TRK	813	813
ELIZABETH	4811 ELIZABETH ST, CUDAHY, CA 90201	3 TRK	2348	
EL ORO EL	12230 EL ORO WAY GRANADA HILLS, CA 91344	1 TRK	582	582
EL SERENO EL	3838 ROSEMEAD AVE LOS ANGELES, CA 90032	1 TRK	756	756
ELYSIAN HEIGHTS EL	1562 BAXTER ST LOS ANGELES, CA 90026	1 TRK	468	468
EMELITA EL	17931 HATTERAS ST ENCINO, CA 91316	1 TRK	618	618
ENCINO EL	16941 ADDISON ST ENCINO, CA 91316	1 TRK	665	665
ERWIN EL	13400 ERWIN ST VAN NUYS, CA 91401	1 TRK	1218	1218
ESHELMAN EL	25902 ESHELMAN AVE LOMITA, CA 90717	4 TRK	657	768
ESPERANZA EL	680 LITTLE ST LOS ANGELES, CA 90017	3 TRK	821	1141
EUCLID EL	806 EUCLID AVE LOS ANGELES, CA 90023	1 TRK	857	857
EVERGREEN EL	2730 GANAHL ST LOS ANGELES, CA 90033	1 TRK	1263	1263
FAIR EL	6501 FAIR AVE NO HOLLYWOOD, CA 91606	3 TRK	1263	1821
FAIRBURN EL	1403 FAIRBURN AVE LOS ANGELES, CA 90024	1 TRK	444	444
FARMDALE EL	2660 RUTH SWIGGETT DR LOS ANGELES, CA 90032	1 TRK	863	863
FENTON EL	11828 GAIN ST LAKE VIEW TERRACE, CA 91342	OTHER		931
FERNANGELES EL	12001 ART ST SUN VALLEY, CA 91352	3 TRK	1019	1457
FIGUEROA EL	510 W 111TH ST LOS ANGELES, CA 90044	3 TRK	722	989
FISHBURN EL	5701 FISHBURN AVE MAYWOOD, CA 90270	3 TRK	921	1314
FLETCHER DR EL	3350 FLETCHER DR LOS ANGELES, CA 90065	3 TRK	780	1101
FLORENCE EL	7211 BELL AVE LOS ANGELES, CA 90001	3 TRK	947	1345
FLOURNOY EL	1630 E 111TH ST LOS ANGELES, CA 90059	1 TRK	907	907
FORD BLVD EL	1112 S FORD BLVD LOS ANGELES, CA 90022	1 TRK	1519	1519
FRANKLIN EL	1910 N COMMONWEALTH AVE LOS ANGELES, CA 90027	1 TRK	562	562
FRIES EL	1301 FRIES AVE WILMINGTON, CA 90744	3 TRK	873	1281
FULLBRIGHT EL	6940 FULLBRIGHT AVE CANOGA PARK, CA 91306	1 TRK	660	660
GARDEN GROVE EL	18141 VALERIO ST RESEDA, CA 91335	1 TRK	534	534
GARDENA EL	647 W GARDENA BLVD GARDENA, CA 90247	4 TRK	746	950
GARDNER EL	7450 HAWTHORN AVE LOS ANGELES, CA 90046	1 TRK	608	608
GARVANZA EL	317 N AVE 62 LOS ANGELES, CA 90042	4 TRK	573	684
GATES EL	3333 MANITOU AVE LOS ANGELES, CA 90031	3 TRK	820	1181
GAULT EL	17000 GAULT ST VAN NUYS, CA 91406	1 TRK	579	579
GERMAIN EL	20730 GERMAIN ST CHATSWORTH, CA 91311	1 TRK	918	918

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
GLASSELL PARK EL	2211 W AVE 30 LOS ANGELES, CA 90065	4 TRK	767	971
GLEDHILL EL	16030 GLEDHILL ST NORTH HILLS, CA 91343	1 TRK	801	801
GLEN ALTA EL	3410 SIERRA ST LOS ANGELES, CA 90031	1 TRK	458	458
GLENFELIZ BLVD EL	3955 GLENFELIZ BLVD LOS ANGELES, CA 90039	1 TRK	695	695
GLENWOOD EL	8001 LEDGE AVE SUN VALLEY, CA 91352	1 TRK	798	798
GRAHAM EL	8407 S FIR AVE LOS ANGELES, CA 90001	3 TRK	1004	1487
GRANADA EL	17170 TRIBUNE ST GRANADA HILLS, CA 91344	1 TRK	625	625
GRAND VIEW EL	3951 GRAND VIEW BLVD LOS ANGELES, CA 90066	1 TRK	847	847
GRANT EL	1530 N WILTON PL LOS ANGELES, CA 90028	3 TRK	1090	1575
GRAPE EL	1940 E 111TH ST LOS ANGELES, CA 90059	1 TRK	764	764
GRATTS EL	309 LUCAS AVE LOS ANGELES, CA 90017	3 TRK	717	1053
GRIDLEY EL	1907 EIGHTH ST SAN FERNANDO, CA 91340	3 TRK	815	1208
GRIFFIN EL	2025 GRIFFIN AVE LOS ANGELES, CA 90031	1 TRK	748	748
GRIFFITH JOYNER EL	1963 E 103RD ST LOS ANGELES, CA 90002	1 TRK	1201	1201
GULF EL	828 W "L" ST WILMINGTON, CA 90744	3 TRK	1049	1497
HADDON EL	10115 HADDON AVE PACOIMA, CA 91331	3 TRK	1071	1554
HALLDALE EL	21514 HALLDALE AVE TORRANCE, CA 90501	1 TRK	722	722
HAMASAKI EL	4865 E FIRST ST LOS ANGELES, CA 90022	1 TRK	651	651
HAMLIN EL	22627 HAMLIN ST CANOGA PARK, CA 91307	1 TRK	591	591
HAMMEL EL	438 N BRANNICK AVE LOS ANGELES, CA 90063	1 TRK	1101	1101
HANCOCK PARK EL	408 S FAIRFAX AVE LOS ANGELES, CA 90036	1 TRK	788	788
HARBOR CITY EL	1508 W 254TH ST HARBOR CITY, CA 90710	3 TRK	570	792
HARDING EL	13060 HARDING ST SYLMAR, CA 91342	1 TRK	825	825
HARRISON	3529 CITY TERRACE DRIVE, LOS ANGELES, CA 90063	1 TRK	1455	1455
HART ST EL	21040 HART ST CANOGA PARK, CA 91303	4 TRK	873	1077
HASKELL EL	15850 TULSA ST GRANADA HILLS, CA 91344	1 TRK	494	494
HAWAIIAN EL	540 HAWAIIAN AVE WILMINGTON, CA 90744	4 TRK	1037	1333
HAYNES EL	6624 LOCKHURST DR WEST HILLS, CA 91307	1 TRK	423	423
HAZELTINE EL	7150 HAZELTINE AVE VAN NUYS, CA 91405	3 TRK	944	1359
HELIOTROPE EL	5911 WOODLAWN AVE MAYWOOD, CA 90270	3 TRK	1029	1514
HERRICK EL	13350 HERRICK AVE SYLMAR, CA 91342	1 TRK	839	839
HILLCREST DR EL	4041 HILLCREST DR LOS ANGELES, CA 90008	4 TRK	947	1216
HILLSIDE EL	120 E AVE 35 LOS ANGELES, CA 90031	3 TRK	554	761
HOBART BLVD EL	980 S HOBART BLVD LOS ANGELES, CA 90006	3 TRK	1457	2103
HOLMES EL	5108 HOLMES AVE LOS ANGELES, CA 90058	1 TRK	589	589
HOOPER EL	1225 E 52ND ST LOS ANGELES, CA 90011	3 TRK	1486	2142
HOOVER EL	2726 FRANCIS AVE LOS ANGELES, CA 90005	3 TRK	1548	2273

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
HUBBARD EL	13325 HUBBARD ST SYLMAR, CA 91342	1 TRK	1062	1062
HUGHES EL	4242 CLARA ST CUDAHY, CA 90201	3 TRK	1071	1529
HUMPHREYS EL	500 S HUMPHREYS AVE LOS ANGELES, CA 90022	1 TRK	1046	1046
HUNTINGTON DR EL	4435 N HUNTINGTON DR LOS ANGELES, CA 90032	1 TRK	817	817
HYDE PARK EL	3140 HYDE PARK BLVD LOS ANGELES, CA 90043	4 TRK	884	1133
INDEPENDENCE EL	8435 VICTORIA AVE SOUTH GATE, CA 90280	3 TRK	796	1161
IVANHOE EL	2828 HERKIMER ST LOS ANGELES, CA 90039	1 TRK	424	424
JUSTICE EL	23350 JUSTICE ST CANOGA PARK, CA 91304	1 TRK	606	606
KENNEDY EL	4010 E RAMBOZ DRIVE LOS ANGELES, CA 90063	1 TRK	868	868
KENTER CANYON EL	645 N KENTER AVE LOS ANGELES, CA 90049	1 TRK	500	500
KENTWOOD EL	8401 EMERSON AVE LOS ANGELES, CA 90045	1 TRK	521	521
KESTER EL	5353 KESTER AVE VAN NUYS, CA 91411	1 TRK	780	780
KING JR EL	3989 S HOBART BLVD LOS ANGELES, CA 90062	1 TRK	1109	1109
KITTRIDGE EL	13619 KITTRIDGE ST VAN NUYS, CA 91401	3 TRK	906	1294
KNOLLWOOD EL	11822 GERALD AVE GRANADA HILLS, CA 91344	1 TRK	639	639
LA SALLE EL	8715 LA SALLE AVE LOS ANGELES, CA 90047	1 TRK	1159	1159
LANAI EL	4241 LANAI RD ENCINO, CA 91436	1 TRK	541	541
LANE EL	1500 CESAR CHAVEZ AVE MONTEREY PARK, CA 91754	1 TRK	576	576
LA NEW #3	1211 SOUTH HOBART BLVD, LOS ANGELES, CA 90006		NEW	NEW
LANGDON EL	8817 LANGDON AVE NORTH HILLS, CA 91343	3 TRK	1125	1672
LANKERSHIM EL	5250 BAKMAN AVE NO HOLLYWOOD, CA 91601	4 TRK	736	940
LASSEN EL	15017 SUPERIOR ST NORTH HILLS, CA 91343	1 TRK	785	785
LATONA EL	4312 BERENICE AVE LOS ANGELES, CA 90031	3 TRK	419	561
LAUREL EL	925 N HAYWORTH AVE LOS ANGELES, CA 90046	1 TRK	499	499
LEAPWOOD EL	19302 LEAPWOOD AVE CARSON, CA 90746	1 TRK	586	586
LELAND EL	2120 S LELAND ST SAN PEDRO, CA 90731	1 TRK	755	755
LEMAY EL	17520 VANOWEN ST VAN NUYS, CA 91406	1 TRK	439	439
LIBERTY EL	2728 LIBERTY BLVD SOUTH GATE, CA 90280	3 TRK	961	1369
LIGGETT EL	9373 MOONBEAM AVE PANORAMA CITY, CA 91402	3 TRK	1010	1443
LILLIAN EL	5909 LILLIAN ST LOS ANGELES, CA 90001	1 TRK	781	781
LIMERICK EL	8530 LIMERICK AVE CANOGA PARK, CA 91306	1 TRK	1175	1175
LOCKHURST EL	6170 LOCKHURST DR WOODLAND HILLS, CA 91367	1 TRK	615	615
LOCKWOOD EL	4345 LOCKWOOD AVE LOS ANGELES, CA 90029	3 TRK	813	1154
LOGAN EL	1711 W MONTANA ST LOS ANGELES, CA 90026	4 TRK	1164	1465
LOMA VISTA EL	3629 E 58TH ST MAYWOOD, CA 90270	3 TRK	1242	1785
LORENA EL	1015 S LORENA ST LOS ANGELES, CA 90023	1 TRK	959	959
LORETO EL	3408 ARROYO SECO AVE LOS ANGELES, CA 90065	3 TRK	534	756

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
LORNE EL	17440 LORNE ST NORTHRIDGE, CA 91325	1 TRK	481	481
LOS ANGELES EL	1211 S HOBART BLVD LOS ANGELES, CA 90006	3 TRK	907	1300
LOS FELIZ EL	1740 N NEW HAMPSHIRE AVE LOS ANGELES, CA 90027	1 TRK	849	849
LOYOLA VILLAGE EL	8821 VILLANOVA AVE LOS ANGELES, CA 90045	1 TRK	432	432
MACLAY PRIMARY	12513 GAIN ST, PACOIMA, CA 91331	4 TRK	300	
MAGNOLIA EL	1626 S ORCHARD AVE LOS ANGELES, CA 90006	3 TRK	1332	1919
MAIN ST EL	129 E 53RD ST LOS ANGELES, CA 90011	3 TRK	1125	1623
MALABAR EL	3200 E MALABAR ST LOS ANGELES, CA 90063	1 TRK	1106	1106
MANCHESTER EL	661 W 87TH ST LOS ANGELES, CA 90044	3 TRK	1242	1785
MANHATTAN EL	1850 W 96TH ST LOS ANGELES, CA 90047	1 TRK	887	887
MAR VISTA EL	3330 GRANVILLE AVE LOS ANGELES, CA 90066	1 TRK	760	760
MARIANNA EL	4215 E GLEASON ST LOS ANGELES, CA 90063	1 TRK	548	548
MARQUEZ EL	16821 MARQUEZ AVE PACIFIC PALISADES, CA 90272	1 TRK	790	790
MARVIN EL	2411 MARVIN AVE LOS ANGELES, CA 90016	4 TRK	834	1038
MAYALL EL	16701 MAYALL ST NORTH HILLS, CA 91343	1 TRK	657	657
MAYBERRY EL	2414 MAYBERRY ST LOS ANGELES, CA 90026	1 TRK	500	500
MC KINLEY EL	7812 MC KINLEY AVE LOS ANGELES, CA 90001	1 TRK	1007	1007
MELROSE EL	731 N DETROIT ST LOS ANGELES, CA 90046	1 TRK	376	376
MELVIN EL	7700 MELVIN AVE RESEDA, CA 91335	1 TRK	743	743
MENLO EL	4156 MENLO AVE LOS ANGELES, CA 90037	3 TRK	985	1393
MEYLER EL	1123 W 223RD ST TORRANCE, CA 90502	4 TRK	1052	1326
MICHELTORENA EL	1511 MICHELTORENA ST LOS ANGELES, CA 90026	4 TRK	670	811
MIDDLETON EL	6537 MALABAR ST HUNTINGTON PARK, CA 90255	3 TRK	1393	2044
MILES EL	6720 MILES AVE HUNTINGTON PARK, CA 90255	3 TRK	1792	2596
MILLER EL	830 W 77TH ST LOS ANGELES, CA 90044	3 TRK	951	1359
MIRAMONTE EL	1400 E 68TH ST LOS ANGELES, CA 90001	3 TRK	1533	2253
MONLUX EL	6051 BELLAIRE AVE NO HOLLYWOOD, CA 91606	1 TRK	762	762
MONTAGUE EL	13000 MONTAGUE ST PACOIMA, CA 91331	OTHER	8	1132
MONTARA AVE EL	10018 MONTARA AVE SOUTH GATE, CA 90280	3 TRK	635	897
MONTE VISTA EL	5423 MONTE VISTA ST LOS ANGELES, CA 90042	4 TRK	698	869
MORNINGSIDE EL	576 N MACLAY AVE SAN FERNANDO, CA 91340	3 TRK	847	1260
MOUNTAIN VIEW EL	6410 OLCOTT ST TUJUNGA, CA 91042	1 TRK	775	775
MT WASHINGTON EL	3981 SAN RAFAEL AVE LOS ANGELES, CA 90065	1 TRK	434	434
MULTNOMAH EL	2101 N INDIANA AVE LOS ANGELES, CA 90032	1 TRK	564	564
MURCHISON EL	1501 MURCHISON ST LOS ANGELES, CA 90033	1 TRK	940	940
NAPA EL	19010 NAPA ST NORTHRIDGE, CA 91324	4 TRK	731	919
NESTLE EL	5060 NESTLE AVE TARZANA, CA 91356	1 TRK	598	598

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
NEVADA EL	22120 CHASE ST CANOGA PARK, CA 91304	1 TRK	788	788
NEVIN EL	1569 E 32ND ST LOS ANGELES, CA 90011	3 TRK	613	840
NEWCASTLE EL	6520 NEWCASTLE AVE RESEDA, CA 91335	1 TRK	500	500
NOBLE EL	8329 NOBLE AVE NORTH HILLS, CA 91343	3 TRK	1211	1799
NORMANDIE EL	4505 S RAYMOND AVE LOS ANGELES, CA 90037	4 TRK	1162	1483
NORMONT EL	1001 W 253RD ST HARBOR CITY, CA 90710	4 TRK	503	634
NORWOOD EL	2020 OAK ST LOS ANGELES, CA 90007	4 TRK	963	1219
NUEVA VISTA EL	4412 RANDOLPH ST BELL, CA 90201	3 TRK	1017	1470
O MELVENY EL	728 WOODWORTH ST SAN FERNANDO, CA 91340	4 TRK	726	907
OSCEOLA EL	14940 OSCEOLA ST SYLMAR, CA 91342	4 TRK	459	550
OVERLAND EL	10650 ASHBY AVE LOS ANGELES, CA 90064	1 TRK	620	620
OXNARD EL	10912 OXNARD ST NO HOLLYWOOD, CA 91606	3 TRK	843	1211
PACIFIC PALISADES	800 VIA DE LA PAZ PACIFIC PALISADES, CA 90272	1 TRK	513	513
PACOIMA EL	11016 NORRIS AVE PACOIMA, CA 91331	OTHER	1340	1663
PALMS EL	3520 MOTOR AVE LOS ANGELES, CA 90034	1 TRK	600	600
PARK AVE EL	5027 LIVE OAK ST CUDAHY, CA 90201	3 TRK	817	1157
PARK WESTERN EL	1214 PARK WESTERN PL SAN PEDRO, CA 90732	1 TRK	416	416
PARMELEE EL	1338 E 76TH PL LOS ANGELES, CA 90001	3 TRK	1107	1632
PARTHENIA EL	16825 NAPA ST NORTH HILLS, CA 91343	4 TRK	747	951
PIO PICO	1512 So. ARLINGTON AVE, LOS ANGELES, CA. 91042	3 TRK	1655	
PINEWOOD EL	10111 SILVERTON AVE TUJUNGA, CA 91042	1 TRK	936	936
PLAINVIEW EL	10819 PLAINVIEW AVE TUJUNGA, CA 91042	1 TRK	625	625
PLASENCIA EL	1321 CORTEZ ST LOS ANGELES, CA 90026	4 TRK	1076	1377
PLAYA DEL REY EL	12221 JUNIETTE ST CULVER CITY, CA 90230	1 TRK	323	323
PLUMMER EL	9340 NOBLE AVE NORTH HILLS, CA 91343	3 TRK	1236	1782
POINT FERMIN EL	3333 KERCKHOFF AVE SAN PEDRO, CA 90731	1 TRK	429	429
POLITI EL	2481 W 11TH ST LOS ANGELES, CA 90006	3 TRK	871	1259
POMELO EL	7633 MARCH AVE CANOGA PARK, CA 91304	1 TRK	892	892
PRESIDENT EL	1465 W 243RD ST HARBOR CITY, CA 90710	1 TRK	699	699
PURCHE EL	13210 PURCHE AVE GARDENA, CA 90249	1 TRK	732	732
QUEEN ANNE EL	1212 QUEEN ANNE PL, LOS ANGELES, CA 90019	1 TRK	579	579
RAMONA EL	1133 N MARIPOSA AVE, LOS ANGELES, CA 90029	3 TRK	1006	1479
RANCHITO EL	7940 RANCHITO AVE, PANORAMA CITY, CA 91402	3 TRK	548	770
RAYMOND AVE EL	7511 RAYMOND AVE LOS ANGELES, CA 90044	4 TRK	851	1085
RESEDA EL	7265 AMIGO AVE RESEDA, CA 91335	1 TRK	601	601
RICHLAND EL	11562 RICHLAND AVE LOS ANGELES, CA 90064	1 TRK	516	516
RIO VISTA EL	4243 SATSUMA AVE NO HOLLYWOOD, CA 91602	1 TRK	518	518

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
RITTER EL	11108 WATTS AVE LOS ANGELES, CA 90059	1 TRK	493	493
RIVERSIDE EL	13061 RIVERSIDE DR SHERMAN OAKS, CA 91423	1 TRK	898	898
ROCKDALE EL	1303 YOSEMITE DR LOS ANGELES, CA 90041	1 TRK	376	376
ROSCOE EL	10765 STRATHERN ST SUN VALLEY, CA 91352	3 TRK	851	1227
ROSCOMARE EL	2425 ROSCOMARE RD LOS ANGELES, CA 90077	1 TRK	569	569
ROSEMONT EL	421 N ROSEMONT AVE LOS ANGELES, CA 90026	3 TRK	1071	1591
ROSEWOOD EL	503 N CROFT AVE LOS ANGELES, CA 90048	1 TRK	624	624
ROWAN EL	600 S ROWAN AVE LOS ANGELES, CA 90023	3 TRK	1135	1658
RUSSELL EL	1263 E FIRESTONE BLVD LOS ANGELES, CA 90001	3 TRK	1017	1450
SAN ANTONIO ELEM	6222 STATE ST HUNTINGTON PARK, CA 90255	3 TRK	473	633
SAN FERNANDO EL	1130 MOTT ST SAN FERNANDO, CA 91340	4 TRK	832	1081
SAN GABRIEL EL	8628 SAN GABRIEL AVE SOUTH GATE, CA 90280	3 TRK	760	1056
SAN JOSE EL	14928 CLYMER ST MISSION HILLS, CA 91345	1 TRK	786	786
SAN MIGUEL EL	9801 SAN MIGUEL AVE SOUTH GATE, CA 90280	3 TRK	1033	1471
SAN PASCUAL EL	815 SAN PASCUAL AVE LOS ANGELES, CA 90042	1 TRK	487	487
SAN PEDRO EL	1635 S SAN PEDRO ST LOS ANGELES, CA 90015	4 TRK	689	860
SANTA MONICA COMM	1022 N VAN NESS AVE LOS ANGELES, CA 90038	3 TRK	1003	1488
SATICOY EL	7850 ETHEL AVE NO HOLLYWOOD, CA 91605	1 TRK	851	851
SATURN EL	5360 SATURN ST LOS ANGELES, CA 90019	4 TRK	735	948
SELMA EL	6611 SELMA AVE LOS ANGELES, CA 90028	1 TRK	749	749
SERRANIA EL	5014 SERRANIA AVE WOODLAND HILLS, CA 91364	1 TRK	842	842
SHARP EL	13800 PIERCE ST PACOIMA, CA 91331	4 TRK	954	1215
SHENANDOAH EL	2450 SHENANDOAH ST LOS ANGELES, CA 90034	1 TRK	985	985
SHERIDAN ST EL	416 N CORNWELL ST LOS ANGELES, CA 90033	1 TRK	1506	1506
SHERMAN OAKS EL	14755 GREENLEAF ST SHERMAN OAKS, CA 91403	1 TRK	1052	1052
SHIRLEY EL	19452 HART ST RESEDA, CA 91335	1 TRK	989	989
SHORT EL	12814 MAXELLA AVE LOS ANGELES, CA 90066	1 TRK	646	646
SIERRA PARK EL	3170 BUDAU AVE LOS ANGELES, CA 90032	4 TRK	1009	1290
SIERRA VISTA EL	4342 ALPHA ST LOS ANGELES, CA 90032	1 TRK	399	399
SOLANO EL	615 SOLANO AVE LOS ANGELES, CA 90012	1 TRK	298	298
SOTO EL	1020 S SOTO ST LOS ANGELES, CA 90023	1 TRK	510	510
SOUTH PARK EL	8510 TOWNE AVE LOS ANGELES, CA 90003	4 TRK	919	1175
STAGG EL	7839 AMESTOY AVE VAN NUYS, CA 91406	1 TRK	547	547
STANFORD EL	2833 ILLINOIS AVE SOUTH GATE, CA 90280	3 TRK	1246	1794
STATE EL	3211 SANTA ANA ST SOUTH GATE, CA 90280	3 TRK	1105	1585
STERRY EL	1730 CORINTH AVE LOS ANGELES, CA 90025	1 TRK	455	455
STONEHURST EL	9851 STONEHURST AVE SUN VALLEY, CA 91352	1 TRK	476	476

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
STONER EL	11735 BRADDOCK DR CULVER CITY, CA 90230	1 TRK	706	706
STRATHERN EL	7939 ST CLAIR AVE NO HOLLYWOOD, CA 91605	3 TRK	965	1378
SUNLAND EL	8350 HILLROSE ST SUNLAND, CA 91040	1 TRK	761	761
SUNNY BRAE EL	20620 ARMINTA ST WINNETKA, CA 91306	1 TRK	959	959
SUNRISE EL	2821 E SEVENTH ST LOS ANGELES, CA 90023	1 TRK	710	710
SUPERIOR EL	9756 OSO AVE CHATSWORTH, CA 91311	1 TRK	595	595
SYLMAR EL	13291 PHILLIPPI AVE SYLMAR, CA 91342	3 TRK	816	1157
SYLVAN PARK EL	6238 NOBLE AVE VAN NUYS, CA 91411	3 TRK	902	1310
TAPER EL	1824 TAPER AVE SAN PEDRO, CA 90731	1 TRK	761	761
TARZANA EL	5726 TOPEKA DR TARZANA, CA 91356	1 TRK	629	629
TELFAIR EL	10975 TELFAIR AVE PACOIMA, CA 91331	1 TRK	1320	1320
TOLAND WAY EL	4545 TOLAND WAY LOS ANGELES, CA 90041	1 TRK	591	591
TOLUCA LAKE EL	4840 CAHUENGA BLVD NO HOLLYWOOD, CA 91601	1 TRK	803	803
TOPANGA EL	141 N TOPANGA BLVD TOPANGA, CA 90290	1 TRK	428	428
TOPEKA DR EL	9815 TOPEKA DR NORTHRIDGE, CA 91324	1 TRK	713	713
TOWNE EL	18924 TOWNE AVE CARSON, CA 90746	1 TRK	583	583
TRINITY EL	3736 TRINITY ST LOS ANGELES, CA 90011	3 TRK	1279	1866
TULSA EL	10900 HAYVENHURST AVE GRANADA HILLS, CA 91344	1 TRK	616	616
TWEEDY EL	9515 PINEHURST AVE SOUTH GATE, CA 90280	3 TRK	596	896
UNION EL	150 S BURLINGTON AVE LOS ANGELES, CA 90057	3 TRK	1434	2020
UTAH EL	255 N CLARENCE ST LOS ANGELES, CA 90033	1 TRK	825	825
VALERIO EL	15035 VALERIO ST VAN NUYS, CA 91405	4 TRK	1092	1418
VALLEY VIEW EL	6921 WOODROW WILSON DR LOS ANGELES, CA 90068	1 TRK	288	288
VAN DEENE EL	826 W JAVELIN ST TORRANCE, CA 90502	1 TRK	569	569
VAN GOGH EL	17160 VAN GOGH ST GRANADA HILLS, CA 91344	1 TRK	530	530
VAN NESS EL	501 N VAN NESS AVE LOS ANGELES, CA 90004	4 TRK	472	563
VAN NUYS EL	6464 SYLMAR AVE VAN NUYS, CA 91401	3 TRK	641	916
VANALDEN EL	19019 DELANO ST RESEDA, CA 91335	1 TRK	626	626
VAUGHN	13330 VAUGHN ST, SAN FERNANDO,CA 91340		1070	
VENA EL	9377 VENA AVE PACOIMA, CA 91331	1 TRK	685	685
VERMONT EL	1435 W 27TH ST LOS ANGELES, CA 90007	4 TRK	1235	1601
VERNON CITY EL	2360 E VERNON AVE LOS ANGELES, CA 90058	1 TRK	299	299
VICTORIA EL	3320 MISSOURI AVE SOUTH GATE, CA 90280	3 TRK	1151	1676
VICTORY EL	6315 RADFORD AVE NO HOLLYWOOD, CA 91606	3 TRK	1089	1557
VINE EL	955 N VINE ST LOS ANGELES, CA 90038	3 TRK	760	1076
VINEDALE EL	10150 LA TUNA CANYON RD SUN VALLEY, CA 91352	1 TRK	505	505
VIRGINIA EL	2925 VIRGINIA RD LOS ANGELES, CA 90016	1 TRK	633	633

Exhibit K.3-8

ELEMENTARY

Name	Address	Calendar	Capacity	
			2 Semester	Operating
WADSWORTH EL	981 E 41ST ST LOS ANGELES, CA 90011	3 TRK	1173	1711
WALGROVE EL	1630 WALGROVE AVE LOS ANGELES, CA 90066	1 TRK	595	595
WALNUT PARK EL	2642 OLIVE ST HUNTINGTON PARK, CA 90255	3 TRK	1078	1563
WARNER EL	615 HOLMBY AVE LOS ANGELES, CA 90024	1 TRK	741	741
WEEMES EL	1260 W 36TH PL LOS ANGELES, CA 90007	4 TRK	1412	1822
WEIGAND EL	10401 WEIGAND AVE LOS ANGELES, CA 90002	3 TRK	433	595
WELBY EL	23456 WELBY WAY CANOGA PARK, CA 91307	1 TRK	534	534
WEST ATHENS EL	1110 W 119TH ST LOS ANGELES, CA 90044	4 TRK	956	1212
WEST HOLLYWOOD	970 N HAMMOND ST WEST HOLLYWOOD, CA 90069	1 TRK	366	366
WEST VERNON EL	4312 S GRAND AVE LOS ANGELES, CA 90037	3 TRK	1083	1561
WESTERN EL	1724 W 53RD ST LOS ANGELES, CA 90062	1 TRK	1053	1053
WESTMINSTER EL	1010 ABBOT KINNEY BLVD VENICE, CA 90291	1 TRK	564	564
WESTPORT HTS EL	6011 W 79TH ST LOS ANGELES, CA 90045	1 TRK	620	620
WESTWOOD EL	2050 SELBY AVE LOS ANGELES, CA 90025	1 TRK	877	877
WHITE HOUSE PLACE	108 SO. BIMINI PLACE, LOS ANGELES, CA 90004	3 TRK	328	
WHITE POINT EL	1410 SILVIUS AVE SAN PEDRO, CA 90731	1 TRK	548	548
WILBUR EL	5213 CREBS AVE TARZANA, CA 91356	1 TRK	821	821
WILMINGTON PK EL	1140 MAHAR AVE WILMINGTON, CA 90744	1 TRK	1303	1303
WILSHIRE CREST EL	5241 W OLYMPIC BLVD LOS ANGELES, CA 90036	1 TRK	825	825
WILTON PL EL	745 S WILTON PL LOS ANGELES, CA 90005	3 TRK	1051	1519
WINNETKA EL	8240 WINNETKA AVE CANOGA PARK, CA 91306	1 TRK	687	687
WONDERLAND EL	8510 WONDERLAND AVE LOS ANGELES, CA 90046	1 TRK	232	232
WOODCREST EL	1151 W 109TH ST LOS ANGELES, CA 90044	3 TRK	1140	1665
WOODLAKE EL	23231 HATTERAS ST WOODLAND HILLS, CA 91367	1 TRK	710	710
WOODLAND HILLS EL	22201 SAN MIGUEL ST WOODLAND HILLS, CA 91364	1 TRK	746	746
WOODLAWN EL	6314 WOODLAWN AVE BELL, CA 90201	3 TRK	944	1332
YORKDALE EL	5657 MERIDIAN ST LOS ANGELES, CA 90042	1 TRK	691	691

Exhibit K.3-8

MIDDLE

Name	Address	Calendar	Capacity	
			2 Semester	Operating
ADAMS MS	151 W 30TH ST LOS ANGELES, CA 90007	3 TRK	2400	3360
AUDUBON MS	4120 11TH AVE LOS ANGELES, CA 90008	1 TRK	2400	2400
BANCROFT MS	929 N LAS PALMAS AVE LOS ANGELES, CA 90038	1 TRK	2036	2036
BELVEDERE MS	312 N RECORD AVE LOS ANGELES, CA 90063	1 TRK	2754	2754
BERENDO MS	1157 S BERENDO ST LOS ANGELES, CA 90006	3 TRK	2400	3360
BETHUNE MS	155 W 69TH ST LOS ANGELES, CA 90003	3 TRK	2400	3360
BURBANK MS	6460 N FIGUEROA ST LOS ANGELES, CA 90042	3 TRK	2400	3360
BURROUGHS MS	600 S MC CADDEN PL LOS ANGELES, CA 90005	1 TRK	2400	2400
BYRD MS	9171 TELFAIR AVE SUN VALLEY, CA 91352	4 TRK	2226	2771
CARNEGIE MS	21820 BONITA ST CARSON, CA 90745	1 TRK	2400	2400
CARVER MS	4410 MC KINLEY AVE LOS ANGELES, CA 90011	3 TRK	2394	3333
CLAY MS	12226 S WESTERN AVE LOS ANGELES, CA 90047	1 TRK	2400	2400
COLUMBUS MS	22250 ELKWOOD ST CANOGA PARK, CA 91304	1 TRK	2230	2230
CURTISS MS	1254 E HELMICK ST CARSON, CA 90746	1 TRK	2268	2268
DANA MS	1501 S CABRILLO AVE SAN PEDRO, CA 90731	1 TRK	2400	2400
DODSON MS	28014 MONTEREINA DR SAN PEDRO, CA 90732	1 TRK	2400	2400
DREW MS	8511 COMPTON AVE LOS ANGELES, CA 90001	3 TRK	2400	3360
EDISON MS	6500 HOOPER AVE LOS ANGELES, CA 90001	3 TRK	2400	3360
EL SERENO MS	2839 N EASTERN AVE LOS ANGELES, CA 90032	1 TRK	2544	2544
EMERSON MS	1650 SELBY AVE LOS ANGELES, CA 90024	1 TRK	2003	2003
FLEMING MS	25425 WALNUT ST LOMITA, CA 90717	1 TRK	2400	2400
FOSHAY	3751 SOUTH HARVARD, LOS ANGELES, CA 900218	3 TRK	2838	
FROST MS	12314 BRADFORD PL GRANADA HILLS, CA 91344	1 TRK	2163	2163
FULTON MS	7477 KESTER AVE VAN NUYS, CA 91405	1 TRK	2434	2434
GAGE MS	2880 E GAGE AVE HUNTINGTON PARK, CA 90255	3 TRK	3104	3823
GOMPERS MS	234 E 112TH ST LOS ANGELES, CA 90061	1 TRK	2400	2400
GRIFFITH MS	4765 E FOURTH ST LOS ANGELES, CA 90022	1 TRK	2400	2400
HALE MS	23830 CALIFA ST WOODLAND HILLS, CA 91367	1 TRK	2801	2801
HARTE PREP MS	9301 S HOOVER ST LOS ANGELES, CA 90044	1 TRK	2400	2400
HENRY MS	17340 SAN JOSE ST GRANADA HILLS, CA 91344	1 TRK	1703	1703
HOLLENBECK MS	2510 E SIXTH ST LOS ANGELES, CA 90023	1 TRK	2977	2977
HOLMES MS	9351 PASO ROBLES AVE NORTHRIDGE, CA 91325	1 TRK	1718	1718
IRVING MS	3010 ESTARA AVE LOS ANGELES, CA 90065	1 TRK	2400	2400
KING MS	4201 FOUNTAIN AVE LOS ANGELES, CA 90029	3 TRK	2400	3360
LAWRENCE MS	10100 VARIEL AVE CHATSWORTH, CA 91311	1 TRK	2400	2400
LE CONTE MS	1316 N BRONSON AVE HOLLYWOOD, CA 90028	3 TRK	2400	3360

Exhibit K.3-8

MIDDLE

Name	Address	Calendar	Capacity	
			2 Semester	Operating
LOS ANGELES ACAD MS	644 E 56TH ST LOS ANGELES, CA 90011	3 TRK	2400	3360
MACLAY MS	12540 PIERCE AVE PACOIMA, CA 91331	4 TRK	2387	2993
MADISON MS	13000 HART ST NO HOLLYWOOD, CA 91605	1 TRK	2431	2431
MANN MS	7001 S ST ANDREWS PL LOS ANGELES, CA 90047	1 TRK	2400	2400
MARINA DEL REY MS	12500 BRADDOCK DR LOS ANGELES, CA 90066	1 TRK	2018	2018
MARK TWAIN MS	2224 WALGROVE AVE LOS ANGELES, CA 90066	1 TRK	2079	2079
MARKHAM MS	1650 E 104TH ST LOS ANGELES, CA 90002	1 TRK	2400	2400
MILLIKAN MS	5041 SUNNYSLOPE AVE SHERMAN OAKS, CA 91423	1 TRK	2327	2327
MOUNT GLEASON MS	10965 MT GLEASON AVE SUNLAND, CA 91040	1 TRK	2074	2074
MOUNT VERNON MS	4066 W 17TH ST LOS ANGELES, CA 90019	1 TRK	2400	2400
MUIR MS	5929 S VERMONT AVE LOS ANGELES, CA 90044	4 TRK	2400	3360
MULHOLLAND MS	17120 VANOWEN ST VAN NUYS, CA 91406	1 TRK	2400	2400
NIGHTINGALE MS	3311 N FIGUEROA ST LOS ANGELES, CA 90065	1 TRK	2400	2400
NIMITZ MS	6021 CARMELITA AVE HUNTINGTON PARK, CA 90255	3 TRK	3232	3993
NOBEL MS	9950 TAMPA AVE NORTHRIDGE, CA 91324	1 TRK	2400	2400
NORTHRIDGE MS	17960 CHASE ST NORTHRIDGE, CA 91325	1 TRK	2131	2131
OLIVE VISTA MS	14600 TYLER ST SYLMAR, CA 91342	1 TRK	2400	2400
PACOIMA MS	9919 LAUREL CANYON BLVD PACOIMA, CA 91331	1 TRK	2400	2400
PALMS MS	10860 WOODBINE ST LOS ANGELES, CA 90034	1 TRK	2400	2400
PARKMAN MS	20800 BURBANK BLVD WOODLAND HILLS, CA 91367	1 TRK	1742	1742
PEARY MS	1415 W GARDENA BLVD GARDENA, CA 90247	4 TRK	2400	3072
PORTER MS	15960 KINGSBURY ST GRANADA HILLS, CA 91344	1 TRK	2400	2400
PORTOLA MS	18720 LINNET ST TARZANA, CA 91356	1 TRK	2463	2463
REED MS	4525 IRVINE AVE NO HOLLYWOOD, CA 91602	3 TRK	2400	3360
REVERE MS	1450 ALLENFORD AVE LOS ANGELES, CA 90049	1 TRK	2400	2400
SAN FERNANDO MS	130 N BRAND BLVD SAN FERNANDO, CA 91340	1 TRK	2400	2400
SEPULVEDA MS	15330 PLUMMER ST NORTH HILLS, CA 91343	3 TRK	2400	3360
SOUTH GATE MS	4100 FIRESTONE BLVD SOUTH GATE, CA 90280	3 TRK	3376	4110
STEVENSON MS	725 S INDIANA ST LOS ANGELES, CA 90023	1 TRK	2400	2400
SUN VALLEY MS	7330 BAKMAN AVE SUN VALLEY, CA 91352	3 TRK	2400	3360
SUTTER MS	7330 WINNETKA AVE CANOGA PARK, CA 91306	1 TRK	2400	2400
VAN NUYS MS	5435 VESPER AVE VAN NUYS, CA 91411	1 TRK	2400	2400
VIRGIL MS	152 N VERMONT AVE LOS ANGELES, CA 90004	3 TRK	2400	3360
WEBSTER MS	11330 W GRAHAM PL LOS ANGELES, CA 90064	1 TRK	2075	2075
WHITE MS	22102 S FIGUEROA ST CARSON, CA 90745	1 TRK	2400	2400
WILMINGTON MS	1700 GULF AVE WILMINGTON, CA 90744	1 TRK	2400	2400
WRIGHT MS	6550 W 80TH ST LOS ANGELES, CA 90045	1 TRK	2130	2130

Exhibit K.3-8

SENIOR

Name	Address	Calendar	Capacity	
			2 Semester	Operating
BANNING SH	1527 LAKME AVE WILMINGTON, CA 90744	1 TRK	3314	3314
BELL SH	4328 BELL AVE BELL, CA 90201	3 TRK	3172	4447
BELMONT SH	1575 W 2ND ST LOS ANGELES, CA 90026	3 TRK	3177	4425
BIRMINGHAM SH	17000 HAYNES ST VAN NUYS, CA 91406	1 TRK	3776	3776
CANOGA PARK SH	6850 TOPANGA CYN BLVD CANOGA PARK, CA 91303	1 TRK	2588	2588
CARSON SH	22328 S MAIN ST CARSON, CA 90745	1 TRK	3600	3600
CHATSWORTH SH	10027 LURLINE AVE CHATSWORTH, CA 91311	1 TRK	3600	3600
CLEVELAND SH	8140 VANALDEN AVE RESEDA, CA 91335	1 TRK	3698	3698
CRENSHAW SH	5010 11TH AVE LOS ANGELES, CA 90043	1 TRK	3236	3236
DORSEY SH	3537 FARMDALE AVE LOS ANGELES, CA 90016	1 TRK	2320	2320
EAGLE ROCK HS	1750 YOSEMITE DR LOS ANGELES, CA 90041	1 TRK	2883	2883
EL CAMINO REAL SH	5440 VALLEY CIRCLE BLVD WOODLAND HILLS, CA 91367	1 TRK	3885	3885
FAIRFAX SH	7850 MELROSE AVE LOS ANGELES, CA 90046	1 TRK	3238	3238
FRANKLIN SH	820 N AVE 54 LOS ANGELES, CA 90042	3 TRK	2783	3844
FREMONT SH	7676 S SAN PEDRO ST LOS ANGELES, CA 90003	3 TRK	3450	4853
GARDENA SH	1301 W 182ND ST GARDENA, CA 90248	1 TRK	3600	3600
GARFIELD SH	5101 E SIXTH ST LOS ANGELES, CA 90022	3 TRK	3600	5040
GRANADA HILLS SH	10535 ZELZAH AVE GRANADA HILLS, CA 91344	1 TRK	3905	3905
GRANT SH	13000 OXNARD ST VAN NUYS, CA 91401	1 TRK	3600	3600
HAMILTON SH-COMPLEX	2955 S ROBERTSON BLVD LOS ANGELES, CA 90034	1 TRK	2813	2813
HOLLYWOOD SH	1521 N HIGHLAND AVE LOS ANGELES, CA 90028	3 TRK	2283	3205
HUNTINGTON PARK SH	6020 MILES AVE HUNTINGTON PARK, CA 90255	3 TRK	3177	4437
JEFFERSON SH	1319 E 41ST ST LOS ANGELES, CA 90011	3 TRK	2551	3542
JORDAN SH	2265 E 103RD ST LOS ANGELES, CA 90002	1 TRK	2449	2449
KENNEDY SH	11254 GOTHIC AVE GRANADA HILLS, CA 91344	1 TRK	3238	3238
LINCOLN SH	3501 N BROADWAY LOS ANGELES, CA 90031	1 TRK	3078	3078
LOCKE SH	325 E 111TH ST LOS ANGELES, CA 90061	1 TRK	3586	3586
LOS ANGELES SH	4650 W OLYMPIC BLVD LOS ANGELES, CA 90019	3 TRK	3508	4931
MANUAL ARTS SH	4131 S VERMONT AVE LOS ANGELES, CA 90037	3 TRK	2908	4050
MARSHALL SH	3939 TRACY ST LOS ANGELES, CA 90027	3 TRK	3586	5045
MONROE SH	9229 HASKELL AVE NORTH HILLS, CA 91343	3 TRK	3600	5040
NARBONNE SH	24300 S WESTERN AVE HARBOR CITY, CA 90710	1 TRK	3524	3524
NO HOLLYWOOD	5231 COLFAX AVE NO HOLLYWOOD, CA 91601	3 TRK	3415	4766
PALISADES CHRTR	15777 BOWDOIN ST PACIFIC PALISADES, CA 90272	1 TRK	2760	2760
POLYTECHNIC SH	12431 ROSCOE BLVD SUN VALLEY, CA 91352	3 TRK	2859	3981

Exhibit K.3-8

SENIOR

Name	Address	Calendar	Capacity	
			2 Semester	Operating
RESEDA SH	18230 KITTRIDGE ST RESEDA, CA 91335	1 TRK	3528	3528
ROOSEVELT SH	456 S MATHEWS ST LOS ANGELES, CA 90033	3 TRK	4246	5420
SAN FERNANDO	11133 O'MELVENY AVE SAN FERNANDO, CA 91340	3 TRK	3841	5181
SAN PEDRO SH	1001 W 15TH ST SAN PEDRO, CA 90731	1 TRK	3514	3514
SOUTH GATE SH	3351 FIRESTONE BLVD SOUTH GATE, CA 90280	3 TRK	3401	4764
SYLMAR SH	13050 BORDEN AVE SYLMAR, CA 91342	1 TRK	3571	3571
TAFT SH	5461 WINNETKA AVE WOODLAND HILLS, CA 91364	1 TRK	3712	3712
UNIVERSITY SH	11800 TEXAS AVE LOS ANGELES, CA 90025	1 TRK	2600	2600
VAN NUYS SH	6535 CEDROS AVE VAN NUYS, CA 91411	3 TRK	4040	5420
VENICE SH	13000 VENICE BLVD LOS ANGELES, CA 90066	1 TRK	3235	3235
VERDUGO HILLS SH	10625 PLAINVIEW AVE TUJUNGA, CA 91042	1 TRK	2411	2411
WASHINGTON PREP SH	10860 S DENKER AVE LOS ANGELES, CA 90047	3 TRK	2831	3940
WESTCHESTER SH	7400 W MANCHESTER AVE LOS ANGELES, CA 90045	1 TRK	3546	3546
WILSON SH	4500 MULTNOMAH ST LOS ANGELES, CA 90032	1 TRK	2921	2921

Exhibit K.3-8

CONTINUATION HIGH SCHOOLS

Name	Address	Calendar
ADDAMS HS	16341 DONMETZ ST GRANADA HILLS, CA 91344	1 TRK
ANGEL'S GATE HS	3200 S ALMA ST SAN PEDRO, CA 90731	1 TRK
AVALON HS	1425 N AVALON BLVD WILMINGTON, CA 90744	1 TRK
BOYLE HEIGHTS HS	544 S MATHEWS ST LOS ANGELES, CA 90033	CONTIN
CENTRAL HS	716 E 14TH ST LOS ANGELES, CA 90021	CONTIN
CHEVIOT HILLS HS	9200 CATTARAUGUS AVE LOS ANGELES, CA 90034	1 TRK
DEL REY HS	8701 PARK HILL DR LOS ANGELES, CA 90045	1 TRK
DOUGLAS HS	10500 LINDLEY AVE NORTHRIDGE, CA 91326	1 TRK
EAGLE TREE CONTN HS	22628 S MAIN ST CARSON, CA 90745	1 TRK
EARHART HS	5355 COLFAX AVE NO HOLLYWOOD, CA 91601	CONTIN
EINSTEIN HS	15938 TUPPER ST NORTH HILLS, CA 91343	CONTIN
ELLINGTON HS	1541 W 110TH ST LOS ANGELES, CA 90047	CONTIN
EVERGREEN HS	13101 DRONFIELD AVE SYLMAR, CA 91342	1 TRK
GREY HS	6510 ETIWANDA AVE RESEDA, CA 91335	1 TRK
HIGHLAND PARK HS	928 N AVE 53 LOS ANGELES, CA 90042	CONTIN
HOPE HS	7840 TOWNE AVE LOS ANGELES, CA 90003	CONTIN
INDEPENDENCE HS	6501 BALBOA BLVD VAN NUYS, CA 91406	1 TRK
INDIAN SPRINGS HS	1441 S BARRINGTON AVE LOS ANGELES, CA 90025	1 TRK

Exhibit K.3-8

CONTINUATION HIGH SCHOOLS

Name	Address	Calendar
LEONIS HS	5445 MANTON AVE WOODLAND HILLS, CA 91367	1 TRK
LEWIS HS	12508 WICKS ST SUN VALLEY, CA 91352	CONTIN
LONDON HS	12924 OXNARD ST VAN NUYS, CA 91401	1 TRK
METROPOLITAN HS	727 S WILSON ST LOS ANGELES, CA 90021	CONTIN
MISSION HS	11015 O'MELVENY AVE SAN FERNANDO, CA 91340	CONTIN
MONETA HS	1230 W 177TH ST GARDENA, CA 90248	1 TRK
MONTEREY HS	466 S FRASER AVE LOS ANGELES, CA 90022	CONTIN
MT LUKENS HS	7705 SUMMITROSE ST TUJUNGA, CA 91042	1 TRK
NEWMARK HS	134 WITMER ST LOS ANGELES, CA 90026	CONTIN
ODYSSEY HS	8693 DEARBORN AVE SOUTH GATE, CA 90280	CONTIN
OWENSMOUTH HS	6921 JORDAN AVE CANOGA PARK, CA 91303	1 TRK
PATTON HS	24514 S WESTERN AVE HARBOR CITY, CA 90710	1 TRK
PHOENIX HS	12971 ZANJA ST LOS ANGELES, CA 90066	1 TRK
PUEBLO DE L.A. HS	2506 ALTA ST LOS ANGELES, CA 90031	1 TRK
RODIA HS	2315 E 103RD ST LOS ANGELES, CA 90002	1 TRK
ROGERS HS	15141 LEMAY ST VAN NUYS, CA 91405	CONTIN
SAN ANTONIO HS	2861 RANDOLPH ST HUNTINGTON PARK, CA 90255	CONTIN
STONEY POINT HS	10010 DE SOTO AVE CHATSWORTH, CA 91311	1 TRK
TEMESCAL CANYON HS	777 TEMESCAL CYN. RD PACIFIC PALISADES, CA 90272	1 TRK
THOREAU HS	5429 QUAKERTOWN AVE WOODLAND HILLS, CA 91364	1 TRK
TRUTH HS	11015 S AVALON BLVD LOS ANGELES, CA 90061	1 TRK
VIEW PARK CONTN HS	4701 RODEO RD LOS ANGELES, CA 90016	1 TRK
WHITMAN HS	7795 ROSEWOOD AVE LOS ANGELES, CA 90036	CONTIN
YOUNG HS	3051 W 52ND ST LOS ANGELES, CA 90043	1 TRK

Exhibit K.3-8

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL ***ELEMENTARY***

Name	Address
10TH ST	HAZELTINE AVE
20TH ST	HELIOTROPE AVE
24TH ST	HILLCREST DRIVE
28TH ST	HOBART BOULEVARD
49TH ST	HOOPER AVE
52ND ST	HOOVER ST
66TH ST	HUGHES
68TH ST	HYDE PARK BOULEVARD
75TH ST	KITTRIDGE ST

Exhibit K.3-8

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL *ELEMENTARY*

Name	Address
92ND ST	LANGDON AVE
95TH ST	LANKERSHIM
107TH ST	LATONA AVE
ALDAMA	LIBERTY BOULEVARD
ALEXANDRIA AVE	LILLIAN ST
ALLESANDRO	LOCKWOOD AVE
ALTA LOMA	LOGAN ST
ARAGON AVE	LOMA VISTA AVE
ARLINGTON HEIGHTS	LORETO ST
ARMINTA ST	LOS ANGELES
ASCOT AVE	LOS FELIZ
BASSETT ST	MAGNOLIA
BEACHY AVE	MAIN ST
BROAD AVE	MANCHESTER AVE
BROADOUS	MENLO AVE
BRYSON AVE	MIDDLETON ST
BUCHANAN ST	MILES AVE
CAHUENGA	MILLER
CAMELIA AVE	MIRAMONTE
CANOGA PARK	MONTAGUE ST
CHEREMOYA AVE	MONTARA AVE
CIENEGA	MONTE VISTA ST
COLDWATER CANYON	MORNINGSIDE
COMMONWEALTH AVE.	NAPA ST
CORONA AVE	NEVIN AVE
DAYTON HEIGHTS	NOBLE AVE
DYER ST	NORMONT
ESPERANZA	NORWOOD ST
FAIR AVE	NUEVA VISTA
FENTON AVE	O'MELVENY
FERNANGELES	OSCEOLA ST
FIGUEROA ST	OXNARD ST
FISHBURN AVE	PACOIMA
FLETCHER DRIVE	PARK AVE
FLORENCE AVE	PARMELEE AVE
FRIES AVE	PLACENTIA
GARDENA	PLUMMER
GARVANZA	POLITI

Exhibit K.3-8

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL *ELEMENTARY*	
Name	Address
GATES ST	RAMONA
GLASSELL PARK	RANCHITO AVE
GRAHAM	RAYMOND AVE
GRANT	ROSCOE
GRATTS	ROSEMONT AVE
GRIDLEY ST	RUSSELL
GULF AVE	SAN ANTONIO
HADDON AVE	SAN FERNANDO
HAWAIIAN AVE	SAN GABRIEL AVE
SAN MIGUEL AVE	SANTA MONICA BLVD.
SATURN ST	SHARP AVE
STANFORD AVE	STATE ST
STRATHERN ST	SYLMAR
SYLVAN PARK	TRINITY ST
TWEEDY	UNION AVE
VALERIO ST	VAN NESS AVE
VAN NUYS	VERMONT AVE
VICTORIA AVE	VICTORY BOULEVARD
VINE ST	WADSWORTH AVE
WALNUT PARK	WEEMES
WEIGAND AVE	WEST VERNON AVE
WILTON PLACE	WOODCREST
WOODLAWN AVE	

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL *MIDDLE SCHOOL*	
NAME	ADDRESS
ADAMS	BERENDO
BETHUNE	BYRD
CARVER	DREW
EDISON	GAGE
LE CONTE	MACLAY
MOUNT VERNON	NIMITZ
SOUTH GATE	SUN VALLEY
VIRGIL	

Exhibit K.3-8

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL	*SENIOR HIGH SCHOOL*
NAME	ADDRESS
BELL	BELMONT
FRANKLIN	FREMONT
GARFIELD	HOLLYWOOD
HUNTINGTON PARK	JEFFERSON
LOS ANGELES	MANUAL ARTS

NEW & CONTINUATION MULTI-TRACK YEAR-ROUND SCHOOL	*SENIOR HIGH SCHOOL*			
NAME	ADDRESS			
MARSHALL	MONROE			
POLYTECHNIC	ROOSEVELT			
SAN FERNANDO	SOUTH GATE			
WASHINGTON PREP				

SPAN SCHOOLS (NOT MAGNETS)

Name	Address	Calendar	Capacity	
			2 Semester	Operating
CAROLDALE LRNG	22424 CAROLDALE AVE CARSON, CA 90745	1	1433	1433
ELIZABETH LC	4811 ELIZABETH ST CUDAHY, CA 90201	3	2279	3198
FOSHAY LC	3751 S HARVARD BLVD LOS ANGELES, CA 90018	3 TRK	2582	3600
HARRISON EL	3529 CITY TERRACE DR LOS ANGELES, CA 90063	3 TRK	929	1311
PIO PICO EL	1512 S ARLINGTON AVE LOS ANGELES, CA 90019	3 TRK	1850	2592
VAUGHN EL	13330 VAUGHN ST SAN FERNANDO, CA 91340	OTHER	8	652

PRIMARY CENTER

Name	Address	Calendar	Capacity	
			2 Semester	Operating
ARCO IRIS PRIMRY CTR	4504 ASCOT AVE LOS ANGELES, CA 90011	3 TRK	140	200
BELL #3 NEW PC	7326 S WILCOX AVE CUDAHY, CA 90201	4 TRK	240	320
BELLEVUE PRIMARY SCH	610 N MICHELTORENA ST LOS ANGELES, CA 90026	4 TRK	275	340
KINDERGARTEN LRN ACD	6555 SYLMAR AVE VAN NUYS, CA 91401	3 TRK	225	305
LAFAYETTE PARK PC	310 S LAFAYETTE PARK PL LOS ANGELES, CA 90057	3 TRK	240	340
MACARTHUR PARK PC	2300 W 7TH ST LOS ANGELES, CA 90057	4 TRK	260	390
MACLAY PRIMARY CTR	12513 GAIN ST PACOIMA, CA 91331	4 TRK	245	305
PARKS/HUERTA PRIMARY	1020 W 58TH PL LOS ANGELES, CA 90044	1 TRK	240	240
PRIMARY ACADEMY	9075 WILLIS AVE PANORAMA CITY, CA 91402	3 TRK	330	490
VALERIO NEW PC	14935 VALERIO ST VAN NUYS, CA 91405	4 TRK	292	332
WHITE HSE PL PRIMARY	108 S BIMINI PL LOS ANGELES, CA 90004	3 TRK	200	300

Exhibit K.3-8

MAGNET-SELF CONTAINED (ELEM)

Name	Address	Calendar	Capacity	
			Semester	Op.
BALBOA G/HA MAG	17020 LABRADOR ST NORTHRIDGE, CA 91325	1 TRK	677	677
BRADLEY ENV/HUMAN MG	3875 DUBLIN AVE LOS ANGELES, CA 90008	1 TRK	710	710
BRENTWOOD SCI MAG	740 GRETNA GREEN WAY LOS ANGELES, CA 90049	1 TRK	1190	1190
COMMUNITY MAGNET SCH	11301 BELLAGIO RD LOS ANGELES, CA 90049	1 TRK	424	424
CRESCENT HTS EL	1661 S CRESCENT HTS BLVD LOS ANGELES, CA 90035	1 TRK	396	396
LOMITA MATH/SCI MAG	2211 W 247TH ST LOMITA, CA 90717	4 TRK	1307	1307
OPEN CHARTER MAG SCH	5540 W 77TH ST LOS ANGELES, CA 90045	1 TRK	384	384
PASEO DEL REY NAT SC	7751 PASEO DEL REY PLAYA DEL REY, CA 90293	1 TRK	515	515
S SHORES PER ARTS MG	2060 W 35TH ST SAN PEDRO, CA 90732	1 TRK	449	449
VINTAGE MATH/SCI MAG	15848 STARE ST NORTH HILLS, CA 91343	1 TRK	679	679
WINDSOR M/S AERO MAG	5215 OVERDALE DR LOS ANGELES, CA 90043	1 TRK	710	710

SPECIAL EDUCATION

Name	Address	Calendar	Capacity	
			Semester	Operating
BANNEKER SP ED CTR	14024 S SAN PEDRO ST LOS ANGELES, CA 90061	1 TRK		
BLEND EL	5210 CLINTON ST LOS ANGELES, CA 90004	1 TRK		
CARLSON HSP SCH(K-12	10952 WHIPPLE ST NO HOLLYWOOD, CA 91602	1 TRK		
LANTERMAN HS	2328 ST JAMES PL LOS ANGELES, CA 90007	1 TRK		
LEICHMAN SP ED CTR	19034 GAULT ST RESEDA, CA 91335	1 TRK		
LOKRANTZ SP ED CTR	19451 WYANDOTTE ST RESEDA, CA 91335	1 TRK		
LOWMAN SP ED CTR	12827 SATICOY ST NO HOLLYWOOD, CA 91605	1 TRK		
LULL SP ED CTR	17551 MIRANDA ST ENCINO, CA 91316	1 TRK		
MARLTON SCH	4000 SANTO TOMAS DR LOS ANGELES, CA 90008	1 TRK		
MCBRIDE SP ED CTR	3960 CENTINELA AVE LOS ANGELES, CA 90066	1 TRK		
MILLER HS	8218 VANALDEN AVE RESEDA, CA 91335	1 TRK		
PACIFIC BL SP ED CTR	5714 PACIFIC BLVD HUNTINGTON PARK, CA 90255	1 TRK		
PEREZ SP ED CTR	4540 MICHIGAN AVE LOS ANGELES, CA 90022	1 TRK		
SALVIN SP ED CTR	1925 BUDLONG AVE LOS ANGELES, CA 90007	1 TRK		
SELLERY SP ED CTR	15805 S BUDLONG AVE GARDENA, CA 90247	1 TRK		
WEST VALLEY SP ED	6649 BALBOA BLVD VAN NUYS, CA 91406	1 TRK		
WIDNEY HS	2302 S GRAMERCY PL LOS ANGELES, CA 90018	1 TRK		
WILLENBERG SP ED CTR	308 WEYMOUTH AVE SAN PEDRO, CA 90732	1 TRK		

Exhibit K.3-8

OPPORTUNITY SCHOOLS/UNITS

Name	Address	Calendar	Capacity	
			Semester	Operating
AGGELER HS	21050 PLUMMER ST CHATSWORTH, CA 91311	CONTIN		
MC ALISTER HS-CYESIS	155 N OCCIDENTAL BLVD LOS ANGELES, CA 90026	CONTIN		
RILEY HS-CYESIS	1524 E 103RD ST LOS ANGELES, CA 90022	CONTIN		

SPAN MAGNET

Name	Address	Calendar	Capacity	
			Semester	Operating
32ND/USC PER ART MAG	822 W 32ND ST LOS ANGELES, CA 90007	1 TRK	734	734
ARROYO SECO MUSM SCI	4805 SYCAMORE TERR LOS ANGELES, CA 90042	1 TRK	542	542
LACES MAG	5931 W 18TH ST LOS ANGELES, CA 90035	1 TRK	1618	1618
MID-CITY MAGNET	3150 W ADAMS BLVD LOS ANGELES, CA 90018	1 TRK	370	370
SOCES MAG	18605 ERWIN ST RESEDA, CA 91335	1 TRK	1780	1780
VALLEY ALTERN MAG	6701 BALBOA BLVD VAN NUYS, CA 91406	1 TRK	576	576
WESTSIDE LDRSHIP MAG	104 ANCHORAGE ST MARINA DEL REY, CA 90292	1 TRK	463	463

MAGNET-SELF CONTAINED SENIOR (SS)

Name	Address	Calendar	Capacity	
			Semester	Operating
BRAVO MEDICAL MAG	1200 N CORNWELL ST LOS ANGELES, CA 90033	1 TRK	1709	1709
DOWNTOWN BUSINESS MAG	1081 W TEMPLE ST LOS ANGELES, CA 90012	1 TRK	671	671

COMMUNITY DAY SCHOOL (T)

Name	Address	Calendar	Capacity	
			Semester	Operating
CDS COOPER	2210 TAPER AVE SAN PEDRO, CA 90731	1 TRK		
CDS JOHNSON	333 E 54TH ST LOS ANGELES, CA 90011	CONTIN		
CDS WEST HOLLYWOOD	1049 FAIRFAX AVE LOS ANGELES, CA 90046	CONTIN		
RAMONA HS	231 S ALMA AVE LOS Angeles, CA 90063	CONTIN		

Exhibit K.3-9

Revised

Los Angeles Unified School District
STUDENT GENERATION FACTORS

TYPE	NO. OF BEDROOMS	GENERATION FACTOR				
		ELEMENTARY		JUNIOR HIGH	SENIOR HIGH	
		K-6	K-5	7-9 & 6-8	10-12	9-12
Lower Income Areas						
Single-family	2	.3	.26	.15	.15	.2
	3 or more	.6	.52	.25	.25	.34
Townhouse	1	.0	.0	.0	.0	.0
	2	.05	.043	.02	.02	.027
	3 or more	.2	.17	.1	.1	.14
Medium Income Areas						
Single-family	2	.25	.22	.1	.1	.14
	3 or more	.5	.43	.25	.25	.34
Townhouse	1	.0	.0	.0	.0	.0
	2	.04	.035	.02	.02	.027
	3 or more	.15	.13	.075	.075	.1
Higher Income Areas						
Single-family	2	.2	.17	.1	.1	.14
	3 or more	.4	.35	.2	.2	.27
Townhouse	1	.0	.0	.0	.0	.0
	2	.03	.026	.02	.02	.027
	3 or more	.075	.065	.03	.03	.04
Multiple (Rented) (Units that permit children)	1	.0	.0	.0	.0	.0
	2	.25	.22	.1	.1	.14
	3 or more	.6	.52	.2	.2	.27
Multiple (Condominium)	1	.0	.0	.0	.0	.0
	2	.03	.026	.02	.02	.027
	3 or more	.05	.043	.02	.02	.027

K.4. RECREATION AND PARKS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XIII.2.iv): Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?

XIV.a.): Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

XIV.b): Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have a physical effect on the environment?

B. Introduction

Within the City of Los Angeles, the Department of Recreation and Parks operates over 16,000 acres of park land comprised of some 150 recreation centers and 386 park sites Citywide.[1] Facilities at neighborhood parks include softball, basketball, volleyball, table games, handicrafts, lawn games, small children's play areas and community buildings. In addition to the facilities at a neighborhood park, community parks provide baseball diamonds, combined football and soccer fields, tennis, handball courts, swimming pools, and picnic areas. In ocean areas outside the Los Angeles Harbor and at beaches, there are also other opportunities such as marine recreation (e.g., boating and waterside entertainment).

The Public Recreation Plan, a portion of the Service Systems Element, includes service standards and goals for recreational facilities and operations. The City is updating the 1980 plan as a part of current long-range planning efforts.

The Quimby Act allows California municipalities to require parkland dedications of new

[1] *Department of Recreation and Parks, Valley Region Informational Guide, and telephone interview, 2003.*

residential subdivisions, or to charge fees to developers in lieu of park land dedication. The City of Los Angeles enacted ordinances, which implement the Quimby Act and require dedications and fees for other types of permits and approvals.[2] The Quimby fee is based on the number of units and zoning for the project and site.

Service needs are related to the size of the population and geographic area served and community characteristics. Projects that affect these factors (e.g., by increasing residential population in an area) may increase the demand for recreation facilities.

C. Screening Criteria

- Would the project result in a net increase of 50 or more residential units that would adversely impact recreation and park services and/or facilities due to the project's proximity to, or expected usage of, those facilities or services?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Recreation and Parks, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Recreation and Parks from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and determine the number of net new residential units proposed. Compare this information to the Screening Criteria, considering the type of residential units proposed, the total size, and the project's proximity to recreation and park facilities.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

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2 *Refer to the following Sections of the Los Angeles Municipal Code (LAMC): Subdivision Requirements - 17.12 and 17.58; Zone Change requirements - 12.32 and 12.33; and Dwelling Unit Construction Tax - 21.10.3.*

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The net population increase resulting from the proposed project;
- The demand for recreation and park services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to recreation and park services (renovation, expansion, or addition) and the project's proportional contribution to the demand; and
- Whether the project includes features that would reduce the demand for recreation and park services (e.g., on-site recreation facilities, land dedication or direct financial support to the Department of Recreation and Parks).[3]

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- The name, description, and location of recreation and park facilities serving the project and their respective acreage. Generally, this includes neighborhood parks and recreational sites within one mile of the project site, community parks and recreational sites within two miles and other park or recreational facilities or sites as appropriate. Refer to the Environmental and Public Facilities Maps, Community Parks, Neighborhood Parks, Regional Parks, and other Park Facilities, or contact the Department of Recreation and Parks, Planning and Development Office, as necessary; and
- Describe the population and geographic area served, as well as the community characteristics.

Project Impacts

Review the description of the project and surrounding area. Determine the net

[3] *The use of utility easements or transmission line right-of-way (ROW) for park or recreational facilities requires an agreement with the utility.*

population increase resulting from the project and identify the recreational facilities that would be used by project residents. Evaluate the demand for recreational services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion, or addition) and the project's proportional contribution to the demand. As necessary, consult with the Department of Recreation and Parks. Evaluate project features which would reduce the demand for services (e.g., on-site recreation facilities or direct support to the Department of Recreation and Parks).

Cumulative Impacts

Identify the related projects which would be served by the same recreational facilities as the proposed project. Consider the characteristics of the related projects in terms of size, location, and types of land uses. Determine the net population increase resulting from the related projects. As above, evaluate the cumulative demand for recreational facilities anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion or addition). As necessary, consult with the Department of Recreation and Parks. As feasible, evaluate known features of the related projects that would reduce the demand for recreation services (e.g., on-site recreation facilities or direct support to the Department of Recreation and Parks). Consider the combined impact of the related and proposed projects and the project's proportional contribution to the cumulative demand.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Provide on-site recreational amenities; and

- Provide direct support to the Department of Recreation and Parks, including land, equipment, funding, etc.

3. DATA, RESOURCES, AND REFERENCES

Department of Recreation and Parks, Planning and Development Office; Telephone: (213) 485-5671.

Public Recreation Plan, a portion of the Public Facilities and Service Element, October 1980.

General Plan Framework Element, July 1996, re-adopted August 2001.

LAMC (Sections 17.12, 17.58, 12.32, 12.33, and 21.10.3).

Environmental and Public Facilities Maps (1996):

- Community Parks;
- Neighborhood Parks; and
- Regional Parks and Other Park Facilities.

The Quimby Act, California Government Code Section 66477, allows the legislative body of a city or county, by ordinance, to require the dedication of land or impose a requirement of the payment of fees in lieu thereof, or a combination of both, for park or recreational purposes as a condition to the approval of a tentative map or parcel map.

K.5. LIBRARIES

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XIII.e): Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?

B. Introduction

Within the City of Los Angeles, the Los Angeles Public Library (LAPL) System provides library services at the Central Library, eight regional branch libraries, 67 community branches and four bookmobiles. Approximately 6 million books and other materials comprise the City Library collection. The Central Library houses 2.2 million of these.[1]

The Public Libraries Plan, an element of the City's General Plan, includes service standards and goals for library facilities and operations. In 1988, the Library adopted its own master plan for libraries and subsequently funded it through two bonds (1989 & 1998). The final phase of the library master plan will be completed in 2004 when the final bond libraries are opened. Current site selection criteria are listed in Exhibit K.5-1.

Service needs are related to the size of the population and geographic area served and community characteristics. Projects that affect these factors (e.g., by increasing residential population in an area) may increase the demand for service from the LAPL.

C. Screening Criteria

- Would the proposed project result in a net increase of 75 residential units or more?

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[1] *LAPL, Public Relations Fact Sheet, provided by Robert Reagan, Public Information Director, December 29, 1994 and Los Angeles Public Library, 2003.*

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Libraries and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Libraries from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and determine the number of net new residential units proposed. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The net population increase resulting from the proposed project;
- The demand for library services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to library services (renovation, expansion, addition or relocation) and the project's proportional contribution to the demand; and
- Whether the project includes features that would reduce the demand for library services (e.g., on-site library facilities or direct support to the LAPL).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Name, location, and description of the LAPL facilities serving the project site, including capacity, population served, operating characteristics, and scheduled improvements. Generally, this includes libraries within two miles. If unknown, refer to the Environmental and Public Facilities Map, Los Angeles Public Libraries, or see Exhibit

K.5-2. (For information about improvements, contact the LAPL Library Construction Unit.); and

- Description of the population and geographic area served, as well as community characteristics.

Project Impacts

Review the description of the project and surrounding area. Determine the net population increase resulting from the project and identify the LAPL facilities that would be used by the project residents. Identify existing facilities and their capacities. Evaluate the demand for library services anticipated at the time of the project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion, or addition) and the project's proportional contribution to the demand. As necessary, consult with LAPL. Evaluate project features, which would reduce the demand for library services (e.g., on-site library facilities or direct support to LAPL). Describe any characteristics of the project area, such as a college or other library near the project site, that would reduce the demand for LAPL services.

Cumulative Impacts

Identify the related projects, which would be served by the same LAPL facilities as the proposed project. Consider the characteristics of the related projects in terms of size, location, and types of land uses. Determine the net population increase resulting from the related projects. As above, evaluate the cumulative demand for library services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements (renovation, expansion, addition, or relocation). As necessary, consult with LAPL. As feasible, evaluate known features of the related projects (e.g., on-site library facilities or direct support to the LAPL), which would reduce the expected cumulative demand for library service. Consider the combined impact of the proposed and related projects and the project's proportional contribution to the cumulative demand.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Provide on-site or other private library facilities; and

- Provide direct support to the LAPL, including land, equipment, materials, funding, etc.

3. DATA, RESOURCES, AND REFERENCES

LAPL, Branch Facilities Division; Telephone: (213) 228-7576.

The Environmental and Public Facilities Map (1996), Los Angeles Public Libraries, shows the location of LAPL facilities and their service radii.

Exhibit K.5-1
LOS ANGELES PUBLIC LIBRARY (LAPL)
Branch Facilities
Site Selection Criteria

1. Branch building size standards are:

Population Served	Size of Facility (sf)	Property Required (sf)
Above 50,000	12,500	32,500
Below 50,000	10,500	27,500
Expansion or Special Situations*	Special Size	
Regional Branch	Up to 20,000	52,000

*Due to available property size and configuration, architectural constraints or opportunities, or building code requirements, some facilities may differ from the recommended sizes.

2. Security conscious design located in retail center.

3. A one-story library building with interior layouts designed to accommodate:

   - Full access for the disabled;
   - Interior layouts designed to accommodate electronic technology;
   - Substantial shelving and seating capacities; and
   - To include a community meeting room.

4. Good visibility and street access.

5. Easily accessible by car, by bus and on foot.

6. Taking into consideration the relative locations of all schools served by the branch.

7. Taking into consideration the relative locations of neighboring branch libraries.

Exhibit K.5-2
LOS ANGELES PUBLIC LIBRARY (LAPL)
BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Angeles Mesa 2700 W. 52nd St.	4,750	5,250	Structurally reinforce and renovate existing historic building.
Arroyo Seco Regional 6145 N. Figueroa St.	10,200	14,000	New 2-story building on existing site. Open June 2003
Ascot 120 W. Florence Ave..	6,642	10,500	New building. Open April 2004
Atwater Village 3379 Glendale Blvd.	5,900	------	New building (1989), meets standard.
Baldwin Hills 2906 S. La Brea Ave.	5,278	12,000	New building opened Feb 2002
Benjamin Franklin 2200 E. First St.	9,656	9,656	New building. (1975), meets standard.
Brentwood 11820 San Vicente Blvd.	3,463	10,500	New 2-story building on existing site. (1994).
Cahuenga 4591 Santa Monica Blvd.	10,621	12,000	Structurally reinforce, renovate and expand on existing historic building. Obtain adjacent site. Provide parking.
Canoga Park 7260 Owensmouth Ave.	6,469	12,500	Grand opening, Aug 2004
Chatsworth Temp. Loc.* 10044 Old Depot Plaza Rd..	5,463	12,500	Permanent location: 21052 Devonshire St., Grand opening Sept. 2004

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Chinatown 639 N. Hill St.	14,162 Leased	14,500	New building. Opened Feb. 2003
Cypress Park 1150 Cypress Ave.	3,080	10,750	Opened Jan. 2003.
Eagle Rock 5027 Caspar Ave.	12,411	------	New building (1981); meets standard.
Echo Park 1410 W. Temple	7,919	12,500	Relocate. Obtain site for new building.
Edendale 2011 W. Sunset Blvd.	None	12,500	Grand opening Sept. 2004.
El Sereno 5226 Huntington Dr., S.	4,274	10,500	Grand opening Sept. 2004.
Encino -Tarzana 18231 Ventura Blvd.	5,404	12,500	New building on site. Opened April 2003.
Exposition Park [b] 3665 S. Vermont Ave.	9,656	15,000	Renovate. Long Range: Expand. Obtain adjacent site.
Fairfax 'Express Station' Branch closed for remodeling 161 S. Gardner St.	5,230	12,500	Relocate. New building 75% complete.
Felipe de Neve 2820 W. Sixth St.	7,761	9,000	Structurally reinforce, renovate and expand on existing historic building. Provide parking.
Goldwyn-Hollywood Regional 1623 N. Ivar Ave.	19,000	------	New building (1986); meets standard. Long Range: Obtain site for parking.

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Granada Hills 10640 Petit Ave.	11,310	------	New building; expanded (1975); meets standard. Closed for Seismic repair.
Harbor Gateway-Harbor City 24000 Western Ave.	6,300 Leased	14,500	Project in progress - bid and Award 45% Complete
Hyde Park 2205Florence Ave.	4,389	10,500	Grand opening, Oct. 2004
Jefferson 2211 W. Jefferson Blvd.	2,980	9,000	Renovate and expand. Obtain adjacent site for parking.
John C. Fremont 6121 Melrose Ave.	4,276	8,000	Structurally reinforce, renovate and expand on existing historic building. Obtain adjacent site. Provide parking.
John Muir 1005 W. 64th Street	4,850	8,000	Structurally reinforce, renovate and expand. Obtain adjacent site. Provide parking.
Junipero Serra 4607 S. Main St.	Leased 3,922	10,500	Relocate. Obtain site for new building.
Lake View Terrace 12002 Osborne Street	12,500		
La Biblioteca del Pueblo de Lincoln Heights 2530 Workman St.	7,072	10,500	Structurally reinforce, renovate and expand on existing historic building. Provide parking.
Little Tokyo 203 S. Los Angeles St.	2,500	12,500	Construction 75% complete
Los Feliz 1874 Hillhurst Ave.	2,250	10,500	Relocate. Obtain site for new building.

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Winchester 7114 W. Manchester Ave.	4,369	12,500	Obtain site for new building.
Malabar 2801 Wabash Ave.	1,168	6,000	Structurally reinforce, renovate and expand historic building.
Mar Vista 12006 Venice Blvd.	5,450	12,500	Grand Opening, March 2003
Mark Twain 9621 S. Figueroa St.	4,342	9,900	Grand opening, Jan. 2003.
Memorial 4625 W. Olympic Blvd.	7,217	10,500	Structurally reinforce, renovate and expand on existing historic building. Provide parking.
Mid Valley Regional & Bookmobile Headquarters 16244 Nordhoff St.	27,981	------	New building on City-owned site. Complete. (1996).
North Hollywood Regional 5211 Tujunga Ave.	12,597	15,150	Expand on existing historic building to add a multipurpose meeting room & parking lot. Grand opening, November 2002.
Northridge 9051 Darby Ave.	6,240	12,500	New building on existing site. Grand opening, Dec. 2003.
Pacoima 13605 Van Nuys	5,511	11,300	New building on existing site. Grand opening, April 2002.
Palisades 861 Alma Real Dr.	7,025	11,500	New bldg. On existing site. Grand opening, Feb. 2002.
Palms-Rancho Park 2920 Overland Ave.	6,342	10,500	New building on existing site. Grand opening, Nov. 2002.

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Panorama City 14345 Roscoe Blvd.	6,101	12,500	New building on existing site. Obtain adjacent site.
Pico Union 1030 S. Alvarado	None	12,500	Grand opening, May 2004.
Pio Pico – Koreatown 694 S Oxford Ave	18,000	------	*New address*
Platt 23600 Victory Blvd.	14,053	------	New building on City-owned site. Complete (1995).
Playa Vista 6400 Playa Vista Dr.	None	10,500	New building on a site to be provided by the Playa Vista developer. Grand opening, May 2004.
Porter Ranch 11371 Tampa Ave.	12,300	------	New building on City-owned site. Complete (1995).
R. L. Stevenson 803 Spence St.	4,474	5,000	Structurally reinforce, renovate and expand on existing historic building.
Robertson 1719 S. Robertson Blvd.	3,505	10,500	New 2-story building on existing site.
San Pedro Regional 931 S. Gaffey St.	20,000	------	New building (1983); meets standard. Long Range: Obtain adjacent site for added parking. Ceremony and Dedication, Jan. 2001
Sherman Oaks 14245 Moorpark St.	None	12,500	Renovate and expand on existing site. Obtain adjacent site. Grand opening, May 2003.
Silver Lake, Ph. I To be determined.	5,230	10,500	Project in site and land acquisition stage.

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Studio City 12511 Moorpark St.	5,230	10,500	New building on existing site. Obtain adjacent site.
Sun Valley 7935 Vineland Ave.	5,230	12,500	New building on existing site. Obtain adjacent site. Grand opening, Sept. 2003.
Sunland-Tujunga 7771 Foothill Blvd.	4,500	10,500	New building on existing site. Obtain adjacent City-owned site.
Sylmar 14561 Polk St.	5,511	12,500	New building on existing site. Obtain adjacent site. Grand opening, Sept. 2003.
Valley Plaza 12311 Vanowen St.	5,450	10,500	Renovate and expand on existing site. Grand opening, Jan. 2004.
Van Nuys 6250 Sylmar Ave. Mall	12,814	------	Renovate existing building and optimize parking lot. Transfer Valley Bookmobile Unit to Mid-Valley Regional Branch Library. Complete (1996).
Venice – Abbot Kinney 501 S. Venice Blvd.	5,581	10,500	Relocate. New building on City-owned site.
Vermont Square 1201 W. 48th St.	8,000	------	Structurally reinforce and renovate existing historic building with small expansion. Complete (1996).
Vernon – Leon H. Washington Jr Memorial 4505 S. Central Ave.	10,325	------	New building; meets standard.
Washington Irving 4117 W. Washington Blvd.	3,918	10,500	Relocate. Obtain site for new building.

Exhibit K.5-2, continued
LAPL BRANCH FACILITIES

Name & Address of Branch	Building Size (In Square Feet)		Branch Facilities Plan a
	Existing	Proposed	
Alma Reaves Woods - Watts 10205 Compton Ave.	3,542	12,500	Exchange Library-owned property for CRA land on the corner of 102 and Compton. New building on CRA site.
West Los Angeles Regional 11360 Santa Monica Blvd.	13,740	13,740	Renovate existing building. Long Range: Obtain adjacent site for parking.
West Valley Regional 19036 Vanowen St.	12,469	14,000	Renovate and expand to add a multipurpose meeting room on existing site. Grand opening, Oct. 2002
Westchester-Loyola Village 7114 W. Manchester Ave.	5,918	12,500	Relocate and combine with Loyola Village. Obtain site for new building. Grand opening, June 2003.
Westwood 1246 Glendon Ave.	None	12,500	Under construction, 80% complete.
Will & Ariel Durant 7140 W. Sunset Blvd..	4,155	12,500	Relocate. Obtain site for new building. Grand opening, Jan 2004.
Wilmington 1300 North Avalon Blvd.	10,500	------	New building (1988); meets standard.
Wilshire 149 N. St. Andrews Pl.	6,258	------	Structurally reinforce and renovate existing historic building.
Woodland Hills 22200 Ventura Blvd.	6,272	12,500	New building on existing site. Grand opening, Aug. 2003.
Westwood	None	12,500	Obtain site for new building.

Adopted by the Board of Library Commissioners August 24, 1988; Revised 1991, 1992, 1998, 1999, 2001, 2002.
LAPL, 1998 Library Bond Program Annual Report, July 2003 and July 2004.

a) Some historic building renovations will not include parking.

L. TRANSPORTATION

L.1. INTERSECTION CAPACITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XV.a): Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads or congestion at intersections)?

XV.b): Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

B. Introduction

This issue involves the ability of an intersection to accommodate the increased vehicular traffic demands associated with a proposed project. The impact typically results from the addition of new project-generated traffic to an intersection. In situations where a project involves street vacations or other substantial street system changes, it can also result from diverted or shifted traffic caused by the project.[1] Impacts may also result from a combination of new trips and diverted traffic. The impact is measured as the effect of the project on traffic operating conditions, expressed in terms of level of service (LOS) and either volume to capacity (V/C) ratio (for signalized intersections) or average vehicle delay (for unsignalized intersections). Impacts are related to factors such as type of use, size of project, access points, capacity of the transportation system, and other characteristics of the project and surrounding area. For impacts on emergency access, see K.2. FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES.

Intersection capacity impacts are evaluated when project details, such as land use and size, location of access points, etc., are known. If these features are not known, see L.2. STREET SEGMENT CAPACITY. Intersection capacity impacts are typically evaluated for permanent traffic increases after project completion, but can also be evaluated for temporary traffic increases generated during project construction. Impacts should be evaluated for a future study year usually

[1] *Impacts related to loss of capacity due to temporary lane closures associated with projects requiring construction activity within the street are discussed in L.8. IN-STREET CONSTRUCTION IMPACTS.*

set one or two years after the expected year of project completion. The following traffic scenarios should be analyzed:

- Existing Conditions;
- Cumulative (Future) Base Conditions (also termed the "No Project" alternative); and
- Cumulative (Future) Plus Project Conditions

C. Screening Criteria

- Would the proposed project generate and/or cause a diversion or shift of 500 or more daily trips or 43 or more p.m. peak hour vehicle trips on the street system?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Intersection Capacity, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant Intersection Capacity impact from the proposed project.

D. Evaluation of Screening Criteria

If the project is expected to generate new or shift existing vehicular traffic, estimate the number of peak hour trips expected to result from project implementation and compare this information to the Screening Criteria.

To estimate new project trips, apply the appropriate trip generation rates to the proposed project land uses.[2] The following two sources of trip rates are preferred:

- Standard trip generation rates/equations contained in the latest edition of Trip Generation, published by the Institute of Transportation Engineers (ITE); and

- Trip generation rates specified in a Transportation Specific Plan (TSP) or Interim Control Ordinance (ICO) must be used if the project is located in a TSP or ICO area.

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2 *Note that traffic studies which are required by City of Los Angeles Department of Transportation (LADOT) (CEQA and non-CEQA) are also subject to the policies and procedures of LADOT's Traffic Study Policies and Procedures Manual as well as requirements of applicable specific plans. Contact LADOT at (213) 580-1195 for further information.*

If the above sources do not provide rates for a particular land use under study, or due to unique characteristics of the project it is believed that standard rates are not appropriate, the following alternative techniques may be considered:

- Use of alternative published rates, such as those contained in the latest edition of Trip Generators (San Diego Association of Governments (SANDAG));

- Use of rates empirically derived from trip generation studies of similar developments or facilities; and

- Explicit derivation of vehicle trips based upon estimation of person trips. For example, because little or no trip rate data exist for museum facilities, trip generation for such developments could be derived by applying mode split and vehicle occupancy data to estimated person trips for the various generators (patrons, employees, service/delivery).

If the project is expected to divert or shift traffic, estimate the amount based on the project characteristics and on ambient traffic volumes for the affected streets/intersections and compare to the Screening Criteria.

For freeway ramp intersections, use the same trip generation rates and calculate the number of trips that would occur at identified ramp intersections in the a.m. or p.m. peak hour. See the Project Impact section for a discussion of trip distribution methods.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A proposed project would normally have a significant impact on intersection capacity if the project traffic causes an increase in the V/C ratio on the intersection operating condition after the addition of project traffic of one of the following:

V/C ratio increase $\geq$0.040 if final LOS* is C
V/C ratio increase $\geq$0.020 if final LOS* is D
V/C ratio increase $\geq$0.010 if final LOS* is E or F

* "Final LOS" is defined as projected future conditions including project, ambient, and related project growth but without project traffic mitigation.

Note that if stricter criteria are required in an applicable local TSP or ICO, those criteria will apply.

If an unsignalized intersection is projected to operate at LOS C, D, E or F, re-analyze the intersection using the signalized intersection methodology to determine the significance of impacts using the sliding scale criteria described above.

B. Methodology to Determine Significance

Environmental Setting

Describe the existing traffic conditions based on the appropriate study area, time periods, existing transportation facilities, traffic counts, and LOS.

Study Area and Time Periods for Analysis. Identify the geographic study area (i.e., intersections to be analyzed), based on project size, type, location and existing levels of traffic, in consultation with Los Angeles Department of Transportation (LADOT). Include intersections of surface streets with other surface streets and with freeway ramps, as well as the appropriate Congestion Management Program (CMP) arterial monitoring intersections.[3]

For most projects, analyze existing traffic for both the a.m. and p.m. weekday peak hours. For some projects, analysis of p.m., midday or weekend periods is appropriate if those are expected to be the prime periods of trip generation for the project (e.g., a recreational project).

Existing Setting. Describe existing traffic conditions, including:

- A description of the existing street system serving the defined study area (i.e., number of lanes, traffic control devices, on-street parking, etc.);

- Existing lane configurations and signal phasing at study intersections;

- Existing peak hour traffic turning movements at study intersections. Traffic counts should not be more than two years old; and
- Quantify the existing LOS at the intersections to be analyzed using the appropriate intersection capacity methodology described below:

[3] *See Exhibit L-3 in L. TRANSPORTATION for a map of CMP monitoring locations.*

- Signalized Intersections - For the analysis of signalized intersections, determine peak hour LOS based on the Critical Movements Analysis (CMA) methodology contained in the Transportation Research Board's (TRB) Circular No. 212 - Interim Materials on Highway Capacity at the identified intersections. Summarize V/C ratio and LOS in the study; and

- Two-Way and All-Way Stop-Controlled (Unsignalized) Intersections - For two-way and all-way stop-controlled intersections, use the procedures described in Chapter 10 of TRB's Highway Capacity Manual, Special Report 209, Third Edition. Summarize average vehicle delay and LOS in the study.

LOS definitions for signalized and unsignalized intersections are listed in Exhibits L.1-1 and L.1-2. For additional details regarding intersection LOS calculation, see LADOT's Traffic Study Policies and Procedures Manual.

Project Impacts

Project impacts are typically based upon a comparison of intersection LOS for cumulative base and cumulative base plus project (final LOS) conditions. The cumulative base conditions are comprised of existing traffic levels increased by a factor to account for ambient growth, plus projected traffic levels from known related projects in the vicinity. Using the appropriate intersection capacity methodologies described above, quantify the cumulative plus project LOS at the study intersections for the projected cumulative plus project traffic volumes. The project impact is determined by comparing the projected cumulative base and cumulative plus project intersection LOS, using the defined significance threshold.

Project Trip Generation. The preferred methods of calculating trip generation rates are described above in Evaluation of Screening Criteria.

Depending upon the particular characteristics of the project, one or more of the following adjustments to the project trip generation may be appropriate (consult with LADOT for applicability):

- Central Business District (CBD) Trips - If the project is located within the CBD, defined as the area bordered by the Santa Ana Freeway to the north, Los Angeles Street to the east, the Santa Monica Freeway to the south, and the Harbor Freeway to the west, trip reduction factors may be applied to reflect prevailing CBD mode splits. (Consult with LADOT for most current rates.);

- Pass-by Trips – "Pass-by trips" occur when a proportion of traffic generated by a shopping center, for example, is not new to the area but is actually diverted from the flow of traffic that already existed on the adjacent street system. LADOT's discount rates for pass-by trips are shown in Exhibit L.1-3;

- Mode Split Adjustments - The mode split inherent in the ITE trip generation rates for most land uses reflect a relatively modest transit usage (typically less than 5 percent), and thus a low average vehicle ridership (AVR). If the project is located in an area where transit mode split or vehicle occupancy is considered to be higher than normal, identify the prevailing or projected mode split(s) for the project area to determine an appropriate adjustment to the ITE rates. Several data sources are available to perform this evaluation, including the South Coast Air Quality Management District (SCAQMD) Regulation XV data (through March 1996) which summarizes employee trips by travel mode, data from the Los Angeles County Metropolitan Transportation Authority (Metro), Southern California Association of Governments (SCAG), Southern California Rideshare office, and/or City of Los Angeles Citywide Framework regional travel demand models;

- Captive Market (Internal) Trips - For mixed-use projects, different land uses or trip generators may capture patronage from within the project site. The following sources are available to estimate captive market reductions:

  - National Cooperative Highway Research Program (NCHRP) Report 323 - Travel Characteristics at Large-Scale Suburban Activity Centers;

  - Trip Generation; and

  - Urban Land Institute (ULI) Shared Parking.

- Removal of Existing Land Uses - Trips from existing land uses which will be removed, but have been in place at least six months within the last two years, may be credited against the new trips generated by the project (if "existing" traffic counts reflect the existing land use). Projects within a TSP area may be subject to different regulations in regards to existing use trip credits. If driveway counts are not available, trip generation for the existing uses should be estimated using the trip generation procedures described above.

Trip Distribution. The geographic distribution of traffic generated by developments is dependent upon such factors as: the type and density of the proposed land uses; the geographic

distribution of the population, employment, and commercial centers that would attract the project-generated traffic (i.e., the "market" area); the location of site access points in relation to the surrounding street system; the level of congestion on local streets; and the physical characteristics of the street system. To identify total project trip distribution, develop individual distribution patterns for each land use associated with both the project and cumulative projects. Distribution patterns can be based upon: information from previous traffic studies; trip table data from SCAG or City of Los Angeles Framework regional travel demand forecasting models; or most recent CMP.

Cumulative Impacts

The cumulative base traffic forecasts consist of three elements: existing traffic; ambient increases due to regional growth and development; and traffic from specific known development projects in the vicinity of the project. Ambient regional growth is derived through the application of an annual growth factor to existing traffic volumes. The ambient growth factor should be no higher than the regional growth factors contained in the most recent CMP and should usually be less to avoid double counting of trips generated by cumulative projects when the cumulative projects are consistent with the long-range forecasts used to develop the ambient regional growth factor.

The list of cumulative projects (including pertinent descriptive data such as location, types and sizes of land uses, and status) should be developed from files maintained by the LADOT and supplemented with data from the City Planning Department and the Community Redevelopment Agency (CRA) of the City of Los Angeles (for adopted redevelopment areas). General criteria that should be considered for the selection of cumulative projects include:

- The sphere of influence for cumulative projects, based on their proposed size and likely influence on traffic patterns, generally within one or two miles of the proposed project;

- Very large, regionally significant projects that are located outside the typical sphere of influence (i.e., beyond two miles from the analysis area), but could impact intersections analyzed for the project; and
- Projects proposed within neighboring jurisdictions if they could impact the same analyzed intersections.

Determine the trip generation and distribution for cumulative projects using the procedures described above for the project. Add the existing traffic volumes, factored by the ambient

growth rate, to the estimated cumulative projects trips to develop cumulative base traffic projections at the study intersections.

Using the appropriate intersection capacity methodologies described in Evaluation of Screening Criteria, quantify the cumulative base LOS at the study intersections for the projected cumulative traffic volumes. Also, incorporate any approved mitigation measures associated with the cumulative projects into the cumulative base traffic assessment.

Cumulative Plus Project Impact

Using the project trip generation estimates and distribution patterns developed above, assign the project-generated trips to the street system. Then, add the estimated project-generated trips to the cumulative base traffic volumes to develop cumulative plus project traffic projections at the study intersections. Determine the final LOS[4] and the change in the V/C ratio and compare to the Significance Threshold.

Sample Mitigation Measures

Potential mitigation measures include transportation demand management (TDM) measures, transportation system management (TSM) measures, physical roadway improvements, or a combination thereof. The following lists a variety of possible mitigation measures in priority order per LADOT guidelines. Consult with LADOT, as needed, for further information.

TDM Measures reduce single occupancy vehicle (SOV) trips and encourage ridesharing and transit use.[5] Individual measures and actions which could be included in a TDM plan include the following:

- A commuter transportation coordinator;
- Carpool and vanpool program, including participation in a computerized matching system;
- Parking management techniques, including elimination of parking subsidies, constraining the parking supply, preferential parking for rideshare vehicles, offering a cash equivalent of parking costs as a travel allowance, etc;
- Encourage non-vehicle modes, such as bicycling, walking, or telecommuting;

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4 *"Final LOS" is defined as projected future conditions including project, ambient, and related project growth, but without project traffic mitigation.*

5 *See the most recent edition of LADOT's Traffic Study Policies and Procedures Manual for a description of the requirements for preparation and content of a TDM plan.*

- Flexible or staggered work hours, potentially including compressed work weeks (i.e., 4/40 or 9/80 plans);
- Transit incentives and improvements, including subsidized transit passes, distribution of transit information and schedules, and provision of shelters or benches at bus stops and/or layover areas;
- Vehicle trip reduction incentives and services affecting visitors to the project, such as shoppers, clients, patrons, etc; and
- Site trip generation cap and/or parking cap including trip monitoring agreements.

Transit Capacity and Access Improvements:

- Implementation of a local shuttle bus service providing direct access from the project site to multimodal or rail transit stations;
- Bus benches, shelters, or other amenities;
- Concrete bus pads and bus stops; and
- Contributions toward transit stations or centers.

Traffic Signal Improvements:

- Addition of a signal to the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) system (available only where ATSAC has not yet been constructed or a fully-funded construction contract has not been awarded);
- Upgrade of an existing ATSAC signal system to Adaptive Traffic Control System (ATCS);
- Signal modifications, including signal timing, coordination, phasing improvements, etc; and
- New signals, which requires a traffic signal warrants analysis.[6]

Physical Improvements:

- Turn restrictions;
- One-way streets;
- Conversion of mixed-flow lanes to High Occupancy Vehicle (HOV) lanes (permanently or during peak periods);
- Reversible HOV or mixed-flow lanes;
- New roadway;

[6] *See Traffic Manual of the California Department of Transportation (Caltrans), Manual on Uniform Traffic Control Devices, by the Federal Highway Administration (FHWA), and Warrants for Traffic Signals (LADOT) to evaluate the need for traffic signals.*

- Roadway widening to add lanes;
- Extension of truncated street;
- Intersection grade separation;
- Partial intersection grade separation (i.e., left-turn flyovers);
- New freeway on- or off-ramps;
- Redesign of freeway on- and off-ramps;
- Median construction/modification to restrict access;
- Pedestrian crossing grade separation; and
- Flaring of intersections to add turn lanes.

Street Restriping and Parking Prohibitions:

- Restriping to add lanes, with or without parking removal or restrictions;
- Protected left turn pockets, or free right turn lanes; and
- Parking restrictions, daily or during peak hours.

Trip Fees/Mitigation Trust Fund:

If the project is located in a TSP area, an applicant may be required by City Ordinance to pay "trip fees" into a mitigation trust fund for implementation of larger regional projects that are specified in the TSP. If a traffic study demonstrates that the applicant is responsible for only a portion of a large and costly mitigation measure, such as a bridge or freeway ramp, a fair share contribution toward the cost of the improvement may be an acceptable mitigation.

3. DATA, RESOURCES, AND REFERENCES

LADOT, Bureau of Transportation Programs and Development Review, 100 South Main Street, 9th Floor, Los Angeles, California 90012; Telephones: (213) 972-8485 (Metro/South L.A.), (818) 374-4690 (Valley), and (213) 485-1062 (West/Coastal). For traffic study scoping, intersection/street as-built plans, traffic count files, or other assistance.

LADOT, Traffic Study Policies and Procedures Manual, March 2002 or most recent. Warrants for Traffic Signals.

City Planning Department, Community Planning Bureau, 200 North Spring Street, 6th Floor, Los Angeles, California 90012; Telephones: (213) 978-1168 (South L.A.), (213) 978-1179 (Metro/Central), (213) 978-1177 (West/Coastal). For ICOs, TSPs, Framework Regional Travel Demand Forecasting Model, Circulation Element, Proposed Transportation Element, and other planning documents.

American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 2004.

Caltrans, Highway Design Manual, 5th Edition, July 1995.

Caltrans, Traffic Manual, September 1992.

Caltrans, 2004 Traffic Volumes on California State Highways, 2005 (or latest edition).

Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices (MUTCD), Revision 1, 2003.

ITE, Traffic Access and Impact Studies for Site Development: A Recommended Practice, 1991.

ITE, Traffic Engineering Handbook, 5th Edition, 1999

ITE, Transportation and Land Development, 2003.

ITE, Transportation Planning Handbook, 2003.

LACMTA, CMP for Los Angeles County, adopted July 2004 (or most recent).

SANDAG, Trip Generators, October 1993 (or latest edition).

SCAG, 1991 Southern California Origin-Destination Survey, Summary Findings, February 1993. Available by calling (213) 236-1800.

TRB, Circular No. 212 - Interim Materials on Highway Capacity, 1980.

TRB, Highway Capacity Manual, Special Report 209, Third Edition, 1994.
NCHRP Report 323 - Travel Characteristics at Large-Scale Suburban Activity Centers, 1989.

ULI, Shared Parking, Second Edition, 2005.

FHWA, Manual on Uniform Traffic Control Devices, 2003.

FHWA, Technology Sharing Report 80-204, Design of Urban Streets, January 1980.

Exhibit L.1-1
LEVEL OF SERVICE (LOS) DEFINITIONS FOR SIGNALIZED INTERSECTIONS

LOS	Volume to Capacity (V/C) Ratio	Definition
A	0.000 - 0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	GOOD. Occasionally drivers have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: TRB, Circular No. 212, Interim Materials on Highway Capacity, 1980.

Exhibit L.1-2
LEVEL OF SERVICE (LOS) DEFINITIONS FOR TWO-WAY AND ALL-WAY STOP-CONTROLLED INTERSECTIONS

LOS	Average Vehicle Delay (seconds)
A	0.0 - 5.0
B	5.1 - 10.0
C	10.1 - 20.0
D	20.1 - 30.0
E	30.1 - 45.0
F	> 45.0

Source: TRB, Highway Capacity Manual, Special Report 209, Third Edition, 1994.

Exhibit L.1-3
PASS-BY TRIP DISCOUNT RATES

The pass-by trip reduction rates shown below are used for land development projects by the LADOT. However, these rates are superseded by additional guidelines provided in TSPs or ICOs. These rates are not applicable to review of impacts at project driveways and the intersection(s) immediately adjacent to the project site, and are not used in determining the need for a traffic study.

PASS-BY TRIP DISCOUNT RATE	LAND USE CATEGORY
10%	Shopping Center 600,000 sf or more, Quality Restaurant, Specialty Retail, Furniture Store, Medical Office, Day Care, Theater/Cinema, Auto Sales/Repair
20%	Shopping Center 300,000 to less than 600,000 sf, Bank/Savings & Loan, High Turnover Restaurant, Car Wash, Hardware/Lumber Store, Garden Center, Recreation/Health Club
30%	Shopping Center 100,000 to less than 300,000 sf, Discount Club, Discount Store, Auto Parts, Music/Video Store
40%	Shopping Center 50,000 to less than 100,000 sf, Supermarket, Drugstore, Bookstore
50%	Shopping Center less than 50,000 sf, Fast Food Restaurant, Gasoline/Service Station, Convenience Market, Flower/Bakery/Yogurt Shop, Dry Cleaner, Liquor Store

Note: sf = square feet

Source: LADOT.

L.2. STREET SEGMENT CAPACITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XV.a): Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

B. Introduction

This issue involves the ability of a street or roadway segment to accommodate increased vehicular traffic demands associated with a proposed project. The impact typically results from the addition of new traffic generated by a project to a street segment although, in situations where a project involves street vacations or other substantial street system changes, it can also result from diverted or shifted traffic caused by the project or a combination of new and diverted traffic.[1] The impact is measured as the effect of the project on traffic operating conditions, expressed in terms of level of service (LOS) and volume to capacity (V/C) ratio. Impacts are related to factors such as type of use, development densities, capacity of transportation system, and other characteristics of the project and surrounding area.

Street segment capacity impacts are generally evaluated in program-level analyses (such as specific plans or long-range development projects) for which details regarding specific land use types, sizes, project access points, etc., are not known. If such details are known, see L.1. INTERSECTION CAPACITY for applicability. As a travel demand forecasting model is generally used to develop traffic projections, the future study year will usually be the same as the horizon year used by the regional models. Depending on the project, it may not be necessary to evaluate street segment capacity impacts in addition to intersection capacity impacts. Street segment capacity impacts are evaluated for permanent traffic increases after project completion.

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[1] *Impacts related to loss of capacity due to temporary lane or street closures associated with projects requiring construction activity within the street are discussed in L.8. IN-STREET CONSTRUCTION IMPACTS.*

The following traffic scenarios are to be analyzed for street segment capacity impacts:

- Existing Conditions;
- Cumulative Base Conditions (scenario assuming "No Growth" in program area); and
- Cumulative Plus Project Conditions (project can represent full buildout of a plan or a probable market scenario).

C. Screening Criteria

- Would the proposed project generate and/or cause a diversion or shift of 500 or more daily vehicle trips or 43 or more a.m. or p.m. peak hour trips?

A "yes" response to the preceding question indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Street Segment Capacity, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Street Segment Capacity from the proposed project.

D. Evaluation of Screening Criteria

Estimate the project trip generation using the trip generation and distribution methodologies in L.1. INTERSECTION CAPACITY. Compare the result to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A proposed project would normally have a significant street segment capacity impact if project traffic causes an increase in the V/C ratio on the street segment operating condition after the addition of project traffic equal to or greater than the following:

V/C ratio increase ≥0.080 if final LOS* is C
V/C ratio increase ≥0.040 if final LOS* is D
V/C ratio increase ≥0.020 if final LOS* is E or F

* "Final LOS" is defined as projected future conditions including project, ambient, and related project growth but without project traffic mitigation.

B. Methodology to Determine Significance

Environmental Setting

Describe the existing traffic conditions based on the appropriate study area, time periods, existing transportation facilities, traffic counts, and LOS, as detailed below.

Study Area and Time Periods for Analysis. Identify the geographic study area (i.e., street segments to be analyzed), based on project size, type, location, and existing levels of traffic, in consultation with the Los Angeles Department of Transportation (LADOT). Include key major streets and secondary highways and the appropriate arterial street approaches in the Congestion Management Program (CMP). For most projects, analyze existing traffic for both the a.m. and p.m. weekday peak hours. For some projects, analysis of other time periods, such as mid-day or weekend periods, may be required if those are expected to be the prime periods of trip generation for the project (e.g., a recreational project).

Existing Setting. Inventory existing traffic conditions including, the following:

- A description of the existing street system serving the defined study area (i.e., number of lanes, traffic control devices, on-street parking, etc.); and

- Existing peak hour traffic volumes on study street segments. Traffic counts should not be older than two years.

Quantify the existing peak hour V/C ratios and LOS at the study street segments using the street capacity methodology described below.

Street Segment Capacity Methodology. Peak hour roadway (street segment) capacities are based upon several parameters including number of lanes, median type, roadway width, parking conditions, and spacing of signalized intersections. Vehicle capacities are based on the street classification. Consult with LADOT regarding roadway capacities, as needed.

For each study street segment, divide peak hour directional traffic volumes by the directional street segment capacity (determined by multiplying the number of lanes with the selected lane capacity) to calculate a V/C ratio, which is then used to determine LOS. LOS definitions for street segments are included in Exhibit L.2-1.

Project Impacts

Impacts are determined by comparing street segment LOS for the cumulative base and cumulative plus project (final LOS) traffic projections, using the defined significance threshold. The Los Angeles Department of Transportation (LADOT) should be consulted to determine the method in which to develop the traffic projections. Future base traffic volumes may be calculated using traffic growth factors or by employing a travel demand forecast model.

- **Travel Demand Forecasting Model.** Use the focused travel demand forecasting model, which is based on the Citywide Framework model, to forecast future traffic conditions. Additional street network and traffic zone detail should be added in the program study area, which requires disaggregation of the Framework model trip tables. The development of the focused area model may require other modifications and calibration. Consult with LADOT for further information.

- **Program Trip Generation**. Once the model is calibrated, replace the Framework model vehicle projections for the study area with trip ends consistent with the expected type and level of development under the project. Trips should be generated by trip type (e.g., home-work, home-other, non-work), and converted to peak hour trip tables.

- **Trip Distribution**. Using the focus area model, it is suggested that a trip table balancing process be used for each trip type to replicate the trip distribution inherent in the Framework model, prior to conversion of the daily trip tables to peak hour.

Cumulative Impacts

As described above in Project Impacts, develop the focus area model using the Citywide Framework model as the basis for the remainder of the City and the region, with additional model detail added in the program study area. The long-range regional socioeconomic growth projections inherent in the Framework model (which incorporates socioeconomic projections from the Southern California Association of Governments (SCAG) for the region outside of Los Angeles) would represent cumulative base conditions for the study. If necessary, the model trip tables can be adjusted to account for significant large cumulative developments which were not included in the original Framework model trip tables.

Cumulative Plus Project Impacts

Project impacts are usually compared against future cumulative base conditions (the "No Growth" scenario for programs). The model trip tables will likely require modification to replace future growth inherent in the regional models with "no growth" estimates for the program area. Follow the procedures described above for program trip generation to modify the trip tables. Using the street segment capacity methodology described previously, quantify cumulative base LOS at the study street segments from the travel demand focus area model and compare to cumulative plus project LOS (final LOS).[2]

Sample Mitigation Measures

See L.1. INTERSECTION CAPACITY.

3. DATA, RESOURCES, AND REFERENCES

See L.1. INTERSECTION CAPACITY.

[2] *"Final LOS" is defined as projected future conditions including project, ambient, and related project growth, but without project traffic mitigation.*

Exhibit L.2-1
LEVEL OF SERVICE (LOS) DEFINITIONS FOR ARTERIAL STREET SEGMENTS

LOS	Volume to capacity (V/C) Ratio	Definition
A	0.000 - 0.600	EXCELLENT. Primarily free-flow conditions at about 90 percent of free-flow speed. Vehicles are completely free to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	0.601 - 0.700	VERY GOOD. Reasonably unimpeded flow at about 70 percent of free-flow speed. Ability to maneuver is only slightly restricted and delay at intersections is not bothersome.
C	0.701 - 0.800	GOOD. Stable operations at about 50 percent of free-flow speed. Ability to maneuver and change lanes may be restricted at mid-block locations. Motorists will begin to experience appreciable tension while driving.
D	0.801 - 0.900	FAIR. Small increases in flow begin to cause substantial increases in intersection approach delay. Ability to maneuver becomes more difficult, with speeds about 40 percent of free-flow speed.
E	0.901 -1.000	POOR. Characterized by significant delays at intersection approaches and travel speeds about one-third of free-flow speed or less. Ability to maneuver is severely restricted and driver tension is high.
F	> 1.000	FAILURE. Extremely low travel speeds and unstable traffic flow. Characterized by long delays at intersection approaches, severe difficulty in maneuvering between lanes, and extremely high driver tension.

Source: Adapted from Transportation Research Board (TRB), Highway Capacity Manual, Special Report 209, Third Edition, 1994.

L.3 FREEWAY CAPACITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XV.a): Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

XV.b): Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

B. Introduction

This issue involves the ability of a freeway segment or a freeway on- or off-ramp to accommodate increased vehicular traffic demands associated with a proposed project. The impact typically results from the addition of new traffic generated by a project. The impact is measured in terms of the project's effect on freeway operating conditions expressed as level of service (LOS) and demand to capacity (D/C) ratio. On- and off-ramps, similar to street segments, are evaluated in terms of volume to capacity (V/C) ratios and LOS.

Freeway capacity impacts can be evaluated for both short-range development projects and long-range projects for which details, such as site access points, are not yet known. Freeway capacity impacts are typically evaluated for permanent traffic increases after project completion, but can also be evaluated for temporary traffic increases generated during project construction. The future year to be analyzed should be consistent with that analyzed in the intersection capacity or street segment capacity analysis.

The California Department of Transportation (Caltrans) is responsible for the construction and operation of state highways and interstate freeways. Traffic congestion is monitored regionally by the County Transportation Commissions (Los Angeles County Metropolitan Transportation Authority (Metro)), according to state requirements.

C. Screening Criteria

- Would the proposed project add 150 or more one-way vehicle trips to a Congestion Management Program (CMP) mainline freeway monitoring segment during either the a.m. or p.m. peak hours?

- Would the proposed project add 50 or more a.m. or p.m. peak hour trips to a freeway on- or off-ramp?

A "yes" response to any of the preceding questions indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Freeway Capacity and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Freeway Capacity from the proposed project.

D. Evaluation of Screening Criteria

Estimate the number of trips to be generated by the proposed project using the trip generation and distribution methodologies in L.1. INTERSECTION CAPACITY and compare to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant freeway capacity impact if project traffic causes an increase in the D/C ratio on a freeway segment or freeway on- or off-ramp of 2 percent or more capacity (D/C increase $\geq$0.02), which causes or worsens LOS F conditions (D/C >1.00).

B. Methodology to Determine Significance

Environmental Setting

Describe the existing traffic conditions based on the appropriate study area, time periods, existing transportation facilities, traffic counts, and LOS.

Study Area and Time Periods to be Analyzed. Identify the geographic study area (i.e., freeway segments and on- or off-ramp(s) to be analyzed) based on project size, type, location, and existing levels of traffic.

For most projects, analyze existing traffic for both the a.m. and p.m. weekday peak hours. For some projects, other time periods, such as mid-day or weekend periods, may be required if those are expected to be the prime periods of trip generation (e.g., for a recreational project).

Existing Setting. Inventory existing traffic conditions, including the following:

- A description of the freeway system serving the study area (i.e., number of lanes, location of interchanges and ramps serving study area, etc.); and

- Existing peak hour traffic volumes on study freeway segments and on- and off-ramps.

Existing freeway traffic counts can be obtained from the most recent CMP or Caltrans. Traffic counts should not be older than two years.

Freeway Capacity Methodology. Quantify the existing peak hour D/C ratios and LOS at the study freeway segments by dividing peak hour directional traffic volumes by the directional freeway segment capacity (determined by multiplying the number of mainline freeway lanes with a per lane capacity value of 2,000 vehicles per hour) to calculate a D/C ratio, which is then used to determine LOS. Exhibit L.3-1 shows LOS definitions for freeway segments. This is the methodology described in the Congestion Management Program (CMP).

On- and Off-Ramp Methodology. Calculate V/C ratios and LOS for study on- and off-ramps.[1] Traffic counts may be obtained from Caltrans, Metro, Los Angeles Department of Transportation (LADOT), field counts, or other appropriate methods. Ramp capacity is a function of the number of lanes, their configuration, and road geometry. LOS definitions for on- and off-ramps are the same as arterial street segments (Exhibit L.2-1).[2]

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1 *See Transportation Research Board's (TRB) Highway Capacity Manual, Special Report 209. Third Edition, 1994*

2 *See L.2. STREET SEGMENT CAPACITY.*

Project Impacts

Estimate the project trips to be added to freeway segments and on- and off-ramps using the trip generation and distribution methodologies in L.1. INTERSECTION CAPACITY, or L.2. STREET SEGMENT CAPACITY, as appropriate. Add to the future cumulative base levels and compare the resulting LOS and D/C ratio to the significance threshold to determine project impacts.

Cumulative Impacts

Follow the methodologies presented in L.1. INTERSECTION CAPACITY, or L.2. STREET SEGMENT CAPACITY, as appropriate. Future base traffic volumes may also be calculated by using the traffic growth factors provided in the most recent edition of the CMP, through consultation with Caltrans, or through subarea modeling.

Cumulative Plus Project Impacts

Add project traffic volumes at freeway segments and on- and off-ramps to the cumulative base levels. Compare the resulting LOS and D/C ratios to the Significance Threshold.

Sample Mitigation Measures

See L.1. INTERSECTION CAPACITY.

3. DATA, RESOURCES, AND REFERENCES

See L.1. INTERSECTION CAPACITY.

Exhibit L.3-1
LEVELS OF SERVICE (LOS) FOR FREEWAY SEGMENTS

Level of Service (LOS)	Demand to Capacity (D/C) Ratio	Service Rating	Flow Conditions
A	0.00 – 0.35	Good	Operating speed of 55+ mph. No delay. Highest quality of service. Free traffic flow, low volumes and densities. Little or no restriction on maneuverability or speed.
B	>0.35 – 0.54	Good	Operating speed of 50 mph. Minimal delay. Stable traffic flow, speed becoming slightly restricted. Low restriction on maneuverability.
C	>0.54 – 0.77	Adequate	Operating speed of 45 mph. Minimal delay. Stable traffic flow, but less freedom to select speed, change lanes, or pass. Density increasing.
D	>0.77 – 0.93	Adequate	Operating speed of 40 mph. Minimal delay. Approaching unstable flow. Speed tolerable but subject to sudden and considerable variation. Less maneuverability and driver comfort.
E	>0.93 – 1.000	Poor	Operating speed of 35 mph. Significant delays. Unstable traffic flow with rapidly fluctuating speeds and flow rates. Short headways, low maneuverability and low driver comfort.
F	>1.000	Poor	Operating speed up to 20 mph. Considerable delays. Forced traffic flow. Speed and flow may drop to zero with high densities.

Source: Adapted from CMP for Los Angeles County, LACMTA, 2004

L.4. NEIGHBORHOOD INTRUSION IMPACTS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XV.a): Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

B. Introduction

This issue involves impacts of traffic generated by the project, and/or traffic diverted or shifted due to the project, on local streets in residential neighborhoods. Such impacts may result from increased traffic volumes on neighborhood streets or increased delays for vehicles exiting the neighborhood. Traffic conditions are typically expressed in terms of daily volume of traffic.

Evaluation of potential neighborhood intrusion impacts requires details regarding site access. Impacts are related to traffic volume, location of site access points in relation to neighborhood streets, traffic controls, and capacity of area streets. Neighborhood intrusion impacts are typically evaluated for permanent traffic increases after project completion, but can also be evaluated for temporary traffic increases during project construction. Analyze the same future year that is analyzed in the intersection capacity analysis. The Los Angeles Department of Transportation (LADOT) may require a Residential Neighborhood Traffic Management Program be prepared for certain projects. Contact LADOT for further information.

C. Screening Criteria

Would the proposed project:

- Generate more than 120 daily vehicle trips to a local residential street?

A "yes" response to the preceding question indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the

Significance Threshold for Neighborhood Intrusion Impacts, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Neighborhood Intrusion from the proposed project.

D. Evaluation of Screening Criteria

The potential for neighborhood intrusion is generally based on preliminary trip generation and distribution and the location of project access points relative to local residential streets. Use the project traffic study or see L.1. INTERSECTION CAPACITY for trip generation and distribution methodologies and compare the results to the Screening Criteria. Identify the number of trips distributed to local neighborhood streets. Also, identify points at which project traffic could impact a local residential street located adjacent to, or across an arterial from, the project.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant neighborhood intrusion impact if project traffic increases the average daily traffic (ADT) volume on a local residential street in an amount equal to or greater than the following:

ADT increase ≥ 16% if final ADT* <1,000
ADT increase ≥12% if final ADT* ≥1,000 and <2,000
ADT increase ≥10% if final ADT* ≥2,000 and <3,000
ADT increase ≥8% if final ADT* ≥3,000

* "Final ADT" is defined as total projected future daily volume including project, ambient, and related project growth.

The significance of neighborhood intrusion impacts related to vehicle delay shall be determined on a case-by-case basis.

B. Methodology to Determine Significance

Environmental Setting

Describe existing traffic conditions based on the appropriate study area, time periods, existing transportation facilities, traffic counts and level of service (LOS), as detailed below.

Study Area and Time Periods to be Analyzed. Determine the residential street segments to be analyzed, based upon consideration of the potential trip generation of the project, the location of project access points, and the residential streets which are most likely to be affected. Residential neighborhood intrusion impacts are measured in terms of daily traffic volumes.

Existing Setting. Describe existing traffic conditions, including the existing residential streets to be included in the study (i.e., number of lanes, traffic control devices, on-street parking, etc.) and existing daily traffic volumes on the analyzed residential streets. Traffic counts should not be older than two years.

Project Impacts

Use the project traffic study or use the methodology in L.1. INTERSECTION CAPACITY to estimate the daily trip generation and distribute it on the street system to forecast the amount of project traffic which may travel along the analyzed residential streets. Determine the project impact by comparing the projected cumulative base and cumulative plus project ADT volumes for the analyzed residential streets and comparing the result to the Significance Threshold

Cumulative Impacts

Develop cumulative base daily traffic forecasts for the analyzed residential streets, considering both the proposed project and related projects, using the methodology in L.1. INTERSECTION CAPACITY. Determine the resulting impact.

Sample Mitigation Measures

Similar to intersection capacity impacts, potential mitigation measures for neighborhood intrusion impacts can include Transportation Demand Management (TDM) measures to reduce overall traffic levels, transportation system management (TSM) measures or physical improvements on arterial streets to encourage travel on non-residential streets (as listed in L.1. INTERSECTION CAPACITY). In addition, neighborhood traffic control measures can be implemented as mitigation measures to discourage travel on local residential streets. Specific mitigation measures are generally determined through consultation with LADOT, the appropriate City Council office, and the community. Neighborhood traffic control measures include:

- Speed humps;

- Signalized mid-block pedestrian crosswalks;
- Traffic signal timing modifications;
- Additional stop signs;
- Speed limit reductions;
- Diverters or semi-diverters;
- Cul-de-sac or street closure;
- Chokers or narrowing of street widths; and
- Turn restrictions.

In addition, LADOT may require a Residential Neighborhood Traffic Management Program be prepared. Contact LADOT for further information.

3. DATA, RESOURCES, AND REFERENCES

American Society of Civil Engineers **, Residential Streets Task Force**, Stanford P. LaHue, Sr., chmn., Residential Streets, Second Edition, 1990.

Institute of Transportation Engineers (ITE), Residential Street Design and Traffic Control, 2001.

See also L.1. INTERSECTION CAPACITY.

L.5. PROJECT ACCESS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XV.d): Would the project increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?
XV.e): Would the project result in inadequate emergency access?
XV.g): Would the project conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

B. Introduction

Project access impacts relate to the provision of access to and from the project site, and may include safety, operational, or capacity impacts. Impacts can be related to vehicular/vehicular, vehicular/bicycle or vehicle/pedestrian conflicts as well as to operational delays caused by slowing and/or queing to access a project site. These conflicts may be created by the driveway configuration or through the placement of project driveways in areas of inadequate visibility, adjacent to bicycle or pedestrian facilities, or too close to busy or congested intersections. Evaluation of project access impacts requires details regarding land use, size, design, location of access points, etc. These impacts are typically evaluated for permanent conditions after project completion, but can also be evaluated for temporary conditions during project construction. See K.2 FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES for impacts related to emergency vehicles.

Project access can be analyzed in qualitative and/or quantitative terms, in conjunction with a review of internal site circulation and access to parking areas. In addition, peak hour LOS may be quantified for primary site access points, as necessary, using the procedures discussed previously in L.1. INTERSECTION CAPACITY.

C. Screening Criteria

- Would the proposed project generate 500 or more daily trips or 43 or more vehicle trips during either the a.m. or p.m. peak hours?

If yes, would any of the following occur:

- Is a project driveway proposed on a major or secondary highway within 150 feet of an intersection with another major or secondary highway?

- Would a project driveway intersect an on-street bicycle lane or cross a sidewalk in an area of high pedestrian activity?

- Can it be readily perceived that there are access risks or deficiencies associated with the adjoining street system due to curves, slopes, walls or other barriers to adequate lines of sight?

A "yes" response to the first question and one of the other three questions indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Project Access, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the first question and all of the following questions indicates that there would normally be no significant Project Access impacts from the proposed project.

D. Evaluation of Screening Criteria

Identify the estimated number of daily and peak hour trips the project would generate using the project traffic study or the methodology in L.1. INTERSECTION CAPACITY. Review project site plans and the existing transportation facilities (including bicycle and pedestrian facilities) surrounding the project site. Roadway classifications are noted in the Transportation Element, or consult with Los Angeles Department of Transportation (LADOT). LADOT can also advise regarding access risks or deficiencies that may contribute to unsafe conditions. For projects in areas of potentially high pedestrian activity, consider performing a pedestrian capacity or LOS analysis. Compare the results to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

Project Access (operational)

A project would normally have a significant project access impact if the intersection(s) nearest the primary site access is/are projected to operate at LOS E or F during the a.m. or p.m. peak hour, under cumulative plus project conditions.

Bicycle, Pedestrian and Vehicular Safety

The determination of significance shall be on a case-by-case basis, considering the following factors:

- The amount of pedestrian activity at project access points.
- Design features/physical configurations that affect the visibility of pedestrians and bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists.
- The type of bicycle facility the project driveway(s) crosses and the level of utilization.
- The physical conditions of the site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, that could result in vehicle/pedestrian, vehicle/ bicycle or vehicle/vehicle impacts.

B. Methodology to Determine Significance

Environmental Setting

Determine the existing LOS at the intersections nearest the project site (see the traffic study or L.1. INTERSECTION CAPACITY, as appropriate). Describe existing traffic facilities and conditions, including bicycle lanes and/or paths and sidewalks with regular pedestrian activity. Note the distance between site access points and arterial intersections and other conditions (such as curves or grade changes) that may affect traffic safety.

Project Impacts

To identify operational access impacts, use the methodology described in L.1. INTERSECTION CAPACITY and calculate the cumulative plus project volume to capacity (V/C) ratio at the intersection(s) nearest the project access by estimating project-generated trips and adding to the cumulative base projections. Determine the corresponding LOS for the a.m. and p.m. peak hours and compare to the significance threshold.

For vehicle/vehicle and bicycle and pedestrian safety impacts, review all project access points, internal circulation, and parking access from an operational and safety perspective (for example, turning radii, driveway queuing, line of sight for turns into and out of project

driveway(s)). Where project driveways would cross pedestrian facilities or bicycle facilities (bike lanes or bike paths), consider operational and safety issues related to the potential for vehicular/pedestrian and vehicular/bicycle conflicts and the severity of consequences that could result. In areas with high levels of pedestrian or bicycle activity, the collection of pedestrian or bicycle count data may be required.

Cumulative Impacts

Review the related projects or growth assumptions for projects that could impact the same street segments or intersections as the proposed project. For qualitative assessments, review project site access plans for projects that would impact the same primary intersections, bicycle routes or pedestrian facilities as the proposed project. Determine the combined impact and the project's contribution.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Installation of a traffic signal or stop signs or electronic warning devices at site access points;
- Redesign and/or relocation of project access points;
- Redesign of the internal (on-site) circulation system;
- Installation of stop-signs and pavement markings internal to the site; and
- Restrict or prohibit turns at site access points.

3. DATA, RESOURCES, AND REFERENCES

Institute of Transportation Engineers (ITE), Guidelines For Driveway Location & Design, 1987.

See also L.1. INTERSECTION CAPACITY.

L.6. TRANSIT SYSTEM CAPACITY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

VI.h): Would the proposal result in a substantial impact upon existing transportation systems?

B. Introduction

This issue involves the potential impacts of the proposed project on the existing transit system ridership and capacity from the increased demand by project residents, employees, patrons, etc. Where project details are known, impacts are evaluated on specific transit lines. Where specific development sizes and land use are not known, analyses can be at a more generalized level for the project area. Transit system capacity impacts are typically evaluated for permanent impacts after project completion.

C. Screening Criteria

- Will an Environmental Impact Report (EIR) be prepared for the proposed project to evaluate potential transportation impacts?

A "yes" response to the preceding question indicates that further study of this issue may be required. Refer to the Significance Threshold for Transit System Capacity, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that no further review of Transit System Capacity would normally be required.

D. Evaluation of Screening Criteria

Review the description of the proposed project and the CEQA determination for other transportation impacts. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the projected number of additional transit passengers expected with implementation of the proposed project and available transit capacity.

B. Methodology to Determine Significance

Environmental Setting

Describe the public transit system serving the study area, including both existing and planned bus, rail, and paratransit systems. Include all local fixed route transit services within a ¼ mile radius of the proposed project site, and express bus routes and passenger rail services within a two mile radius of the project site.

Project Impacts

Use the traffic study to identify the estimated number of daily and peak hour trips to be generated by the proposed project and the mode split analysis to determine the number of transit trips expected. If this has not been done, use the methodology in the trip generation section of L.1. INTERSECTION CAPACITY, or the most recent Congestion Management Program (CMP).

Identify the expected impacts; consult with the affected transit operators as needed. The transit operator (Los Angeles Department of Transportation (LADOT) or other) may request additional information in response to the Notice of Preparation (NOP). Note any design or program elements of the project, if any, that will encourage public transit use, including the applicable requirements of the City's Transportation Demand Management (TDM) Ordinance and any project-specific measures that will enhance capacity or support transit use (i.e., employee shuttles, van pools).

Cumulative Impacts

Identify the related projects which would use any of the same systems or transit lines as the proposed project. Assess the combined impact of the proposed and related projects and the project's proportional contribution to the cumulative demand using the methodology described above for Project Impacts.

Sample Mitigation Measures

Mitigation measures for transit impacts could occur at either the project or transit operator level. The following are some options to consider; all would require coordination with the transit operator and/or LADOT.

Measures Implemented by Project:

- Install bus stop shelters, benches, or other amenities;
- Provide new private transit service (e.g., employee shuttles, private commuter express services);
- Contribute facilities, equipment, or funds to increase the capacity of existing transit systems, add stations, upgrade traffic signals to alow for Transit Priority Systems, or expedite transit flow; and
- Provide concrete bus pads at bus stops.

Measures Implemented by Transit Operator:

- Minor re-routing of public transit line;
- Increased frequency of public transit service; and
- Provide new public transit service.

3. DATA, RESOURCES, AND REFERENCES

See L.1. INTERSECTION CAPACITY.

L.7. PARKING

1. INITIAL STUDY CHECKLIST PROCESS

A. Initial Study Checklist Question

XV.f): Would the project result in inadequate parking?

B. Introduction

Parking impacts can result from the provision of an insufficient parking supply to serve a project. Such impacts can be manifested by spillover of project parking demands to nearby on-street or off-street parking facilities. Concerns often arise if project parking demands intrude into nearby residential neighborhoods.

Parking impacts are analyzed for projects when details regarding land use, size, proposed parking supply and internal layout, etc., are known. Parking impacts are typically evaluated for permanent conditions after project completion. To evaluate temporary conditions during project construction, see L.8 IN-STREET CONSTRUCTION IMPACTS.

C. Screening Criteria

- Would the project's proposed parking supply be less than that required by City code, including Los Angeles Municipal Code (LAMC), Transportation Specific Plan (TSP) or Interim Control Ordinance (ICO) requirements, prior to applying for a variance, exemption, or amendment, if any apply to the project?

- If the project is located within the coastal zone (generally, 1000 yards inland of the mean high tide line), would the project's proposed parking supply be less than that required by California Coastal Commission requirements?

A "yes" response to any of the preceding questions indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Parking, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant Parking impacts from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project. Apply the appropriate City parking requirements (including LAMC, TSP, ICO, Specific Plan (SP) or Transit Oriented District (TOD) requirements, if any) to the proposed project land uses to determine the required amount of parking. Determine California Coastal Commission requirements if the project is located within the coastal zone. Compare these amounts to the proposed parking supply and review the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on parking if the project provides less parking than needed as determined through an analysis of demand from the project.

B. Methodology to Determine Significance

Environmental Setting

Describe the existing parking supply in the vicinity of the proposed project, including both on-street and off-street parking. Also note any existing parking on the project site. Include a summary of current parking utilization within ¼ mile of the project site if the project proposes using other off-street or on-street parking spaces to meet the code requirements.

Project Impact

Demand Analysis. There are several factors which can affect the actual parking demand for a project. Depending upon individual project characteristics, one or more of the following specialized demand analyses could be performed:

- Transit Mode Split Discount - City parking requirements can be adjusted downward to reflect prevailing or projected transit ridership, to account for an existing or proposed transit/rail station in proximity to the project or if the project is located in an area with a high level of transit service. The LAMC

indicates that a reduction of up to 40 percent in parking requirements can be assumed for a project located at a rail station. (Also, see mode split discussion in trip generation section of L.1. INTERSECTION CAPACITY for relevant details.)

- Effect of Captive Market - The proximity of several land use types in a mixed-use development creates a potential for a captive market. Closeness facilitates walking between activities rather than using a vehicle, potentially reducing parking demands. The following sources are available to assist in estimating captive market reductions:

  - National Cooperative Highway Research Program (NCHRP) Report 323 - Travel Characteristics at Large-Scale Suburban Activity Centers;

  - Trip Generation; and

  - Urban Land Institute's (ULI) Shared Parking.

- Shared Parking - There is also a potential for shared use of parking spaces in mixed use or other projects. The shared use concept considers the fact that the peak parking demand does not occur simultaneously for the various land use elements. The shared parking model incorporates standardized hourly accumulation factors by land use types which represent the percentage of peak parking demand generated during each hour of the day. Use the methodology presented in the publication Shared Parking. The shared parking concept can also account for seasonal variations, using factors contained in Shared Parking.

- Parking Demand Rates - If, due to unique land uses or characteristics of the project (e.g., mixed use, senior housing), the City parking requirements are not considered appropriate for a project, other sources could be used to determine the peak parking demands for the project, including:

  - Shared Parking;

  - Institute of Transportation Engineers' (ITE) Parking Generation;

- Parking demand rates empirically derived from parking utilization/duration surveys conducted at similar facilities in similar areas; and

- Explicit derivation of parking demand based upon estimation of person trip generation and mode split.

Compare parking demand from one of the above methods to the proposed parking supply.

Cumulative Impacts

Identify the related projects which would utilize the same on-street or off-street parking facilities as the proposed project. Consider any deficiencies in the proposed parking supply. Evaluate the combined impact of the related and proposed projects.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Develop and implement an aggressive transportation demand management (TDM) plan. TDM measures, which result in fewer vehicles traveling to and from a project, such as increased ridesharing and increased transit use, also reduce parking needs (see L.1. INTERSECTION CAPACITY for further discussion of TDM measures);

- Modify the project to provide additional on-site parking;

- Enter into agreements with owners of nearby parking facilities to use their facilities as project parking; and

- Provide employee parking at a remote off-site location connected to the project site with a shuttle bus service.

3. DATA, RESOURCES, AND REFERENCES

Planning and Zoning Code, (Chapter 1 of the LAMC), Parking requirements, ICOs, TSPs, Local Coastal Plans. Available from the City Planning Department's Central Publications Unit at 200 N. Spring Street, Los Angeles, California 90012; Telephone: (213) 978-1255.

ITE, Manual of Traffic Engineering Studies, 2001.

ITE, Parking Generation, 3rd Edition, 2004.

ULI and the National Parking Association, The Dimensions of Parking, Fourth Edition, 2000.

See also L.1. INTERSECTION CAPACITY.

L.8. IN-STREET CONSTRUCTION IMPACTS

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XV.a): Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

XV.e): Would the project result in inadequate emergency access?

B. Introduction

This impact category addresses major in-street construction activity of an extended duration that is not exempt from the CEQA process.[1] This category also includes impacts associated with projects requiring major construction activity within a street right-of-way (ROW), such as temporary loss of access to adjacent parcels, temporary loss of bus stops, and temporary loss of on-street parking. (Off-street parking is addressed in L.7. PARKING.) Impacts associated with in-street construction activity are evaluated when details, such as the location, duration, and type of construction activity within the street ROW, are known. Given that these impacts are temporary and generally occur early in the project construction phase, the analyses are based on existing or near-term conditions. The Los Angeles Department of Transportation (LADOT) may require a traffic control plan whether or not project impacts are deemed to be significant. See K.2. FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES for impacts related to emergency vehicles.

C. Screening Criteria

- Would a project not exempted in Article VII of the City CEQA Guidelines require construction activities to take place within a major or secondary highway ROW which would necessitate temporary lane, alley, or street closures for more than one day (including day and evening hours, and including overnight closures if on a residential street)?

- Would a non-exempt project require construction activities to take place within a collector or local street ROW which would necessitate temporary lane, alley, or street closures for more than seven days (including day and evening hours, and including overnight closures if on a residential street)?

- Would in-street construction activities result in the loss of regular vehicular or pedestrian access to an existing land use for more than one day, including day and evening hours and overnight closures if access is lost to residential units?

- Would in-street construction activities result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route that serves the project site?

A "yes" response to any of the preceding questions indicates that further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for In-Street Construction Impacts, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact from In-Street Construction of the proposed project.

D. Evaluation of Screening Criteria

Review project construction plans to determine whether construction activities would result in street closures, blocked access or the loss or rerouting of transit stops. Determine the classification of street affected based upon width and average daily traffic, or contact LADOT for assistance. Identify bus stops and bus routes that serve the project construction area. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

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[1] *See City of Los Angeles CEQA Guidelines, Article VII, Categorical Exemptions.*

Temporary Traffic Impacts:

- The length of time of temporary street closures or closures of two or more traffic lanes;
- The classification of the street (major arterial, state highway) affected;
- The existing traffic levels and level of service (LOS) on the affected street segments and intersections;
- Whether the affected street directly leads to a freeway on- or off-ramp or other state highway;
- Potential safety issues involved with street or lane closures; and
- The presence of emergency services (fire, hospital, etc.) located nearby that regularly use the affected street.

Temporary Loss of Access:

- The length of time of any loss of vehicular or pedestrian access to a parcel fronting the construction area;
- The availability of alternative vehicular or pedestrian access within ¼ mile of the lost access; and
- The type of land uses affected, and related safety, convenience, and/or economic issues.

Temporary Loss of Bus Stops or Rerouting of Bus Lines:

- The length of time that an existing bus stop would be unavailable or that existing service would be interrupted;
- The availability of a nearby location (within ¼ mile) to which the bus stop or route can be temporarily relocated;

- The existence of other bus stops or routes with similar routes/destinations within a ¼ mile radius of the affected stops or routes; and

- Whether the interruption would occur on a weekday, weekend or holiday, and whether the existing bus route typically provides service that/those day(s).

Temporary Loss of On-Street Parking:

- The current utilization of existing on-street parking;

- The availability of alternative parking locations or public transit options (e.g. bus, train) within ¼ mile of the project site; and

- The length of time that existing parking spaces would be unavailable.

B. Methodology to Determine Significance

Environmental Setting

Describe the physical setting, including the classification of adjacent streets, on-street parking conditions in the immediate vicinity of the construction project, a description of the land uses affected by construction, and an inventory of existing bus stops and transit lines within a ¼ mile radius of the construction site. See L.1. INTERSECTION CAPACITY if construction impacts on intersection operating conditions are to be evaluated. See L.2. STREET SEGMENT CAPACITY if construction impacts on street segment operating conditions are to be evaluated.

Project Impacts

Review proposed construction procedures/plans to determine whether construction activity within the street ROW would require any of the following:

- Street or lane closures;

- Block existing vehicle or pedestrian access to parcels fronting the street;

- Closure or movement of an existing bus stop or rerouting an existing bus line;

- Removal of existing, heavily used, on-street parking spaces; or
- Creation of traffic hazards.

Compare the results to the significance factors to determine the level of impact. Consider safety and economic concerns, existing traffic levels, as well as congestion impacts.

Intersection and/or street segment capacity analyses may be used to determine whether street construction would result in significant impacts on the LOS. Project impacts would be determined by comparing the intersection or street segment LOS for pre-construction and construction conditions, which could incorporate expected traffic shifts.

Cumulative Impacts

Review the related projects list for those proposals with concurrent construction schedules. Identify those projects that would impact the same streets, bus stops, bus routes, parking spaces and/or access points. Determine the impact of the related projects in combination with that of the proposed project.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Traffic management plan;
- Detour plan;
- Modification of construction procedures (e.g., cut-and-cover techniques rather than open cut techniques);
- Limit major road traffic obstructions to off-peak hours;
- Coordinate with emergency service and public transit provider agencies;
- Provide alternative vehicular and/or pedestrian access to affected parcels;
- Coordinate access with adjacent property owners and tenants;

- Provide advance notification of temporary bus stop loss and/or bus line relocation;

- Provide and sign temporary bus stops within a reasonable walking distance of closed bus stops;

- Identify temporary alternative bus route(s), and provide and sign bus stops along that route;

- Provide advance notice of temporary parking loss; and

- Identify temporary parking replacement or alternative adjacent parking within a reasonable walking distance.

3. DATA, RESOURCES, AND REFERENCES

Public Works Standards Inc., Work Area Traffic Control Handbook, Ninth Edition, 2003

California Department of Transportation (Caltrans), State of California Manual of Traffic Controls for Construction and Maintenance Work Zones, 1990.

Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices (MUTCD), Revision 1, 2003.

FHWA, National Highway Institute, Design and Operation of Work Zone Traffic Control, Participant Notebook, 1987.

See also L.1. INTERSECTION CAPACITY.

M. PUBLIC UTILITIES

M.1. WATER

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XVI.b): Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

XVI.d): Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

B. Introduction

Potable water is provided in the City by the Los Angeles Department of Water and Power (LADWP). The City receives a significant portion of its supply from the Metropolitan Water District of Southern California (MWD). Additional information on the City's water supply and distribution infrastructure is provided in 3. Data, Resources, and References.

The quantity of water consumed by a project is determined by several factors, including the size, type and characteristics of a project. The need for construction of new or replacement water facilities (e.g., reservoirs, storage tanks, water mains, filtration plants, pumps, wells, and other connections or distribution facilities) would depend on the existing capacity and anticipated demand for the project area.

The Federal government has mandated low-flush toilets via the Energy/Policy act of 1992. The City of Los Angeles Ordinance Nos. 163,532 and 164,093, adopted in 1988, require new buildings to utilize low-flush toilets and urinals (1.5 gallons per flush) in order to obtain building permits. In addition, Title 20 of the California Administrative Code (CAC) Section 1604 establishes efficiency standards (i.e., maximum flow rates) for all new showerheads, lavatory faucets, and sink faucets and prohibits the sale of fixtures that do not comply with the regulations. City Ordinance No. 163,532 also contains provisions requiring xeriphytic (low-water consumption) landscaping.

Under Senate Bill 901, (Public Resources Code (PRC) and California Water Code (CWC) 10910), effective January 1, 1996, when a lead agency prepares a notice of preparation (NOP) for an

EIR for projects of a certain size, the water agency must assess whether the water demand anticipated for the project is covered by the water agency's master water management plan. If the water agency concludes that supplies are insufficient, it must provide the lead agency with: its plans for additional water supplies, including estimated total costs and financing methods associated with acquiring additional water supplies; all federal, state, and local permits, approvals, or other entitlements necessary to acquire or develop the additional water supplies; and estimated timeframes for acquiring the additional water supplies. This information is then incorporated into the project's environmental documentation.

LADWP updates its Urban Water Management Plan every five years to account for changing conditions. This Plan projects water supply and distribution needs based on anticipated growth in population, housing, and employment and identifies water supply strategies to meet this demand. LADWP currently expects to have adequate water supplies for all anticipated development in the City.

C. Screening Criteria

- Would implementation of the proposed project cause the Community Plan area to exceed the projected growth in population, housing, or employment for the year of project occupancy/buildout?

- Would the project's water consumption require the construction of additional off-site water infrastructure?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Water, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Water from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and adjacent or surrounding area, including water infrastructure serving the area. Determine whether new off-site water infrastructure would be required to meet project needs. Consult with LADWP as necessary. Infrastructure could include water mains, storage tanks, reservoirs, filtration plants, pumps, wells, and other connections

or distribution facilities. Based on the project land use types, determine the population, housing units, and employment to be generated by the project. Add this to existing levels and compare to the totals projected in the Community Plan for the year of project occupancy. Consult with the City Planning Department as needed. Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The total estimated water demand for the project;
- Whether sufficient capacity exists in the water infrastructure that would serve the project, taking into account the anticipated conditions at project buildout;
- The amount by which the project would cause the projected growth in population, housing or employment for the Community Plan area to be exceeded in the year of the project completion; and
- The degree to which scheduled water infrastructure improvements or project design features would reduce or offset service impacts.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of major water infrastructure serving the project site, including the type of facilities, location and sizes, and any planned improvements;
- Description of the water conditions for the project area and known improvement plans; and

- The existing population, housing, and employment for the Community Plan area in which the project site is located.

Project Impacts

Review the project description and the information from the Environmental Setting and Evaluation of Screening Criteria. Determine what improvements would be needed, if any, to adequately serve the project. Describe the degree to which presently scheduled off-site improvements offset impacts. As necessary, consult with LADWP or the latest Urban Water Management Plan.

Consider the water conditions for the project area, known improvement plans, and the project's water demand. The project's water demand can be calculated on the basis of estimated population and per capita demands (for residential land uses), unit demand factors by acre (for residential and non-residential land uses), or from a direct analysis of facilities and fixtures (for non-residential land uses). For planning purposes, LADWP generally forecasts demand based upon population trends and average per capita factors. LADWP does not maintain any standard unit demand factors for specific types of land uses. Residential demands can be approximated based upon LADWP per capita data. The average FY 2001-2002 residential water demand was estimated at 101 gallons per capita per day (gpcd), derived by dividing total residential water use by total estimated population within LADWP's service area.[1] This is based upon the combined Citywide mix of multiple family and single family dwelling units. In general, demand from single-family units tends to be higher, primarily because of a higher rate of outside water use for landscaping. Water demand from multi-family units tends to be lower than this average. MWD may also be consulted for typical water demand factors.

Any water conservation measures included in the proposed project, particularly those that are beyond requirements of present regulations, should be described and their impact on water use factored into the project demand, to the extent possible. These would include such measures as water reuse, drip irrigation systems, and/or computerized (moisture-sensitive) irrigation systems.

If not done under Evaluation of Screening Criteria, determine the change in population, housing units, and employment generated by the project. Compare these figures to the totals projected in the Community Plan for the year of project occupancy. Consult with the City

1 *LADWP, Urban Water Management Plan, Fiscal Year 2001-2002 Update.*

Planning Department as needed. Determine the impact from growth which exceeds the projections.

Cumulative Impacts

Review the list of related projects. Identify those that would utilize the same water infrastructure. Using the methodology described above in Project Impacts, determine the combined effect of the related projects and the proposed project on water infrastructure and the growth in population, housing and employment projected in the Community Plan.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Incorporate a recirculating hot water system to reduce waste in long piping systems where water must be run for considerable periods before hot water is received at the outlet. Use tankless water heaters;

- Retrofit other buildings within the City to offset the net water consumption induced by the proposed project;

- Use reclaimed water as a source for project irrigation systems;

- Set automatic irrigation systems to irrigate during early morning or evening hours to minimize water loss due to evaporation and reset to water less in cooler months and during rainfall season;

- Use drip irrigation and soak hoses in lieu of sprinklers to lower the amount of water lost to evaporation and overspray;

- Practice xeriscaping that exceeds City requirements;

- Recycle all water used in cooling systems to the maximum extent possible;

- If a fleet will be maintained, incorporate a water recycling system in on-site facilities for washing vehicles; and
- Perform regular preventive maintenance on all pumps, valves, and piping, in the project's water system to minimize water waste.

3. DATA, RESOURCES, AND REFERENCES

LADWP, Water Supply Division, Water Resources Unit, 111 North Hope Street, Los Angeles, California 90012; Telephone: (213) 367-2661. Current information on annual Citywide water consumption can be obtained from annual reports prepared by LADWP, or by contacting the Water Supply Division directly.

City of Los Angeles Landscape Ordinance (No. 170,978) establishes consistent landscape standards for projects, including water management, conservation and xeriscape.

The Urban Water Management Plan (UWMP) for the City of Los Angeles is prepared every five years and contains data regarding future water demand projections, water supply sources, and other water system planning information. (Available through LADWP.)

Fiscal Year 2001-2002 Annual UWMP update for questions call (213) 367-0800.

Environmental and Public Facilities Maps (1996):

- Potable Water Distribution System; and
- Potable Water Delivery System Service Areas.

Water Supply and Distribution Background Information

LADWP is responsible for supplying water within the City limits, and for ensuring that the delivered water quality meets applicable California health standards for drinking water. Total Citywide 2002 potable water demand was estimated at 670,099 acre feet (AF), and is projected to be about 749,900 AF by the year 2015.[2]

LADWP's water supply comes from these sources: local groundwater, reclaimed water, Owens Valley water, Colorado River Water, and California Aqueduct Water. Local groundwater is produced primarily from wells in the San Fernando Valley, and provides approximately 11 percent of the total supply during fiscal year 2001-2002. Two Owens Valley aqueducts owned by the City bring water from the eastern slopes of the High Sierras. Historically, the Owens Valley supplied a large majority of the City's water supply, but the amount of this source that the City can divert has been significantly reduced as a result of the settlement of environmental litigation. Most of the

[2] *LADWP, Urban Water Management Plan, June 1995.*

remainder of the water supply is purchased from MWD and delivered either from the Colorado River or from the Sacramento-San Joaquin Delta via the California Aqueduct.

LADWP has instituted significant water conservation measures that were particularly successful in reducing demands during drought. In 1995, reclaimed water supplied about 3,000-4,000 AF of water (about six percent of total demand), and the City expects to supply up to 12 percent (90,000 AF) of its total water demand with reclaimed water by the year 2015.

LADWP supplies water that meets or exceeds all health-related state and federal standards, accomplished in part in the following ways: (1) filtration of the Los Angeles Aqueduct supply at a state-of-the-art treatment plant; (2) control of access to water supply and storage areas; (3) control of algae growth and/or covering of reservoirs; (4) continuous disinfection of water entering mains; and (5) water quality testing, inspection, cross-control prevention, and older main replacement.

Water supply infrastructure includes water storage facilities, transmission and distribution pipelines, booster pumping stations, pressure reducing stations, and other related facilities. Water storage is essential for the conservation of water to supply daily peaks, meet high demand conditions, and provide for firefighting and emergencies. The City water system has 110 tanks and reservoirs ranging in size from 10 thousand to 60 billion gallons with a total capacity of 109 billion gallons. Water is distributed through a network of over 7,200 miles of water mains ranging from 4 inches to 120 inches in diameter. Because of the size and range in elevation (0 to 2,400 feet) the system has been divided into 102 pressure zones, with almost 90 booster pumping stations to provide water service at higher elevations.

Selected Legislation

State

California Administrative Code, Title 20, Section 1604 (efficiency standards)

Water Conservation in Landscaping Act, California Government Code, Division 1, Chapter 3, Article 10.8, Section 65591-65600. This Act calls for Department of Water Resources (DWR) to promote and prepare model ordinance. Provides for water efficient landscape ordinance to be adopted by local agencies.

M.2. WASTEWATER

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Question

XVI.a): Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

XVI.b): Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

XVI.c): Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

XVI.d): Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

B. Introduction

The City of Los Angeles operates wastewater treatment and reclamation facilities which serve most of its incorporated areas and several other cities and unincorporated areas in the Los Angeles basin and San Fernando Valley. The elements of the existing system are two treatment plants, two water reclamation plants, a collection system consisting of over 6,500 miles of local, trunk, mainline and major interceptor sewers, five major outfall sewers, and 46 pumping plants. (See Exhibit M.2-1).

Wastewater service and planning areas are determined by natural drainage patterns and do not generally conform to City boundaries. Cities that have contractual rights to discharge specific quantities of wastewater into the City's system are Beverly Hills, Burbank, Culver City, El Segundo, Glendale, San Fernando, Santa Monica, and Universal City. The City serves Marina Del Rey and the Naval Yard in San Pedro. In addition, County Sanitation Districts 4, 5, 9, 11, 16 and 27 serve parts or all of Hollywood, Inglewood, Windsor Hills, Baldwin Hills, Alhambra, Pasadena, and South Pasadena, which also have contractual rights to discharge specific quantities of wastewater into the City's system. The Los Angeles County Sanitation Districts serve the Harbor Gateway as well as several small "islands" north of Inglewood.

The sanitary sewer system serving the City of Los Angeles and its contract agencies is operated under the jurisdiction of the Department of Public Works. The Bureau of Sanitation provides advance planning and financial management, and maintains and operates the wastewater collection and treatment system. The Bureau of Engineering provides design and construction engineering. More detailed information on the City's wastewater collection and treatment system is included in 3. Data, Resources, and References.

Wastewater service requirements are related to the size and type of projects and geographic area served. New projects (e.g., residential, commercial, industrial) may increase wastewater generation and affect wastewater collection and treatment systems. The City's Wastewater Capital Improvement Program (CIP) includes planned improvements to the City's major sewers, pumping plants, and treatment/reclamation plants which are intended to provide capacity in the larger components for planned patterns of development. City Ordinance No. 166,060 (Sewer Allocation) limits the annual increase in wastewater flows discharged into the Hyperion Treatment System to 5 million gallons per day (mgd).

C. Screening Criteria

- Would the project produce wastewater flows greater than existing flows in an area shaded on Exhibits M.2-2 through M.2-11

- Would the project produce a new or increased average daily wastewater flow of 4,000 gallons per day (gpd) or more, regardless of location?

- Does the proposed project include a change in land use limitations (such as a zone change, variance or General Plan amendment), which could allow greater average daily flows than could be produced following the current land use limitations?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Wastewater, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant Wastewater impact from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project and project site and determine the wastewater generation that would be expected with full implementation of the project. If the proposed project would generate wastewater flows larger than existing flows, locate the project and appropriate point of connection to the wastewater collection system on the sewer capacity threshold study area maps, Exhibits M.2-2 through M.2-11, prepared by the Department of Public Works. If the project would change the land use limitations, compare the maximum average daily flows produced by the current land use and zoning designations with the amount that could be produced under the proposed project. The sewage generation factors contained in Exhibit M.2-12 may be used to calculate average daily wastewater flows for a variety of land uses. If needed, consult with the sewer permit counter staff (see 3. DATA, RESOURCES, AND REFERENCES).

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant wastewater impact if:

- The project would cause a measurable increase in wastewater flows at a point where, and a time when, a sewer's capacity is already constrained or that would cause a sewer's capacity to become constrained; or

- The project's additional wastewater flows would substantially or incrementally exceed the future scheduled capacity of any one treatment plant by generating flows greater than those anticipated in the Wastewater Facilities Plan or General Plan and its elements.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Location of the proposed development and appropriate point of connection to the wastewater collection system on the pertinent Sewer Wye Map;

- Description of the existing wastewater system which would serve the project, including its capacity and current flows. Include plans for additions or expansions of the existing system, and the population projected for the planning subregion; and

- Summary of adopted wastewater-related plans and policies that are relevant to the project area.

Project Impacts

Using the information from the Evaluation of Screening Criteria and the description of the proposed project, project site and existing wastewater infrastructure; evaluate the project's wastewater system needs. Pertinent information includes the size, type of use, and location of the proposed project, the point of connection to the wastewater collection system, and the anticipated average daily wastewater flow, taking into consideration design or operational features that would reduce or offset service impacts. If applicable, compare the maximum average daily flows anticipated with the proposed project to the maximum flows that could be produced under the existing land use designation and zoning.

Compare the project's wastewater system needs to the appropriate sewer's capacity and/or the wastewater flows anticipated in the Wastewater Facilities Plan or General Plan (including specific plans, Community Plans, etc.). A sewer's capacity is considered constrained if the depth of flow is equal to or greater than three-quarters of the sewer's diameter; "measurable" means any change greater than ½ inch (0.013 meters). Consult with the Department of Public Works sewer permit counter staff, if necessary, to gauge the anticipated capacity and demand conditions at project buildout and/or to prepare a sewer availability assessment.

Wastewater flow in gpd may be calculated by applying wastewater generation flow factors (see Exhibit M.2-12) for each of the land uses/facility types for the project. The flows for all applicable land uses may then be added in order to obtain total projected wastewater flow.

Example:

To calculate the wastewater flow from a mixed-use development with 20 one-bedroom condominiums, 20 two-bedroom condominiums, and 4,000 gross square feet (gsf) of general commercial/retail, use the wastewater generation flow factors from Exhibit M.2-12 as follows:

Residential Uses:

One bedroom condos: 20 x 120	gpd/unit	=	2,400 gpd
Two bedroom condos: 20 x 160	gpd/unit	=	3,200 gpd

Commercial Uses:

Retail:	4,000 gsf x 80 gpd/1,000 gsf	=	320 gpd
TOTAL PROJECT:			5,920 gpd

Cumulative Impacts

Review the list of related projects. Identify those that would be served by the same wastewater facilities as the proposed project. In the same manner as for Project Impacts, evaluate the cumulative impact on wastewater infrastructure. To the extent known, consider design or operational features of the related projects that would reduce or offset service impacts typically expected. Identify any wastewater capital improvement projects that would reduce or offset the expected service impacts. Determine the combined effect of the proposed project and the related projects on the wastewater infrastructure.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Retrofit other buildings with low-flow plumbing fixtures to offset wastewater generation associated with the project;

- Install a holding tank large enough to hold three times the project daily wastewater flow so that the tank would hold all project wastewater during peak wastewater flow periods for discharge into the wastewater collection system during off-peak periods;

- Include a grey water system to reuse wastewater from the project;

- Offset excess wastewater generation by restricting the wastewater generation of other land uses within the same service area (e.g., by dedicating open space); and

- Construct new wastewater treatment or conveyance infrastructure, or capacity enhancing alterations to existing systems.

3. DATA, RESOURCES, AND REFERENCES

For the most recent data and information regarding wastewater treatment and conveyance, contact the Bureau of Sanitation, Wastewater Engineering Services Division.

Wastewater Engineering Services Division
2714 Media Center
Los Angeles, CA 90065
Telephone: (323) 342-6256

Detailed information about the location, size and slope of existing sewers is available on line at http://navigatela.lacity.org/ and at the Bureau of Engineering's public counters:

Central District……201 North Figueroa Street, 3rd Floor, Counter C
Los Angeles, California. 90012
Telephone: (213) 977-7030

Valley District……..6262 Van Nuys Boulevard, Suite 251
Van Nuys, California 91401
Telephone: (818) 374-5090

West Loas Angeles District……1828 Sawtelle Blvd., 3rd Floor
West Los Angeles, California 90025
Telephone: (310) 575-8384

Harbor District……..638 South Beacon Street, Suite 402
San Pedro, California 90731
Telephone: (310) 732-4677

Information about the land uses anticipated in the general plan is available on line at http://navigatela.lacity.org/ and at the City Planning Department's Community Planning Bureau public counters. See Chapter H for contact information.

Ordinance No. 166,060 (Sewer Allocation) limits the annual increase in the wastewater quantity discharged into the HTP system to five mgd. Bureau of Engineering Special Order No. SO06-0691 changed the design peak dry weather flow for sanitary sewers from three-quarter depth to one-half the sewer diameter to implement the City-adopted goal of no overflows or diversions

from the wastewater collection system. Since these two criteria impact the sewer capacity availability assessment and approval, they should be considered in the evaluation of project impacts. Engineering personnel at the sewer permit counters implement the ordinance.

City of Los Angeles, City Planning Department. General Plan Framework Element, 1996 readopted, August 8, 2001.

The current Wastewater Facilities Plan, which addresses the City's wastewater treatment and collection needs over a 2010 planning horizon, was adopted by the City Council on January 22, 1991. The Plan is currently being revised through an integrated resource planning effort to address demand and capacity through 2020 with new construction and expansion of facilities and operations; water reclamation; and conservation. (Integrated Plan for the Wastewater Program.)

Bureau of Engineering, Wastewater Program Management Division. Wastewater Capital Improvement Program Management Plan. Part D. General Procedural Memorandum No. 16. Sewer Availability Assessment for Proposed Developments.

Wastewater Facilities Background Information

Hyperion Treatment Plant

The Hyperion Treatment Plant (HTP) is located on a 144-acre (58.3 ha) site adjacent to Santa Monica Bay, southwest of the Los Angeles International (LAX) Airport. The drainage area served by the plant is approximately 328,000 acres (133,000 ha) of the greater metropolitan area. The largest wastewater treatment facility in the City, HTP provides full secondary treatment for an average dry weather flow of 413 mgd (1.56 million m^3/d). Solids handling facilities are provided fro 468 dry tons per day.

A small portion of the HTP's effluent is reused, principally for recharging barrier wells, but most of the effluent is discharged into Santa Monica Bay. The five-mile outfall consists of a 12-foot (3.66m) diameter reinforced concrete pipe, a wye structure, and two diffuser legs that discharge primary and secondary treated effluent at a depth of 187 feet (57 m). The city also maintains a one-mile outfall, which is a 12-foot (3.66m) diameter reinforced concrete pipeline terminating at a depth of 50 feet (15.2), in standby condition in case of emergency.

Raw sludge removed from the primary sedimentation system and excess waste activated sludge from the activated sludge system, are pumped into anaerobic sludge digesters for stabilization. The resulting biosolids are either reused in agriculture, or used by landfills as daily cover. No biosolids are discharged into the ocean.

The HTP receives sewage from five major interceptor sewer systems:

- **Central Outfall Sewer (COS)**, serving South Central Los Angeles, El Segundo, and portions of Culver City;

- **North Central Outfall Sewer-North Outfall Sewer (NCOS-NOS)**, serving the southern portions of the cities of Burbank and Glendale, eastern portions of the San Fernando Valley, sections of eastern, central, and south-central Los Angeles, and portions of Culver City;

- **North Outfall Sewer-La Cienega, San Fernando Valley Relief (NOS-LCSFVRS)**, serving the central, northeastern, and western areas of the San Fernando Valley, the western portion of the City, and Beverly Hills, Hollywood, and Playa Del Rey;

- **Coastal Interceptor Sewer System (CIS)**, serving Pacific Palisades, Venice, Mar Vista, the City of Santa Monica and adjacent areas of Los Angeles County; and

- **North Outfall Replacement Sewer (NORS)**, designed to take the pressure off of the North Outfall Sewer.

Within the HTP Service Area, the City operates and maintains pumping plants at those locations where, because of inadequate hydraulic head, sewage flow must be pumped in order to reach the approximate treatment facility. These pumping plants vary in size from capacities of about 30 to 100 gallons per minute (gpm) (114-379 l/min) to capacities of up to 35,000 gpm (132,000 l/min).

Tillman Water Reclamation Plant

The Donald C. Tillman Water Reclamation Plant (TWRP) is located in the West San Fernando Valley at the intersection of Victory Boulevard and Woodley Avenue on the edge of the Sepulveda Flood Control Basin. TWRP has a current design capacity of 80 mgd (0.302 million m^3/d).

The TWRP is an upstream plant that treats constant flows, since it has the ability to bypass flow to the HTP for treatment. The TWRP receives its influent wastewater from the Additional Valley

Outfall Relief Sewer (AVORS) as well as the East Valley Interceptor Sewer (LCSFVRS) tunnel and the downstream system. This hydraulic relief eliminates dry weather overflows from the North Outfall Treatment Facility (NOTG) into Ballona Creek in Culver City.

The tertiary effluent from TWRP is used by the City for irrigating nearby parks, golf courses, greenbelt areas, and for filling the manmade Balboa Lake, or is discharged to the Los Angeles River. All waste solids are returned to AVORS for transport to HTP.

Los Angeles-Glendale Water Reclamation Plant

The Los Angeles-Glendale Water Reclamation Plant (LAGWRP) is located at the southwest junction of the Los Angeles River Flood Control Channel and Colorado Boulevard between Griffith Park and Glendale.

The LAGWRP is a full tertiary treatment facility with capacity to provide tertiary treatment for an average dry weather flow of 20 mgd (0.76 million m^3/d). The plant receives its influent wastewater from the North Outfall Sewer (NOS), thus providing hydraulic relief for the downstream interceptor conveyance facilities and the HTP, while producing recycled water. The plant effluent is pumped to the recycled water distribution system or flows by gravity to the Los Angeles River. All Solids removed from the treatment process are returned untreated to the North Outfall Sewer for conveyance to and treatment at the Hyperion Treatment Plant.

There are two other wastewater treatment facilities in the LAGWRP service area: the Burbank Water Reclamation Plant and the Los Angeles Zoo Treatment Facility.

The Burbank Water Reclamation Plant located in and owned and operated by the City of Burbank. It treats an average flow of 8.5 mgd and its effluent is used for industrial purposes or discharged to the Burbank Western Flood control Channel, a tributary channel to the Los Angeles River. Solids from the Burbank Water Reclamation Plant are conveyed to and treated at the Hyperion Treatment Plant.

The Los Angeles Zoo Treatment Facility is adjacent to the west side of the Golden State Freeway just south of the Ventura Freeway. It provides primary treatment, chlorination and dechlorination of 2.5 mgd of runoff and wash-down water from animal enclosures. The effluent is discharged to the Los Angeles River and the solids are discharged to the North Outfall Sever for conveyance to and treatment at the Hyperion Treatment Plant.

Terminal Island Treatment Plant

The Terminal Island Treatment Plant (TITP) is located on Terminal Island in the Los Angeles Harbor area and covers approximately 20 acres (8 ha). The existing facility provides tertiary treatment for an average dry weather flow of 30 mgd (0.114 million m^3/d). In addition to tertiary treatment, advanced treatment (microfiltration with reverse osmosis) can be provided for 5 mgd. The tertiary effluent flows to the Los Angeles Outer Harbor to a point approximately 3,000 feet (914 m) off-shore via a 60-inch (1,520 mm) diameter outfall. Advanced treated water is used for recharging barrier wells, landscape irrigation, boiler water and cooling water. Solids from the TITP (up to about 19 dry tons per day) are thickened, anaerobically digested, dewatered and hauled to Kern, San Diego, Los Angeles, and Riverside Counties for land application and reuse as a soil amendment.

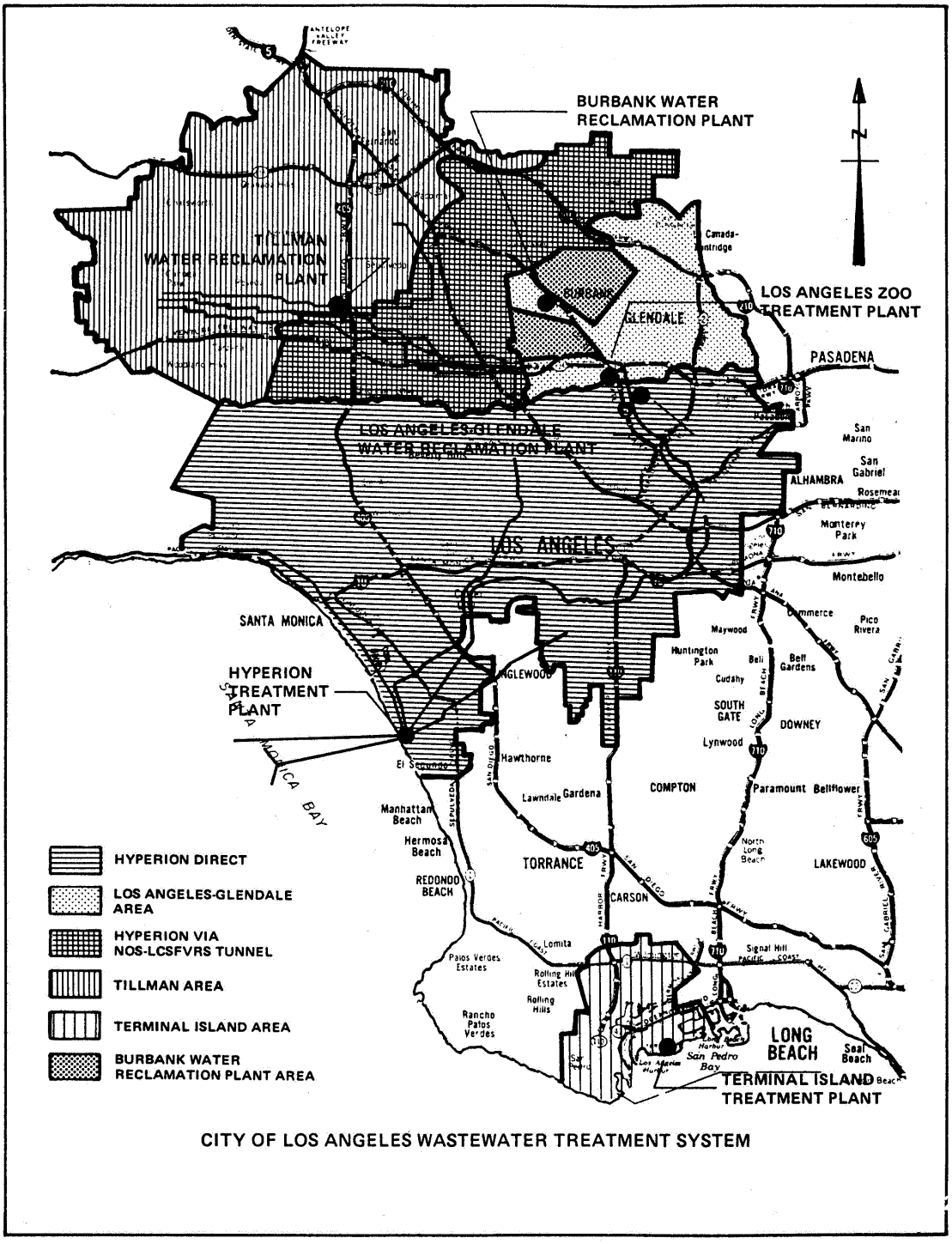
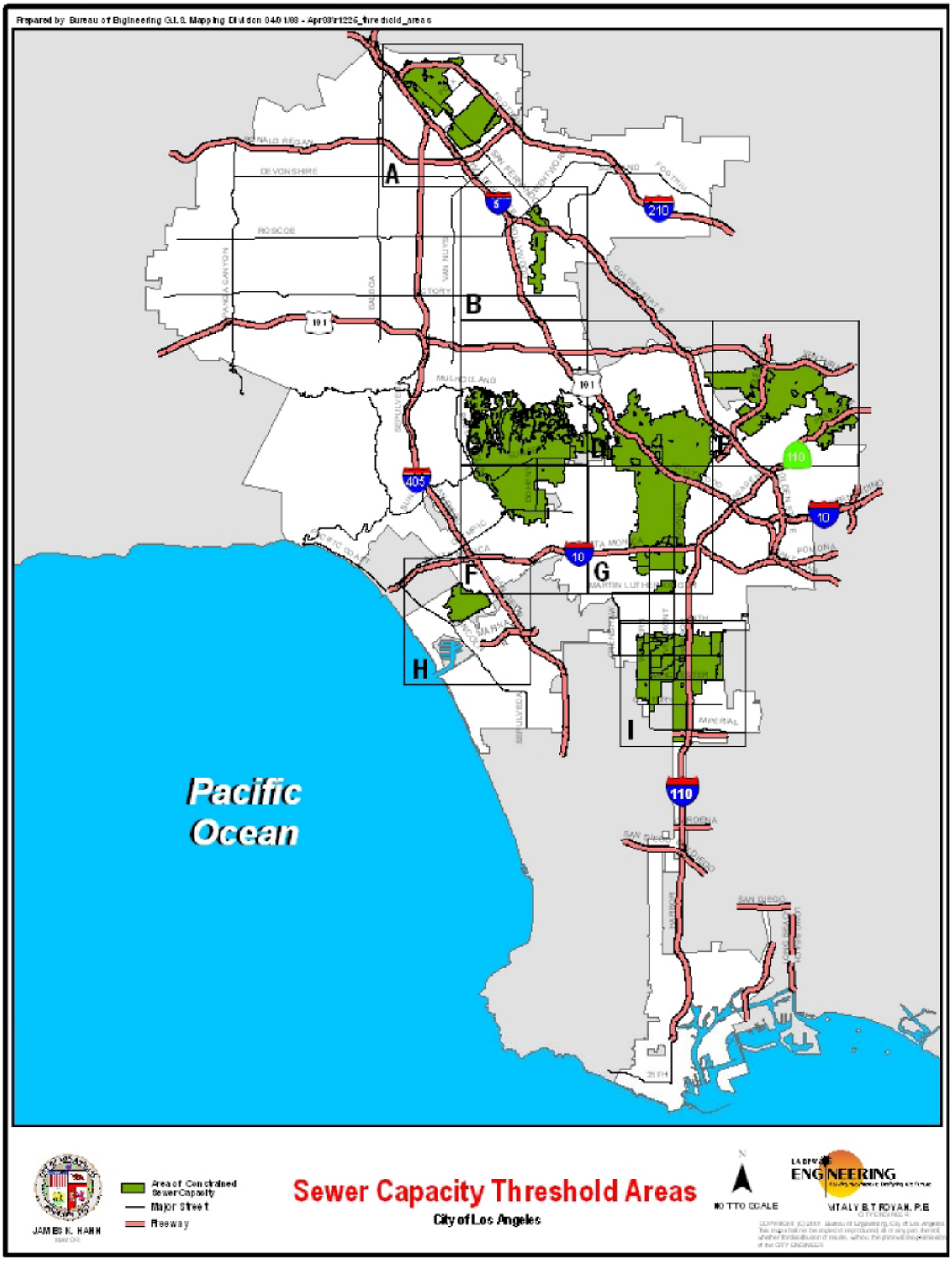

BURBANK WATER RECLAMATION PLANT
TILLMAN WATER RECLAMATION PLANT
LOS ANGELES ZOO TREATMENT PLANT
BURBANK
GLENDALE
PASADENA
LOS ANGELES-GLENDALE WATER RECLAMATION PLANT
LOS ANGELES
SANTA MONICA
HYPERION TREATMENT PLANT
SANTA MONICA BAY
ALHAMBRA
San Marino
San Gabriel
Monterey Park
Montebello
Pico Rivera
Maywood
Huntington Park
Bell
Bell Gardens
Cudahy
SOUTH GATE
DOWNEY
Lynwood
Hawthorne
Lawndale
Gardena
COMPTON
Paramount
Bellflower
Manhattan Beach
Hermosa Beach
REDONDO BEACH
TORRANCE
CARSON
LAKEWOOD
Lomita
Palos Verdes Estates
Rolling Hills Estates
Rolling Hills
Rancho Palos Verdes
Signal Hill
LONG BEACH
Seal Beach
San Pedro Bay
TERMINAL ISLAND TREATMENT PLANT
HYPERION DIRECT
LOS ANGELES-GLENDALE AREA
HYPERION VIA NOS-LCSFVRS TUNNEL
TILLMAN AREA
TERMINAL ISLAND AREA
BURBANK WATER RECLAMATION PLANT AREA
CITY OF LOS ANGELES WASTEWATER TREATMENT SYSTEM

Exhibit M.2-1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A
B
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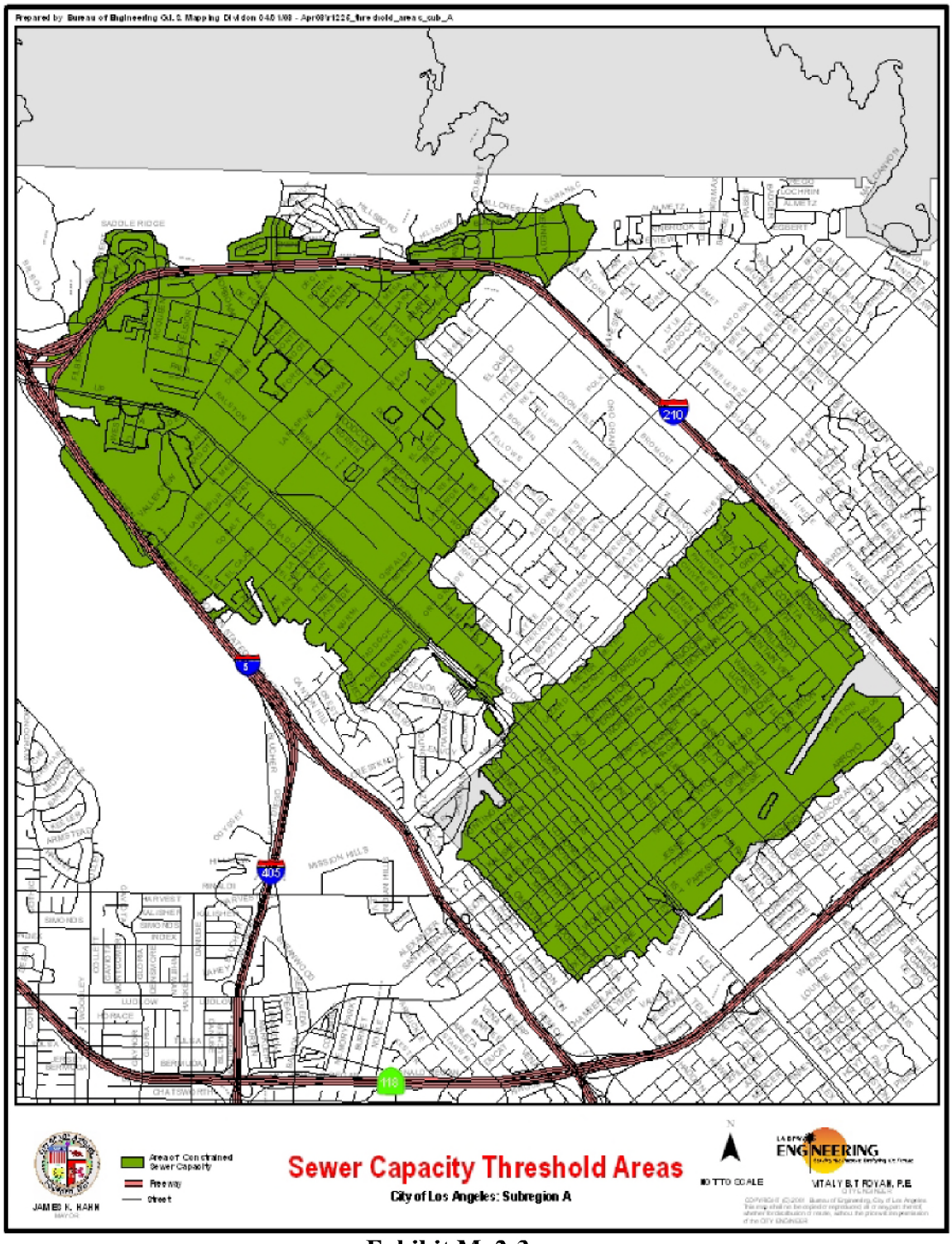
Pacific Ocean
Area of Constrained Sewer Capacity
Major Street
Freeway
Sewer Capacity Threshold Areas
City of Los Angeles
NOT TO SCALE
JAMES K. HAHN
MAYOR
VITALY B. TROYAN, P.E.
CITY ENGINEER

Exhibit M. 2-2


Area of Constrained Sewer Capacity
Freeway
Street
Sewer Capacity Threshold Areas
City of Los Angeles: Subregion A
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MAYOR
NO SCALE
VITALY B.T. ROYAK, P.E.
CITY ENGINEER
SADDLE RIDGE
MISSION HILLS
CHATSWORTH
5
210
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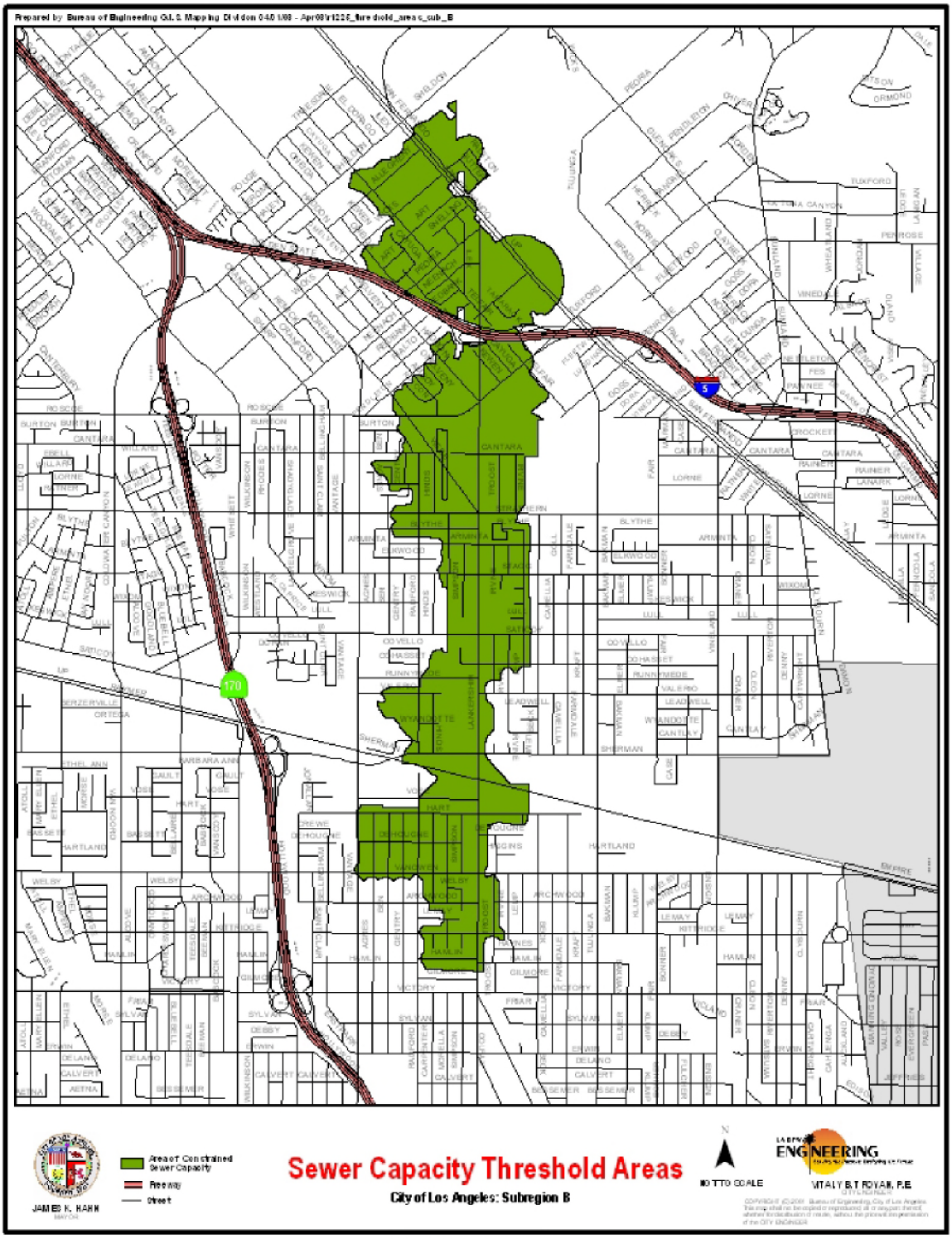
Exhibit M. 2-3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City of Los Angeles: Subregion B
Area of Constrained Sewer Capacity
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Street
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MAYOR
NOT TO SCALE
VITALY B. TROYAN, P.E.
CITY ENGINEER

Exhibit M.2-4

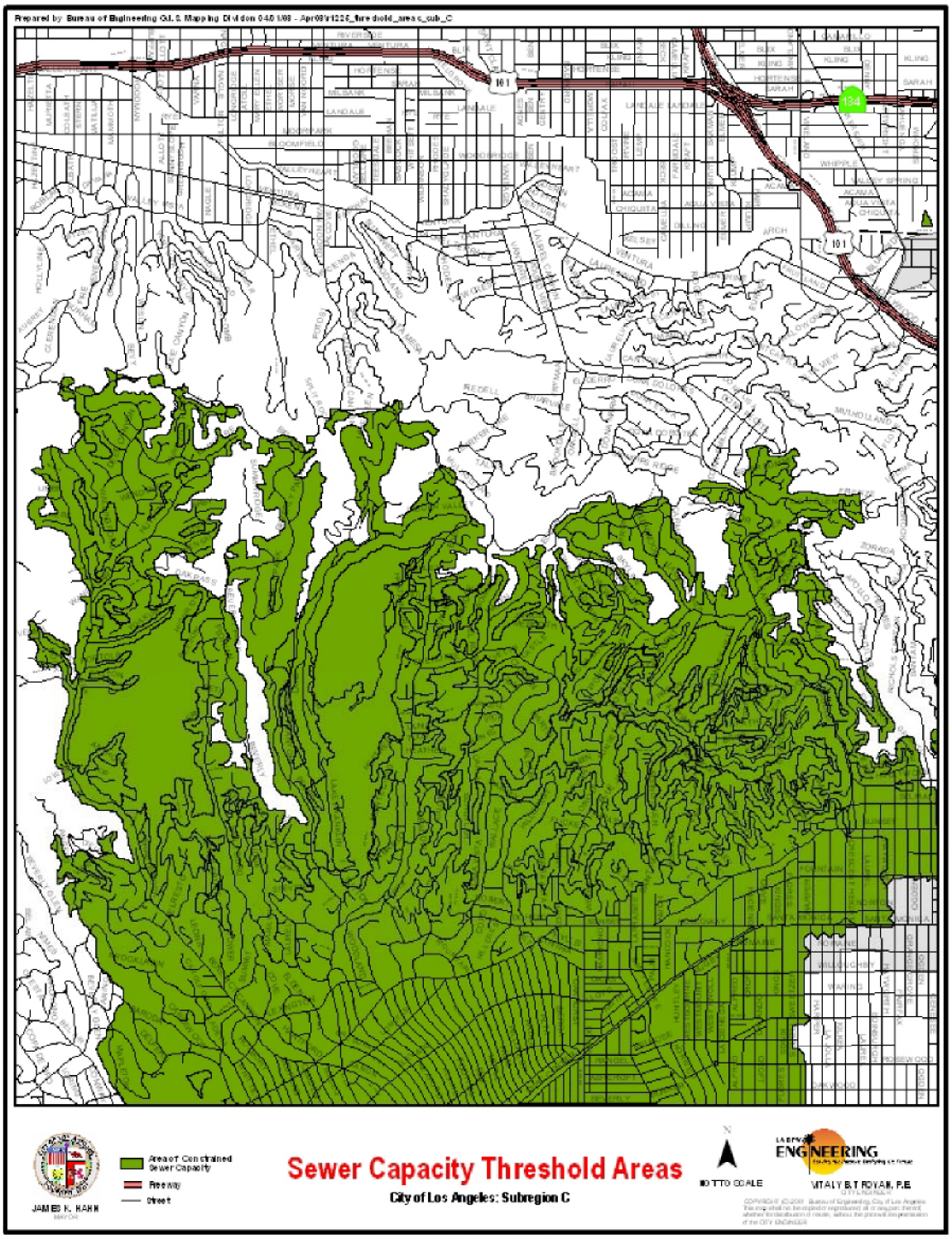
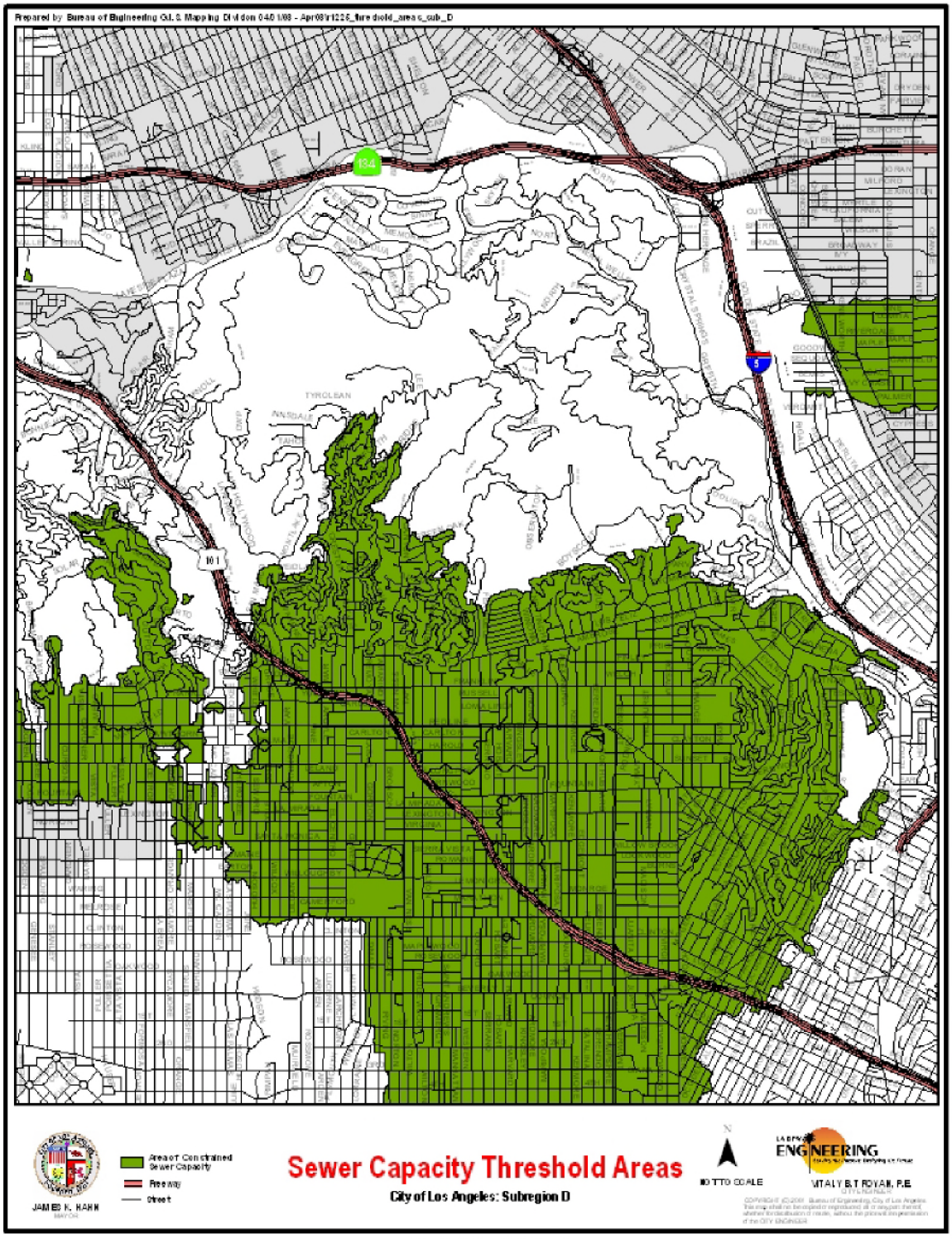

Sewer Capacity Threshold Areas
City of Los Angeles: Subregion C
Area of Constrained Sewer Capacity
Freeway
Street
JAMES K. HAHN
NOT TO SCALE
VITALY B. T. ROYAN, P.E.

Exhibit M. 2.5


Area of Constrained Sewer Capacity
Freeway
Street
Sewer Capacity Threshold Areas
City of Los Angeles: Subregion D
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ENGINEERING
VITALY B.T. ROYAK, P.E.
JAMES K. HAHN

Exhibit M.2-6

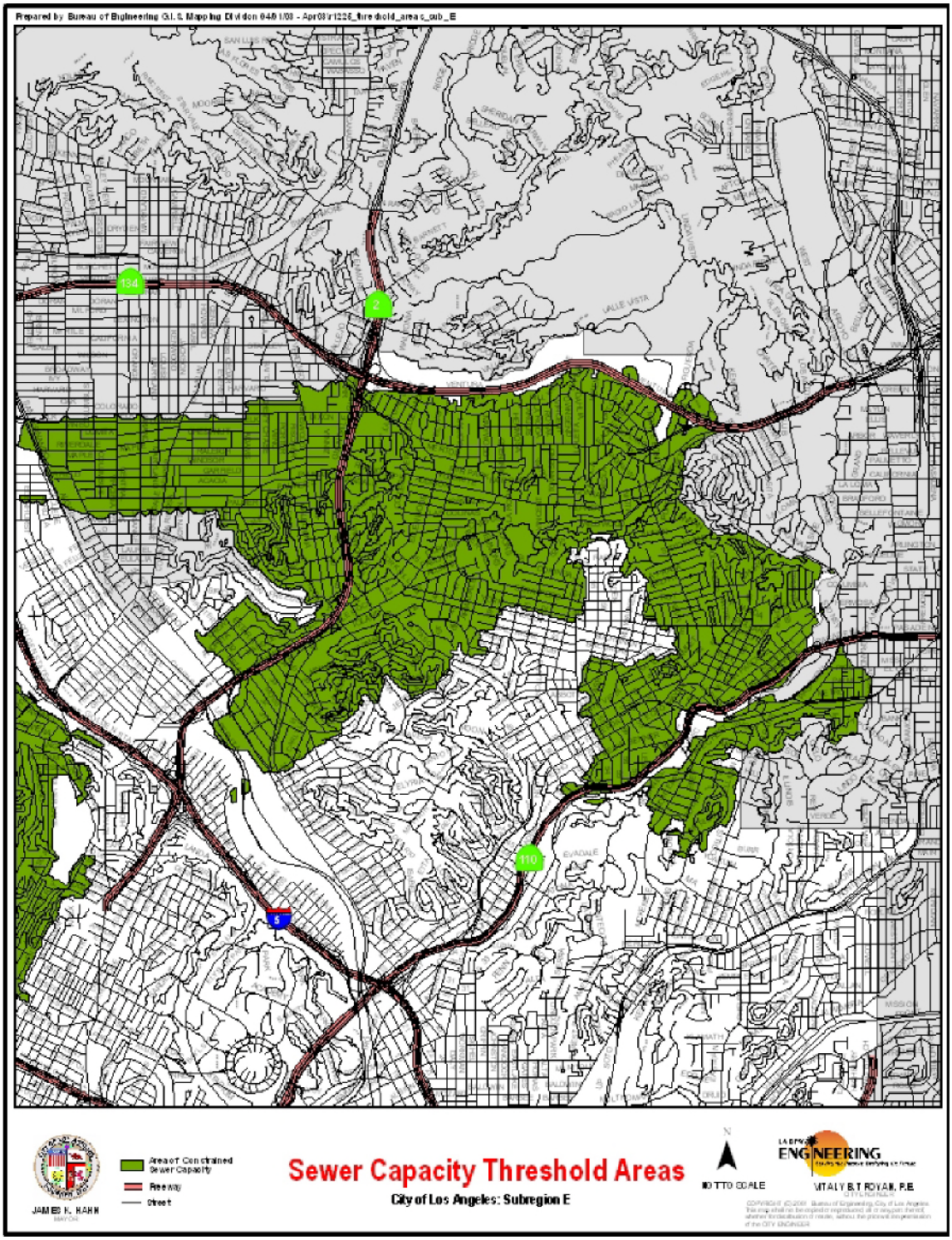
Sewer Capacity Threshold Areas
City of Los Angeles: Subregion E
Area of Constrained Sewer Capacity
Freeway
Street
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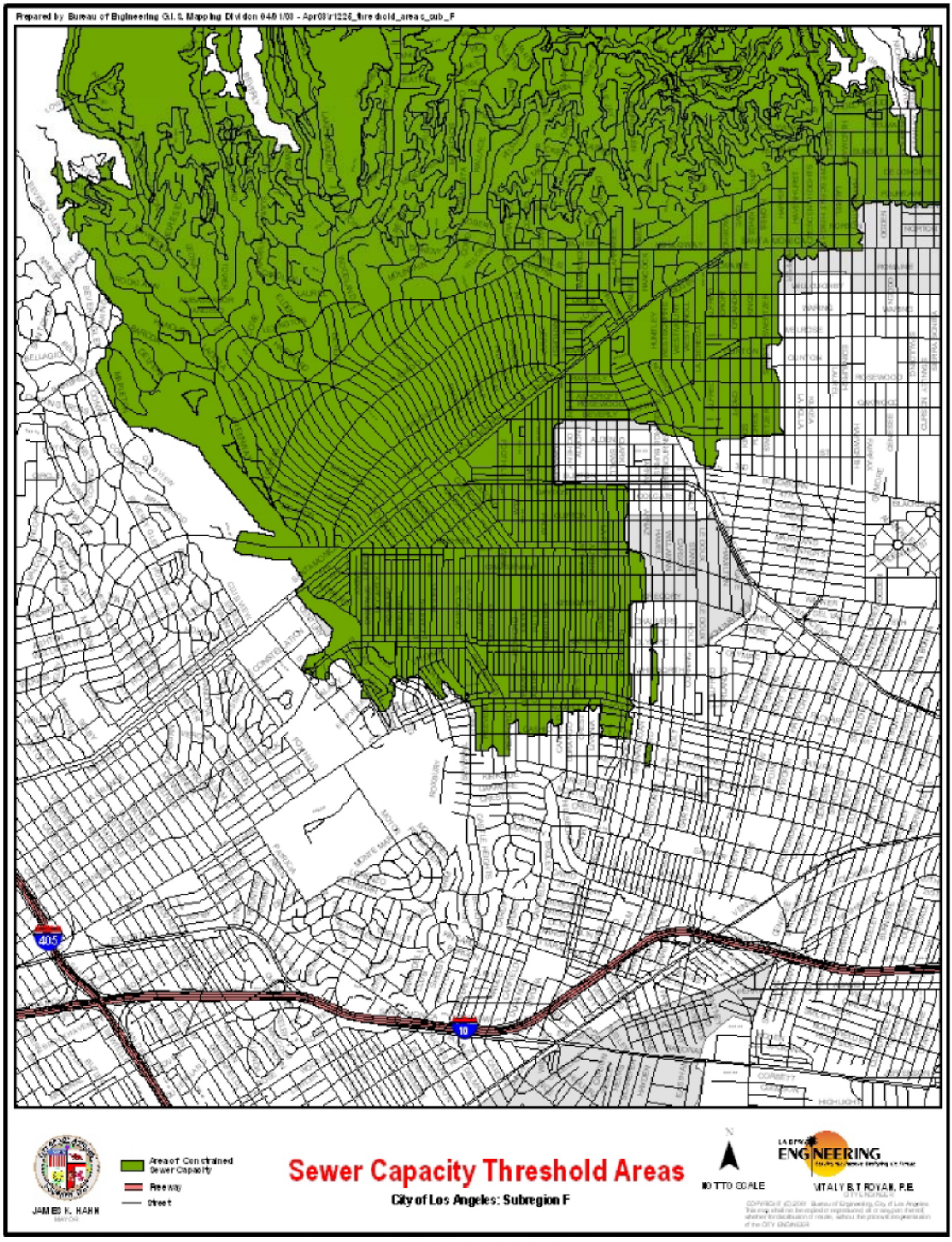
Exhibit M.2-7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Area of Constrained Sewer Capacity
Freeway
Street
JAMES K. HAHN
MAYOR
Sewer Capacity Threshold Areas
City of Los Angeles: Subregion F
NOT TO SCALE
LA BPW ENGINEERING
VITALY B.T. ROYAN, P.E.
CITY ENGINEER
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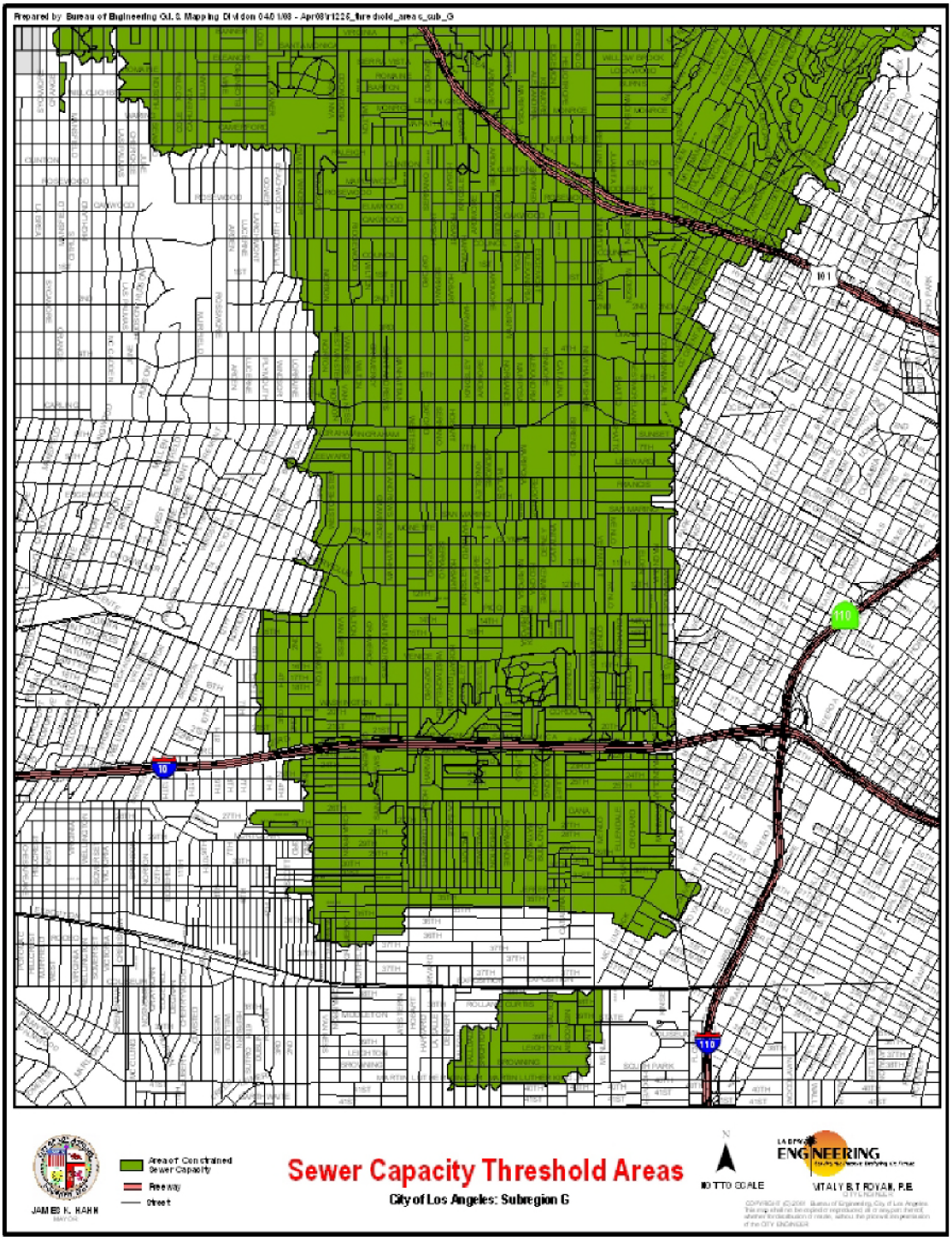
Exhibit M.2-8


Sewer Capacity Threshold Areas
City of Los Angeles: Subregion G
Area of Constrained Sewer Capacity
Freeway
Street
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NOT TO SCALE
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Exhibit M.2-9

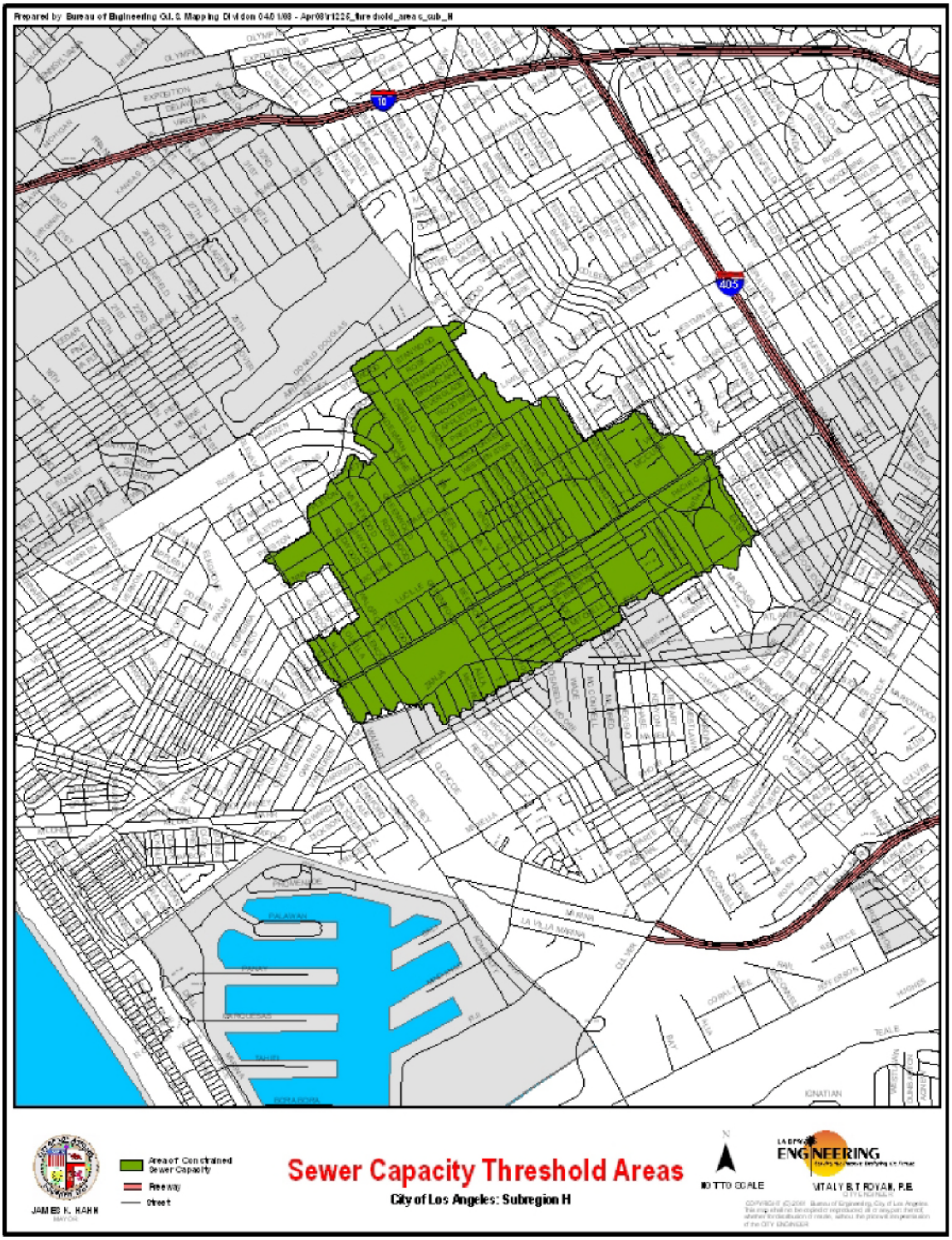

Exhibit M.2-10

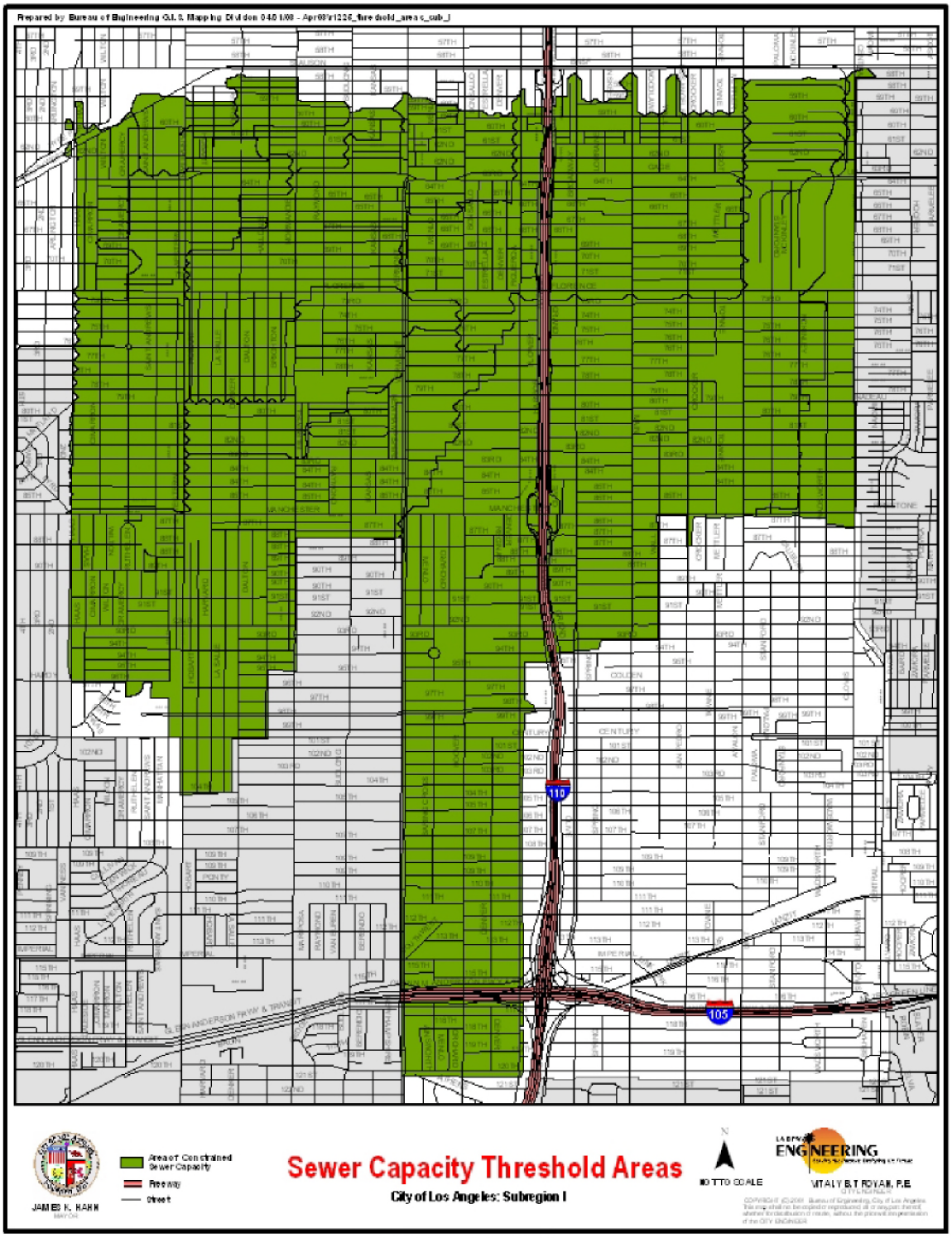

Exhibit M. 2-11

Exhibit M.2-12
SEWAGE GENERATION FACTORS

Type Description	Average Daily Flow (Gpd/unit)
Acupuncture Office/Clinic	150/1000 Gr.sq.ft.
Arcade - Video Games	80/1000 Gr.sq.ft.
Auditorium	4/seat
Auto Parking	20/1000 Gr.sq.ft.
Auto Body/Mech Repair Shop	800/1000 Gr.sq.ft. + Process Flow
Bakery	280/1000 Gr.sq.ft.
Bank: Headquarters	150/1000 Gr.sq.ft.
Bank: Branch	80/1000 Gr.sq.ft.
Banquet Room/ Ballroom	800/1000 Gr.sq.ft.
Bar: Cocktail, Fixed Seat	18/seat
Bar: Juice (No Baking Facilities)	120/1000 Gr.sq.ft.
Bar: Juice (With Baking Facilities)	280/1000 Gr.sq.ft.
Bar: Cocktail Public Table Area	500/1000 Gr.sq.ft.
Barber Shop	100/1000 Gr.sq.ft.
Beauty Parlor	280/1000 Gr.sq.ft.
Building Construction Field Office	150/office
Bowling Alley: Alley, Lanes & Lobby Area	80/1000 Gr.sq.ft.
Bowling Facility: Arcade/ Bar/ Restaurant/ Dancing	See Individual Categories
Cafeteria: Fixed Seat	30/seat
Car Wash: Automatic	Process Flow
Car Wash: Coin Operated Bays	Process Flow
Car Wash: Hand Wash	Process Flow
Car Wash: Counter & Sale Area	80/1000 Gr.sq.ft
Chapel: Fixed Seat	4/seat
Chiropractic Office	150/1000 Gr.sq.ft.
Church: Fixed Seat	4/seat
Church School: Day Care/elem	8/occupant
Church School: One Day Use/week	200/1000 Gr.sq.ft.
Cocktail Lounge: Fixed Seat	18/seat
Coffee House: No Pastry Baking & No Food Prep.	120/1000 Gr.sq.ft.
Coffee House: Pastry Baking Only	280/1000 Gr.sq.ft.
Coffee House: Serves Prepared Food	30/seat
Cold Storage: No Sales	20/1000 Gr.sq.ft.
Cold Storage: Retail Sales	80/1000 Gr.sq.ft.
Comfort Station: Public	100/fixture
Commercial Use	80/1000 Gr.sq.ft.
Community Center	4/occupant
Conference Room of Office Bldg.	Same as other areas in an office bldg.
Counseling Center[1]	150/1000 Gr.sq.ft.
Credit Union	150/1000 Gr.sq.ft.
Dairy	Process Flow
Dairy: Barn	Process Flow
Dairy: Retail Area	80/1000 Gr.sq.ft.

[1] *Counseling center include marriage counseling centers, alcohol/drug rehabilitation/dependency centers, nutrition center, diet centers, etc.*

Exhibit M.2-12, continued
SEWAGE GENERATION FACTORS

Type Description	Average Daily Flow (Gpd/unit)
Dancing Area of Bar or Nightclub	600/1000 Gr.sq.ft.
Dance Studio	80/1000 Gr.sq.ft.
Dental Office/Clinic	250/1000 Gr.sq.ft.
Doughnut Shop	280/1000 Gr.sq.ft.
Drug Rehabilitation Center	150/1000 Gr.sq.ft.
Equipment Booth	20/1000 Gr.sq.ft.
Film Processing – 1-Hour Photo, etc.	100/1000 Gr.sq.ft.
Film Processing – Industrial	80/1000 Gr.sq.ft. + Process Flow
Food Processing Plant	80/1000 Gr.sq.ft. + Process Flow
Gas Station: Self Service	100/w.c.
Gas Station: Four Bays Maximum	430/station
Golf Course: 18-hole/ 9-hole Green Area	0
Golf Course: Driving Range	0
Golf Course Facility: Lobby/Office/Restaurant/Bar	See Individual Categories
Gymnasium – Basketball, Volleyball	250/1000 Gr.sq.ft.
Hanger (Aircraft)	80/1000 Gr.sq.ft.
Health Club/ Spa[2]	800/1000 Gr.sq.ft.
Homeless Shelter	75/bed
Hospital	75/bed
Hospital: Convalescent	75/bed
Hospital: Animal	280/1000 Gr.sq.ft.
Hospital: Psychiatric	75/bed
Hospital: Surgical	450/bed
Hotel: Use Guest Rooms Only	130/room
Jail	85/inmate
Kennel: Dog Kennel/Open Run	100/1000 Gr.sq.ft.
Laboratory: Commercial	250/1000 Gr.sq.ft.
Laboratory: Industrial	Process Flow
Laundromat	170/machine
Library: Public Area	80/1000 Gr.sq.ft.
Library: Stacks, Storage	25/1000 Gr.sq.ft.
Lobby of Retail Area[3]	80/1000 Gr.sq.ft.
Lodge Hall	4/seat
Lounge	See Lobby of Retail Area
Machine Shop	80/1000 Gr.sq.ft. + Process Flow
Manufact or Indust Facility	80/1000 Gr.sq.ft. + Process Flow
Massage Parlor	275/1000 Gr.sq.ft.
Medical Building	250/1000 Gr.sq.ft.
Medical Lab in Hospital	250/1000 Gr.sq.ft.

[2] *Health club/spa includes lobby area, workout floors, aerobic rooms, swimming pools, Jacuzzi, sauna, locker rooms, showers, and restrooms. If a health club/spa has a gymnasium facility, use the gymnasium rate for that portion. Gymnasiums include basketball courts, volleyball courts, and any other large open space with low occupancy density.*

[3] *Lobby of retail includes lounges, holding rooms, waiting areas, etc.*

Exhibit M.2-12, continued
SEWAGE GENERATION FACTORS

Type Description	Average Daily Flow (Gpd/unit)
Medical Office/ Clinic	250/1000 Gr.sq.ft.
Mini-mall	80/1000 Gr.sq.ft.
Mortuary: Embalming	5/7 Gr.sq.ft.
Mortuary: Chapel	4/seat
Mortuary: Living Area	80/1000 Gr.sq.ft.
Motel: Use Guest Rooms Only	130/room
Museum: All Areas	20/1000 Gr.sq.ft.
Museum: Office over 15%	150/1000 Gr.sq.ft.
Museum: Sales Area	80/1000 Gr.sq.ft.
Office Building	150/1000 Gr.sq.ft.
Office Building with Cooling Tower	180/1000 Gr.sq.ft.
Plating Plant	80/1000 Gr.sq.ft. + Process Flow
Pool Hall (No Alcohol)	80/1000 Gr.sq.ft.
Post Office: Full Service[4]	150/1000 Gr.sq.ft.
Prisons	175/inmate
Residential Dorm: College or Residential	75/student
Residential: Apt. -Bachelor/single	80/dwelling Unit
Residential: Apt. - 1 Bedroom	120/dwelling Unit
Residential: Apt. - 2 Bedroom	160/dwelling Unit
Residential: Apt. - 3 Bedroom	200/dwelling Unit
Residential: Apt. - >3 Bedroom	40/additional bedroom
Residential: Boarding House	75/bed
Residential: Condo - 1 Bedroom	120/dwelling Unit
Residential: Condo - 2 Bedroom	160/dwelling Unit
Residential: Condo - 3 Bedroom	200/dwelling Unit
Residential: Condo - >3 Bedroom	40/additional bedroom
Residential: Duplex/ Townhouse/ SFD - 1 Bd.	130/dwelling Unit
Residential: Duplex/ Townhouse/ SFD - 2 Bd.	180/dwelling Unit
Residential: Duplex/ Townhouse/ SFD - 3 Bd.	230/dwelling Unit
Residential: Duplex/ Townhouse/ SFD - >3 Bd	50/additional bedroom
Residential: Room Addition – Bedroom	50/additional bedroom
Residential: Room Addition Other Than Bedroom	0
Residential: Room Conversion into Bedroom	50/additional bedroom
Residential: Room Conversion into Other Than Bedroom	0
Residential: Mobile Home	160/dwelling Unit
Residential: Artist 2/3 of Area	250/dwelling Unit
Residential: Artist Residence	80/dwelling Unit
Residential: Guest Home With Kitchen	See Residential: Apartment
Residential: Guest Home without Kitchen	50/bedroom
Rest Home	75/bed
Restaurant: Drive-in	40/stall
Restaurant: Drive-in	20/seat

[4] *Full service post offices include U.S. Postal Service, UPS, Federal Express, and other private express mail services.*

Exhibit M.2-12, continued
SEWAGE GENERATION FACTORS

Type Description	Average Daily Flow (Gpd/unit)
Restaurant: Fast Food - Indoor Seat	20/seat
Restaurant: Fast Food - Outdoor Seat	12/seat
Restaurant: Full Service - Indoor Seat	30/seat
Restaurant: Full Service - Outdoor Seat	18/seat
Restaurant: Take-out	300/1000 Gr.sq.ft.
Retail Area	80/1000 Gr.sq.ft.
Rifle Range: Shooting Stalls, Shooting Lanes, Lobby	80/1000 Gr.sq.ft.
Rifle Range Facility: Bar, Restaurant	See Individual Categories
School: Arts/Dancing/Music (Part Time)	80/1000 Gr.sq.ft.
School: Arts/Dancing/Music (Full Time)	See type of school below
School: Day Care Center	8/child
School: Elementary or Junior High[5]	8/student
School: High School[5]	12/student
School: Kindergarten	200/1000 Gr.sq.ft.
School: Martial Arts (Part Time)	80/1000 Gr.sq.ft.
School: Martial Arts (Full Time)[5]	See type of school below
School: Nursery - Day Care	8/child
School: Special Class	8/student
School: Trade or Vocational[5]	12/student
School: Training[5]	12/student
School: University or College[5]	18/student
School: Dormitory[6]	75/student
School: Stadium, Pavilion	4/seat
Spa/ Jacuzzi: Commercial - with backwash	Process Flow
Spa/ Jacuzzi: Residential, replaceable filter crtrdg	0
Storage: Building/Warehouse	20/1000 Gr.sq.ft.
Storage: Self Storage Bldg.	20/1000 Gr.sq.ft.
Store: Ice Cream/Yogurt	80/1000 Gr.sq.ft.
Store: Retail	80/1000 Gr.sq.ft.
Studio: Film/ TV – Audience Viewing Room	4/seat
Studio: Film/ TV – Regular Use Indoor Filming Area	80/1000 Gr.sq.ft.
Studio: Film/ TV – Indust. Use Film Proc, Machine Shop	80/1000 Gr.sq.ft. + Process Flow
Studio: Recording	80/1000 Gr.sq.ft.
Swimming Pool: Commercial with backwash	Process Flow
Swimming Pool: Residential replaceable filter crtrdg	0
Tanning Salon: Independent, No Shower	80/1000 Gr.sq.ft.
Tanning Salon: Within a Health Spa/Club	800/1000 Gr.sq.ft.

[5] *The sewage generation factor for schools based on student capacity covers the following facilities: classrooms and lecture halls, professors' offices, administration offices, laboratories for classes or research, libraries, bookstores, student/professor lounges, school cafeterias, warehouses and storage areas, auditoriums and gymnasiums. For any facility not listed under "schools" (e.g., stadium), see the generation factor listed for that land use type.*

[6] *The sewage generation factor for a college dormitory based on student capacity also includes the sewage generation factor for the dormitory cafeterias.*

Exhibit M.2-12, continued
SEWAGE GENERATION FACTORS

Type Description	Average Daily Flow (Gpd/unit)
Theatre: Drive-in	10/vehicle
Theatre: Live/Music/Opera	4/seat
Theatre: Cinema	4/seat
Tract: Commercial/ residential	1/acre
Trailer: Construction/Field Office	150/office
Veterinary Clinic/Office	280/1000 Gr.sq.ft.
Warehouse	20/1000 Gr.sq.ft.
Warehouse with Office	Use Factor for Each Separate Category
Waste Dump: Recreational	430/station
Wine Tasting Room: Kitchen	215/1000 Gr.sq.ft.
Wine Tasting Room: All Areas	80/1000 Gr.sq.ft.

Notes:

Gpd/unit = Gallons per day (gpd) per unit as indicated.

Gr.sq.ft. = Gross Square Feet: area included within the exterior or the surrounding walls of a building excluding courts.

GPM Peak = Peak Flow in gallons per minute. There is an assumption that the peak to average flow ratio is 3.5. Therefore, 1.0 gpm x 1440 minutes/day divided by 3.5 = 412 gpd which is the unit flow factor in the table.

See next page for metric equivalents.

Source: Bureau of Sanitation. Sewerage Facilities Charge, Sewage Generation Factors for Residential and Commercial Categories. Effective June 6, 1996.

METRIC CONVERSION

The President's Executive Order 12770, Metric Usage in Federal Government Programs, was signed on July 25, 1991. Federal regulations recently enacted require that all government affairs be conducted in metrics. The City of Los Angeles must comply with the resultant federal regulations in order to obtain federal funding and permit approvals. For example, federally funded street improvement projects must be designed, advertised and contracted in metric units.

In response to the federal government's actions, the City Engineer has issued a Metric Conversion Manual and a Special Order for metric conversion within the Bureau of Engineering intended to keep the Bureau current with the situation and allow time to analyze the full impact of the conversion while protecting potential federal funding. Review of private development standards and requirements is currently under way and will be the subject of a separate Special Order. That study will determine whether land developers should submit documents and plans in metrics or if they may continue to use Imperial units. Meanwhile, the following is intended for use only with Table 1 and the foregoing thresholds.

GALLONS	EQUIVALENT LITERS (1 qt = .9463 l)	gpd/1000 Gr.sq.ft. converted to l per day / 100 m2	GALLONS	EQUIVALENT LITERS (1 qt = .9463 l)	gpd/1000 Gr.sq.ft. converted to l per day / 100 m2
800	3,028	3,260	130	492	530
600	2,271	2,445	120	454	489
500	1,893	2,037	100	379	407
450	1,703	1,834	85	322	346
430	1,628	1,752	80	303	326
412	1,560	1,679	75	284	306
300	1,136	1,222	50	189	204
280	1,060	1,141	40	151	163
275	1,041	1,120	30	114	122
250	946	1,019	25	95	102
230	871	937	20	76	81
215	814	876	18	68	73
200	757	815	12	45	49
180	681	733	10	38	41
175	662	713	8	30	33
170	643	693	5	19	20
160	606	652	4	15	16
150	568	611	1	4	4

1 gpd/acre = 9 liters per day per hectare

M.3. SOLID WASTE

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

XVI.f): Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

XVI.g): Would the project comply with federal, state, and local statutes and regulations related to solid waste?

B. Introduction

The management of solid waste in the City of Los Angeles involves public and private refuse collection services as well as public and private operation of solid waste transfer, resource recovery, and disposal facilities. The Bureau of Sanitation provides collection services primarily to single family residences and some of the smaller multi-family residences. The City is also responsible for collecting waste from the City Hall complex, some public buildings, parks and fire stations. Multi-family residences, such as apartment complexes and condominiums, and commercial and industrial buildings, contract with a private company to collect and transport their materials for disposal or recycling.

The solid waste management hierarchy encompasses the system of solid waste source reduction, composting, transformation and disposal. The demolition, construction, and operation of projects results in the generation of solid waste. Project impacts are related to: the amount of waste generated and diverted; the need for additional solid waste collection routes or disposal facilities; and compliance with adopted policies and objectives.

In September 1989, the California Integrated Solid Waste Management (ISWM) Act (also known as AB 939) was passed. It required each city in the state to divert at least 25 percent of its solid waste from landfill disposal through source reduction, recycling, and composting, by the end of 1995. Cities must now divert at least 50 percent of their waste stream. AB 939 further requires each city to conduct a Solid Waste Generation Study and to prepare annually a Source Reduction and Recycling Element (SRRE) to describe how it will reach its goals.

The City of Los Angeles has also prepared a Solid Waste Management Policy Plan

(CiSWMPP), which was adopted by the City Council in November 1994. The CiSWMPP is a long-term planning document containing goals, objectives and policies for solid waste management for the City. It specifies citywide diversion goals and disposal capacity needs.

C. Screening Criteria

- Would implementation of the proposed project result in solid waste generation of five tons or more per week?

A "yes" response to the preceding question indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration, or EIR may be required. Refer to the Significance Threshold for Solid Waste, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to the preceding question indicates that there would normally be no significant impact on Solid Waste from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project. Estimate typical project waste generation. The following solid waste generation factors may be used*:

- Residential 12.23 pounds per household per day
- Commercial 10.53 pounds per employee per day
- Industrial 8.93 pounds per employee per day

* These factors are estimates prior to recycling, composting or other waste diversion programs. Factors do not include generation of construction debris.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- Amount of projected waste generation, diversion, and disposal during demolition, construction, and operation of the project, considering proposed design and operational features that could reduce typical waste generation rates;

- Need for an additional solid waste collection route, or recycling or disposal facility to adequately handle project-generated waste; and

- Whether the project conflicts with solid waste policies and objectives in the SRRE or its updates, CiSWMPP, Framework Element or the Curbside Recycling Program, including consideration of the land use-specific waste diversion goals contained in Volume 4 of the SRRE.[1]

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include a description of the solid waste collection services (both diversion and disposal), and facilities which would serve the project. Include the name, location, and other relevant characteristics of the services or facilities, such as the remaining capacity of nearby landfills, daily capacity at recycling centers, the availability of disposal and recycling services, the materials accepted, etc.

Project Impacts

Based on the proposed land uses and their sizes, calculate the amount of anticipated solid waste that would result from implementation of the proposed project. Include both demolition and construction waste and waste generated by project operations. Identify any design measures, such as recycling programs and other waste diversion features, that would reduce the amount typically expected. Consider whether the project's waste would require the addition of a new solid waste collection route or other major improvements.

Compare the project's anticipated waste generation with the land use-specific waste diversion goals in the SRRE, if applicable, and with the overall waste reduction goals in the

[1] *Waste diversion goals have been identified for a limited number of targeted waste generators and materials. Future updates of the SRRE may expand the land uses and materials covered, or modify the current waste diversion goals.*

CiSWMPP, the Framework Element, and Curbside Recycling Program. Note whether the project would support the City's waste reduction goals and/or whether the project would meet specific waste diversion targets, if applicable. A project need not guarantee that it would meet the land use specific waste diversion goals in the SRRE; however, project proponents should identify measures to incorporate into the project to work toward meeting the goals.

Cumulative Impacts

Review the description of the related projects. Identify those that affect the same solid waste collection, disposal, and recycling facilities as the proposed project. Determine the amount of waste generation and diversion from these related projects and then consider the combined impact of the proposed related projects, in the same manner as described above for Project Impacts.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Incorporate recycled content materials in building products, furnishings and building maintenance;

- Recycle construction and demolition debris and California Redemption Value (CRV) generated during construction;

- Use mulching, composting, and grass-cycling on landscaped areas. Use xeriscaping or other low maintenance methods in landscape design;

- Develop a project recycling plan that includes the design and allocation of recycling collection and storage space in the project. As a result of the City's space allocation ordinance, the Los Angeles Municipal Code (LAMC) includes provisions for recycling areas or rooms in all new development projects and certain expansions;

- Incorporate a statement or brochure instructing occupants about source reduction, recycling and procurement of recycled content materials into the ownership agreement, property management agreements and tenant agreements;

- Institute an employee participation recycling program whereby employees are given individual containers/bins to separate newspaper, white and/or colored paper for

regular collection by recyclers;

- Educate residents about proper household hazardous waste collection programs;

- Institute employee education which would, through a series of brief educational sessions, outline various methods whereby employees can further contribute to methods of recycling/conservation in the office and home (e.g., contracting with firms for the purchase of recycled paper, use of two-sided reports, replacement of styrofoam cups with coffee mugs); and

- Conduct an annual waste audit review to measure the effectiveness of the tenant education program and recycling collection activities. Use the results to improve the project recycling plan. Include:

    - A review of purchasing patterns to eliminate materials not compatible with the established waste diversion program;

    - A review of operating procedures which generate either large amounts of waste or non-recyclable materials;

    - A review of occupancy uses and activities;

    - The evaluation and expansion of recyclable materials to be included in a recycling program; and

    - A review of employee awareness of recycling program goals, procedures, and accomplishments, as well as evaluations and implementation of training for all project occupants.

3. DATA, RESOURCES, AND REFERENCES

The Bureau of Sanitation provides information regarding citywide generation, disposal and diversion rates, disposal facilities, commercial, industrial, and residential programs, and collection contracts and agencies. Solid Resources Citywide Recycling Division is located at 433 S. Spring Street, Suite 500, Los Angeles, California 90013; Telephone: (213) 473-8228. For information on commercial, industrial, institutional, and multi-family diversion programs and resources, contact the Integrated Waste Management Office at 433 S. Spring Street, 5th Floor, Los Angeles, California 90013; Telephone: (213) 473-8150.

ISWM Act of 1989 (Public Resources Code 40050 et. seq.) requires specific waste diversion rates in cities and counties by the target years of 1995 (at least 25 percent) and 2000 (at least 50 percent) and mandates, through the California Integrated Waste Management Board (CIWMB) preparation of the SRRE.

CiSWMPP is a long-term planning document containing goals, objectives and policies for solid waste management and specifies citywide diversion goals and disposal capacity at 62 percent by the year 2005.

SRRE contains programs and policies for fulfillment of the goals of the ISWM Act and is updated annually. An executive summary of the 1995 annual update is available from the IWMO free of charge.

The Space Allocation Ordinance (No. 171687) was adopted by the City Council on August 6, 1997, and includes requirements for recycling centers and facilities as well as for areas for collecting and loading recyclable materials. All new construction development projects, multiple family residential development projects of four or more units where the addition of floor area is 25 percent or more, and other development projects where the addition of floor area is 30 percent or more shall provide an adequate Recycling Area or Room for collecting and loading recyclable materials. The ordinance specifies the size, location, conditions of operations, and restrictions on Recycling Areas or Rooms. See Subdivision 19 of Section A of Section 12.21 of the LAMC. Additional information is available from the IWMO.

M.4. ENERGY

1. INITIAL STUDY SCREENING PROCESS

A. Initial Study Checklist Questions

VIII.a): Would the project conflict with adopted energy conservation plans?

VIII.b): Would the project use non-renewable resources in a wasteful and inefficient manner?

XII.a): Would the proposal result in a need for new systems, or substantial alterations to power or natural gas?

B. Introduction

Within the City of Los Angeles, electricity is provided by the Los Angeles Department of Water and Power (LADWP), and natural gas is provided by the Southern California Gas Company (The Gas Company). Energy service requirements are related to the size and type of projects, and the geographic area served. New projects (e.g., residential, commercial, industrial) may increase energy consumption and affect the energy distribution infrastructure.

Customers in the City consume electricity at a rate of approximately 22 million megawatt hours per year. Of LADWP's nearly 1.4 million customers, the largest number of customers are residential. Business and industry customers, however, consume about 70 percent of the electricity. A portion of the electrical consumption is also dedicated to street lighting and water supply distribution.[1] Additional background on electric infrastructure is found in 3. Data, Resources, and References.

The Gas Company serves about 19 million people in more than 530 cities in Southern and Central California, throughout 23,000 square miles. Of the approximately 5.4 million customers, nearly 4.5 million are residential. The average natural gas consumption for residential uses is 50

[1] *LADWP, Statistics, Fiscal Year 1993-94.*
LADWP, 2003.

therms per year.[2] The Gas Company has about 48,000 miles of gas mains, of which 44,000 miles are for distribution and 3,319 miles are for transmission and/or storage.

Title 24 of the California Code of Regulations establishes energy conservation standards for new construction. These standards relate to insulation requirements, glazing, lighting, shading, and water and space heating systems. Also, the California Subdivision Map Act requires that new subdivision designs provide for future passive or natural heating and cooling opportunities, to the maximum extent feasible. The Los Angeles Municipal Code (LAMC) incorporates these state requirements.

C. Screening Criteria

- Would the project design or operation conflict with adopted energy conservation plans or policies of the City, or exceed the growth anticipated in the applicable Community Plan?

- Would the project, result in the need for new (off-site) energy supply facilities, or major capacity enhancing alterations to existing facilities?

A "yes" response to any of the preceding questions indicates further study in an expanded Initial Study, Negative Declaration, Mitigated Negative Declaration or EIR may be required. Refer to the Significance Threshold for Energy, and review the associated Methodology to Determine Significance, as appropriate.

A "no" response to all of the preceding questions indicates that there would normally be no significant impact on Energy from the proposed project.

D. Evaluation of Screening Criteria

Review the description of the proposed project, project site, and energy distribution infrastructure. Determine the energy supply and distribution systems required to serve the project. New off-site energy supply facilities or capacity enhancing alterations to existing facilities include installation, replacement of, or upgrades to, power plants, receiving stations, distribution stations, natural gas mains, or storage or connecting systems. If necessary, consult with the LADWP or The Gas Company.

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2 *The Gas Company, Fact Sheet, Spring 1993, and telephone communication, Mr. Don Dockray, The Gas Company, June 17, 1994 and interview, 2004.*

Also, consider conflicts with the energy conservation and infrastructure programs and policies of applicable utility plans, specific plans, the General Plan and its elements, or the Community Plan.

To evaluate the potential increase in growth, and the corresponding demand for energy from a proposed General Plan amendment, compare the projected population of the applicable planning subregion before and after the General Plan amendment. The Framework Element identifies future population goals for the City. If assistance in determining population projections for a planning subregion is needed, contact the City Planning Department, Community Planning Bureau.

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

The determination of significance shall be made on a case-by-case basis, considering the following factors:

- The extent to which the project would require new (off-site) energy supply facilities and distribution infrastructure, or capacity enhancing alterations to existing facilities;
- Whether and when the needed infrastructure was anticipated by adopted plans; and
- The degree to which the project design and/or operations incorporate energy conservation measures, particularly those that go beyond City requirements.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Description of the electricity and natural gas supply and distribution infrastructure serving the project site. Include plans for new transmission facilities or expansion of existing facilities; and
- Summary of adopted energy conservation plans and policies relevant to the project.

Project Impacts

Using the information from the Evaluation of Screening Criteria and the description of the proposed project, project site and the existing energy distribution infrastructure, evaluate the new energy supply and distribution systems which the project would require. Describe the energy conservation features that would be incorporated into project design and/or operation that go beyond City requirements, or that would reduce the energy demand typically expected for the type of project proposed. Consult with the DWP or The Gas Company, if necessary to gauge the anticipated supply and demand conditions at project buildout.

If project demand would require new infrastructure, determine whether the infrastructure was anticipated by adopted plans, such as applicable utility plans, specific plans, the General Plan and its elements, or the Community Plan. If the new energy supply or distribution system was anticipated at a later time by adopted plans, consider the impact of accelerating additions or alterations.

Cumulative Impacts

Review the list of related projects. Identify those that would be served by the same energy distribution infrastructure as the proposed project. In the same manner as for Project Impacts, evaluate the cumulative impact on energy supply and distribution infrastructure. To the extent known, consider energy conservation features that would be incorporated into the related projects and the impact of these features on the need for new energy supply and distribution infrastructure systems typically expected with the type of projects proposed. Determine whether new energy supply and distribution infrastructure systems would be required as a results of the combined effect of the proposed project and the related projects.

Sample Mitigation Measures

Potential mitigation measures include the following:

- Use tinted and solar reflective glass on appropriate exposures, such as the exterior-facing and/or most solar-exposed sides of the building, to reduce cooling loads;

- Use natural lighting and/or lighting types that are more efficient than incandescent lighting;
- Incorporate light sensors which automatically shut off the lights when occupants have left the room;

- Use lighting switches and thermostats equipped with multi-switch provisions for control by occupants and building personnel;

- Time control public area lighting, both interior and exterior;

- Install a variable air volume system which reduces energy consumption for air cooling and heating or water heating;

- Design the project with air conditioning which will have a 100 percent outdoor air economizer cycle to obtain free cooling during dry outdoor climatic periods;

- Do not allow office lighting loads to exceed an average 2.3 watts per square foot of conditioned floor area;

- Control mechanical systems (heating, ventilation, and air conditioning (HVAC)) and lighting) with computer time clocks;

- Recycle lighting system heat for space heating during cool weather. Exhaust lighting system heat via ceiling plenums, to reduce cooling loads in warm weather;

- Cascade ventilation air from high-priority areas to low-priority areas before being exhausted, thereby decreasing the volume of ventilation air required. For example, cascade air from occupied space to corridors to mechanical spaces before being exhausted;

- Distribute electricity within the project at 480/277 volts, three-phase, and stepped down where necessary for 110-volt outlets using dry transformers. Operate installed lighting systems at 227 volts;

- Design buildings to be well-sealed and include vestivules to prevent outside air from infiltrating and increasing interior space conditioning loads;

- Finish exterior walls and roofs with light-colored materials with high emissivity characteristics to reduce cooling loads. Use light-colored materials for interior walls to reflect more light and thus increase lighting efficiency;

- Use solar water heating for swimming pools.

3. DATA, RESOURCES, AND REFERENCES

LADWP, 111 North Hope Street, Los Angeles, California 90012; Power System Telephone: (213) 367-0285.

City Planning Department, Community Planning Bureau, 200 N. Spring St., City Hall, Los Angeles, California 90012; Telephone: (Eastside) (213)-978-1183, (Metro/Central) (213)-978-1179, (South LA) (213)-978-1168, (West/Coastal) (213)-978-1177, (Valley - 6262 Van Nuys Blvd., Van Nuys, California 91401) (818) 347-5055.

The Gas Company, (213) 244-2518, for information regarding natural gas consumption and infrastructure.

LAMC Sections 12.95.2 and 12.95.3 require projects, which include conversion of residential, commercial, or industrial uses, to submit a report concerning compliance with the Title 24 energy conservation standards.

LADWP, Power for the 21st Century (brochure).

LADWP, The Power System and Los Angeles (brochure).

LADWP, Los Angeles Department of Water and Power (brochure).

Electrical Consumption

The largest single source of power supply for the LADWP is coal, which provides 55 percent of the City's energy. Oil and natural gas provide about 20 percent of the City's energy; hydroelectricity accounts for about four percent; nuclear, 10 percent; and the remainder (11 percent) comes from purchased power.[3] The sources of coal-fired power production are three coal-fired power plants located outside California, in which the LADWP owns shares. The greatest amount of coal-fired power is received from the Intermountain Generating Station near Delta, Utah. About one-fifth of the LADWP's power production is received from the Mohave Power Plant in southern Nevada and the Navajo Power Project near Page, Arizona. Of the four power plants producing energy from natural gas located within the Los Angeles Basin, the largest of these is the Haynes Generating Station in Long Beach. The other plants are the Valley, Harbor, and Scattergood generating stations.

[3] *LADWP, Statistics, Fiscal Year 1991-1992"*

The two main hydroelectric power plants serving the City include Hoover Dam, on the Colorado River, and Castaic Power Plant, on the California State Aqueduct, about 22 miles north of the City. In addition, hydroelectric power is derived from several smaller Los Angeles Aqueduct stations, as well as purchased from other producers, mainly the Columbia River Power System. Nuclear power has been a source of electricity for the City since 1986, from the Palo Verde Nuclear Generating Station near Phoenix.

The LADWP has 21 receiving stations, designed to handle large quantities of bulk power from the major transmission lines connected to the power generating plants in California and neighboring states. The receiving stations lower the voltage of electricity to subtransmission levels, sending the power on to 120 distributing stations in the City. The distribution stations either serve a large manufacturing or commercial center directly or, as in most cases, they each supply a five- to ten-square mile area for residential and business consumers. The distribution stations reduce the voltage from 34,500 to 4,800 volts for efficient distribution of electricity to local transformers. The local distribution system consists of 6,100 miles of overhead pole-lines and 2,200 miles of underground cable.[4]

To accommodate future needs, the LADWP prepares 10-year and 20-year plans. The 10-year plan, updated annually, forecasts demand, distribution, and transmission needs to maintain system integrity. The 20-year plan, also updated annually, forecasts resource needs based on demand projections. The power system is designed to accommodate the maximum peak load of the City, which far exceeds the needs of any one project. In addition, the Electrical Infrastructure Systems Element of the General Plan indicates where major transmission facilities are anticipated.

4 *LADWP, The Power System and Los Angeles, December 1990.*

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 5

May 5, 2026 Letter – Footnote 13

PROTECTED AREAS FOR WILDLIFE & WILDLIFE MOVEMENT PATHWAYS

Final Report

Prepared for
Los Angeles City Planning

February 2021

ESA



PROTECTED AREAS FOR WILDLIFE & WILDLIFE MOVEMENT PATHWAYS

Final Report

Prepared for
Los Angeles City Planning

200 N. Spring Street, Room 750
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February 2021

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ESA

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Irvine	Sacramento	Tampa
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Oakland	San Francisco	

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PROTECTED AREAS FOR WILDLIFE & WILDLIFE MOVEMENT PATHWAYS

Final Report

1. Executive Summary

The City of Los Angeles (City) is a part of the California Floristic Province, which is one of 36 global biodiversity hotspots—a designation that indicates the region has a significant amount of biodiversity that is threatened by factors such as human development.[1] With nearly four million residents, the City is currently one of the most densely populated urban areas in the United States, and contains the majority of the population living within this global biodiversity hotspot. Humans have drastically altered the natural landscape with development, which has resulted in habitat loss, fragmentation, and continues to threaten the biodiversity remaining within the City and California Floristic Province. However, the City still contains a wealth of biological resources within its limits. Surrounded by extensive undeveloped open space and natural lands that are a part of the Transverse Ranges (which include the Santa Monica Mountains and San Gabriel Mountains), these large expanses of natural lands contain a diversity of species that make the greater Los Angeles region their home. Wildlife also persist within fragmented habitats, and even within suburban and urban areas for wildlife that have adapted to living in developed environments.

Future development will continue to put pressure on these limited remaining natural resource areas within the City, and wildlife will be forced to survive on fewer habitat areas and resources, which will continue to threaten the biodiversity remaining within the City. One of the City's Conservation Element objectives is to "preserve, protect, restore and enhance natural plant and wildlife diversity, habitats, corridors and linkages so as to enable the healthy propagation and survival of native species, especially those species that are endangered, sensitive, threatened or species of special concern." The City is committed to conserving natural habitat areas and provide connectivity for wildlife.

In April 2014, the City Council initiated this study by a Motion to address wildlife habitat in the city. Thus, the Department of City Planning (Planning) has undertaken an evaluation to identify important habitats, areas identified as Protection Areas for Wildlife (PAWs), for sustaining wildlife and connectivity within the City.

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1 City of Los Angeles. 2016. *Reader's Guide for the LA River Ecosystem Restoration Project*. Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

The study has three objectives: 1) To evaluate existing biotic conditions within the City's boundaries and delineate important areas for habitat conservation and enhancement necessary for sustaining wildlife within the City Los Angeles (through the designation of PAWs); 2) to identify important areas for enhancing connectivity for wildlife movement within the City (through the designation of Wildlife Movement Pathways [WMPs]); and 3) to provide scientific evidence and recommendations that can be used to inform the creation of guidelines and regulations for conserving and managing biological resources within these areas. These recommendations will inform the development of regulations by Planning, which will help to balance needs for development with needs for wildlife habitat and connectivity.

2. Introduction

2.1 Background

Historically, the Los Angeles Basin was a diverse collection of shrublands, grasslands, forests, and dense woodlands. In 1769, the first known description of the area that was to become Los Angeles was described by Spanish explorer Juan Crespi: "Through a pass between low hills, a spacious valley well-grown with cottonwood and alders, among which ran a beautiful river."[2] The Los Angeles River served as the backbone to a vast system of riverine, freshwater marsh, and riparian habitat that carried seasonal rains and subterranean flows to the coastal plains, and ultimately the Pacific Ocean.[3] Prior to 1825, the Los Angeles River flowed through the Ballona watershed and into the Ballona Lagoon, but after the Los Angeles region experienced three consecutive years of unusually heavy rains that inundated the lowland, as well as a series of earthquakes that rocked the Los Angeles area, the discharge of the Los Angeles River shifted south to San Pedro, where it lies today.[4]

The City is uniquely surrounded with extensive undeveloped open space and natural lands that are a part of the Transverse Ranges including the Santa Monica Mountains, the Santa Susana Mountains, the Verdugo Mountains, and the San Gabriel Mountains with the associated Angeles National Forest. Within these large expanses of natural lands, there is a substantial diversity of wildlife that make the greater Los Angeles region their home. Each species of this biodiverse assembly of organisms portrays a particular role in the greater Los Angeles ecosystem in which a range of ecological functions persist and contribute to the well-being of the environment.

The Los Angeles Basin is a part of the greater California Floristic Province, which stretches throughout California along the Pacific Coast and includes southwestern Oregon, a small part of western Nevada, and northern Baja California. Its Mediterranean-like climate, dynamic climatic and geological history, and topographic complexity have contributed to the species richness (i.e.,

2 Friends of the Los Angeles River (FoLAR). 2016. *State of the River*. The Long Beach Fish Study. June 2016.

3 City of Los Angeles. 2016. *Reader's Guide for the LA River Ecosystem Restoration Project*. Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

4 Dark, S. et al. 2011. *Historical Ecology of the Ballona Creek Watershed*. Southern California Coastal Water Research Project. Technical Report #671. http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/671_BallonaHistoricalEcology.pdf.

the number of different species represented) and endemism (i.e., species that are native and restricted to a certain place) that is found within the region.[5] The California Floristic Province has over 5,500 native plant taxa,[6] 40% of which are endemic.[7] The California Floristic Province is one of the top 36 global hotspots of rapid biodiversity loss on Earth.[8,9,10] A biodiversity hotspot is considered to be an area where exceptional concentrations of endemic species are undergoing exceptional loss of habitat. To qualify as a biodiversity hotspot, a region must meet two criteria: (1) it must have at least 1,500 vascular plants as endemics, and (2) it must have lost at least 70% of its original natural vegetation.[11] Around the world, there are currently 36 recognized biodiversity hotspots.[12]

As human presence within the Los Angeles Basin has increased exponentially, the natural landscape has been drastically altered, first by agricultural and then industrial development. Additionally, after catastrophic flooding from the Los Angeles River in the late 19th and early 20th centuries caused loss of human lives and millions of dollars in property damage, the natural river system was channelized in the 1930s in order to move flood flows to the ocean as efficiently as possible. This further affected the regional landscape by straightening the river's course, considerably changing its appearance and function, disconnecting it from its floodplain and adjacent ecological areas, degrading the habitats associated with the river, and diminishing its plant and wildlife diversity and quality.[13] With continued growth throughout the region, development and urbanization dramatically changed the landscape. Large expanses of native habitats were converted to developed areas with structures and infrastructure that were either devoid of vegetation, or were planted with ornamental species and lacked native vegetation. This resulted in habitat loss and habitat fragmentation (i.e., breaking up large blocks of contiguous native vegetation into smaller habitat patches, which diminishes the ecological functions of that habitat). Habitat loss and fragmentation, combined with increased human presence, has resulted in decreasing biodiversity (e.g., through removal of habitat and plant species, increased

5 Baldwin, Bruce G.; Andrew H. Thornhill; William A. Freyman; David D. Ackerly; Matthew M. Kling; Naia Morueta-Holme; and Brent D. Mishler. 2017. *Species richness and endemism in the native flora of California.* American Journal of Botany. 104 (3): 487 – 501, 2017. https://ucjeps.berkeley.edu/common/pdf/Baldwin_et_al_2017.pdf.

6 This includes distinct species, subspecies, or varieties.

7 Loarie, Scott R.; Benjamin E. Carter; Katharine Hayhoe; Sean McMahon; Richard Moe; Charles A. Knight; and David D. Ackerly. 2008. *Climate Change and the Future of California's Endemic Flora.* PLoS One. 2008; 3(6): e2502. Published online 2008 Jun 25. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2481286/.

8 City of Los Angeles. 2016. *Reader's Guide for the LA River Ecosystem Restoration Project.* Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

9 Conservation International. 2020. *Biodiversity Hotspots.* https://www.conservation.org/priorities/biodiversity-hotspots. Website accessed December 28, 2020.

10 Critical Ecosystem Partnership Fund. 2020. *Biodiversity Hotspots Defined.* https://www.cepf.net/our-work/biodiversity-hotspots/hotspots-defined. Website accessed March 4, 2020.

11 Myers, Norman; Mittermeier, Russell A.; Mittermeier, Cristina G.; da Fonseca, Gustavo A. B.; Kent, Jennifer. 2000. *Biodiversity hotspots for conservation priorities*. Nature. 403 (6772): 853–858.

12 Critical Ecosystem Partnership Fund. 2020. *Biodiversity Hotspots Defined.* https://www.cepf.net/our-work/biodiversity-hotspots/hotspots-defined. Website accessed March 4, 2020.

13 City of Los Angeles. 2016. *Reader's Guide for the LA River Ecosystem Restoration Project.* Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

competition for limited resources).[14] Today, Southern California is our nation's largest urban area and continues to be one of its fastest growing, urbanizing areas,[15] and the City of Los Angeles (City) is currently one of the most densely populated urban areas in the United States.

Remarkably, for an urban setting with nearly four million residents, areas within the City continue to harbor impressive biological diversity comprised of hundreds of species of plants and wildlife, a number of which are protected as endangered or threatened or are otherwise considered to be rare, as well as providing a temporary residence for many migratory wildlife species. Most of these areas are within the undeveloped, or less developed, portions of the City, which are becoming increasingly limited, and many are within proximity to larger undeveloped and open space areas. However, wildlife also persist within fragmented habitats, and even within suburban and urban areas for wildlife that have adapted to living in developed environments. Future development will continue to threaten the integrity of these limited remaining natural resource areas within the City with increasing pressure on wildlife to survive on fewer habitat areas and dwindling resources, which further threatens the biodiversity within the City. Urban areas may be population sinks for some species, where mortality exceeds reproduction.[16] Within remaining natural areas, native plants would compete for limited resources, such as suitable habitat and soils, space to grow, water, and sunlight, as well as compete with non-native plant species introduced by landscaping or other anthropomorphic means (e.g., introduced through spreading seeds, including inadvertently on clothing or via livestock grazing). Further removal of habitat and plant species could also potentially eliminate populations of sensitive habitats and rare plants. Within shrinking habitat areas, native wildlife are also competing for resources, such as water, food, cover, territories, and mates. The introduction of exotic wildlife and pets pose an increased risk of predation for native wildlife. Also, with limited resources, native wildlife have reduced fecundity (i.e., reproductive success), and inbreeding depression (i.e., reduced biological fitness and decreased survivorship due to inbreeding).[17] This will disproportionately affect wildlife that require larger areas of pristine native habitat and are not able to adapt to urbanization, or associated edge effects, which comes from the abrupt transition between developed areas and natural lands at the urban-wildlands interface.

Thus, habitat connectivity between intact patches of habitat, and particularly with larger expanses of natural areas, plays a vital role for the maintenance of the wealth of species to allow natural ecological and evolutionary processes to continue. Habitat connectivity allows for greater wildlife movement, which is essential to wildlife survival for seeking food, shelter, or mates; dispersal of offspring to find new homes; or seasonal migration to find favorable conditions and/or breeding grounds. Movement is also essential for gene flow, for recolonizing unoccupied habitat after a local population goes extinct, and for species to adapt their geographic range (i.e., in response to a

14 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

15 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

16 Noss, Reed. 2004. *Can urban areas have ecological integrity?* Proceedings 4th International Urban Wildlife Symposium. Shaw et al., Eds. 2004.

17 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

significant natural disaster, or global climate change).[18] The preservation of biodiversity within the City is important, not only for the intrinsic value of conserving the remaining natural resources and species that inhabited the area long before people altered the landscape, but also because maintaining the ecological health of these areas can provide ecosystem services that benefit people. Open space areas near urban land uses function as a visual amenity, as a passive recreational asset, a groundwater recharge site, and a "storehouse" for natural species populations. The value of the ecosystem to daily life is found in the contributions toward soil erosion control, air pollution protection, crop and fruit production through pollination (via insects and birds), water quality purification, and other environmental stress reducers. Greater biodiversity conveys improved agricultural production, potential for medicinal wealth, and increased economic and commercial possibilities through tourism and industrial products.

2.2 Purpose

Future development will continue to threaten biodiversity within the City by reducing the remaining natural resource areas and increasing pressure on wildlife to survive on limited habitat and resources. One of the City's Conservation Element objectives is to "preserve, protect, restore and enhance natural plant and wildlife diversity, habitats, corridors and linkages so as to enable the healthy propagation and survival of native species, especially those species that are endangered, sensitive, threatened or species of special concern." The City's Conservation Element recognizes some of the important habitat areas found within the City, among them the Significant Ecological Areas (SEAs), which are significant habitats identified by Los Angeles County (County) as important for the preservation and maintenance of biodiversity. The County of Los Angeles designated SEAs occurring throughout Los Angeles County, including within the City's boundaries **Figure 1**, *City of Los Angeles Map*. However, the County SEAs identified within the City have limited regulatory protection within the City's jurisdiction. Other regional studies have also recognized important ecological areas, such as the California Department of Transportation (CalTrans) and California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game [CDFG]) *California Essential Habitat Connectivity Project*[19] and National Park Service (NPS) *Rim of the Valley Corridor Special Resource Study*.[20]

The City Council initiated this effort in April 2014 by a motion to address wildlife habitat connectivity, while acknowledging that residential development can adversely impact wildlife populations. Thus, Department of City Planning (Planning) has undertaken an evaluation to identify important habitats, or Protection Areas for Wildlife (PAWs), for sustaining wildlife and connectivity within the City.

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18 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

19 California Department of Transportation and California Department of Fish and Game (CalTrans and CDFG). 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared with Funding from: Federal Highways Administration. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18366.

20 NPS. 2015. *Finding of No Significant Impact, Rim of the Valley Corridor Special Resource Study*. November 2015.

The City has many adopted policies to conserve habitat for protection of natural wildlife areas and that maintain connectivity for wildlife corridors and movement pathways. The conservation of the City's natural resources represents the foundation of conserving biological diversity within its jurisdiction in line with metropolitan areas across the nation and world. The City also has the unique opportunity to help educate and integrate its diverse residents and visitors in the conservation of the biodiversity and ecosystem services that natural areas within its own city limits has to offer.

2.3 Study Goals and Objectives

The study's goal is to maintain and enhance the ecological health within the City. To meet this goal, this study has three objectives: 1) To evaluate existing biotic conditions within the City's boundaries and delineate important areas for habitat conservation and enhancement necessary for sustaining wildlife within the City Los Angeles (through the designation of PAWs); 2) to identify important areas for enhancing connectivity for wildlife movement within the City (through the designation of Wildlife Movement Pathways [WMPs]); and 3) to provide scientific evidence and recommendations that can be used to inform the creation of guidelines and regulations for conserving and managing biological resources within these areas. These recommendations will inform the development of regulations by Planning, which will help to balance needs for development with needs for wildlife habitat and connectivity.

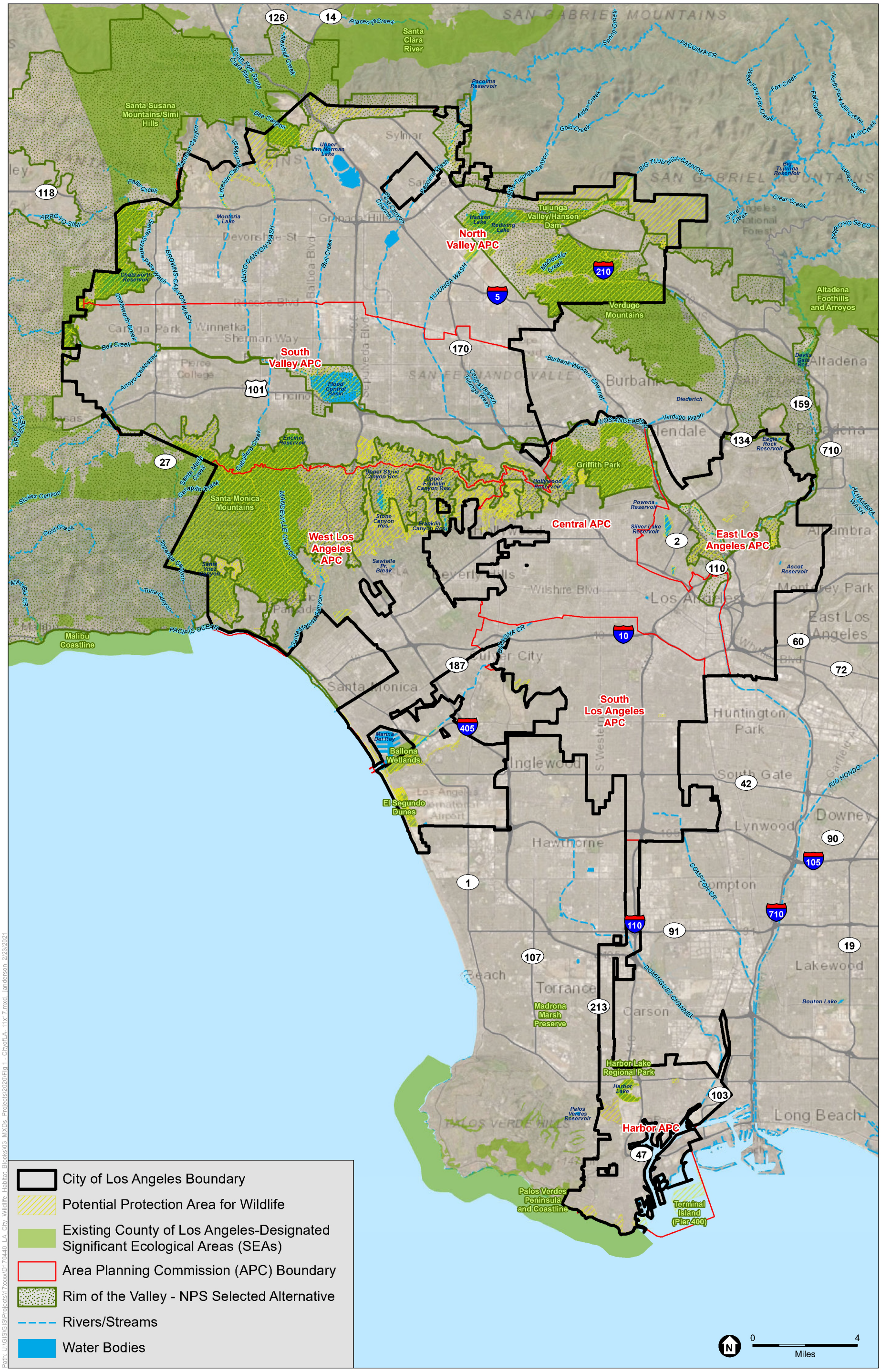
3. Protection Areas of Wildlife (PAWs)

3.1 Background

The City's Conservation Element recognizes some of the important habitat areas for the preservation and maintenance of biodiversity that are found within the City, including the County SEAs. However, the County SEAs identified within the City have limited regulatory protection within the City's jurisdiction. Furthermore, these areas include large contiguous natural areas, but do not include all important habitats for sustaining wildlife and connectivity within the City, such as fragmented habitat where diverse wildlife populations are known to persist.

3.2 Purpose of PAWs

The overall goal of identifying PAWs is to protect biologically important areas that are crucial for maintaining and preserving the existing level of biological diversity found within the City. The PAWs may provide habitat for endangered species, wildlife movement pathways, conservation of undisturbed examples of natural biotic communities, biotic communities or vegetation associations that are unique within the City or Southern California, and restoration or enhancement opportunities for areas of reduced biological diversity where restoration is planned to occur within the foreseeable future. These areas are under continuous pressure from the pattern of urbanization within a large metropolitan region, and in order for the City to maintain biological diversity within the urban environment, protection of these areas is needed for wildlife to persist.



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SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 1
City of Los Angeles Map

ESA

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Additionally, sustaining wildlife habitat and connectivity within the City will have broader implications for conserving habitat connectivity and ecological functions within adjacent habitat areas and the greater region. Biological resources and important wildlife habitat areas within the City of Los Angeles comprise elements of larger regional habitat linkages that extend beyond the City's boundaries. These regional landscape linkages connect biological resource areas in the City with resource areas in neighboring and adjacent jurisdictions, which in turn may extend further to other contiguous or non-contiguous resource areas. Consequently, the recognition and protection of local habitat and connectivity offer a key contribution to the functioning of regional linkages.

3.3 Methodology Used to Define PAWs

3.3.1 Selection Criteria

A suite of selection criteria was established to define what resources and locations should be conserved as PAWs. These criteria parallel the County's SEA criteria, which were chosen to preserve biological diversity and ecological functions. To these initial criteria, wildlife corridors have been added to better acknowledge the importance of habitat connectivity for facilitating wildlife movement and maintaining ecological processes in an urban setting. Wildlife movement corridors may help to reduce or moderate some of the adverse effects of habitat fragmentation by facilitating dispersal of individuals between substantive patches of remaining habitat, allowing for both long-term genetic interchange and individuals to re-colonize habitat patches from which populations may have been locally extirpated. Additionally, another criterion has been added to reflect opportunities to restore and/or enhance natural resources in areas where restoration is planned to occur within the foreseeable future. The selection criteria include the following:

1. The habitat of core populations of Endangered or Threatened plant and/or animal species.
2. Biotic communities, vegetative associations, and plant and animal species habitats that are either unique or are restricted in distribution in Southern California.
3. Biotic communities, vegetative associations, and plant and animal species habitats that are either unique or are restricted in distribution within the City of Los Angeles.
4. Corridors that facilitate wildlife movement between habitat areas and that may be either constrained with urban or suburban development or unconstrained.
5. Habitat that at some point in the life cycle of a species or suite of species serves as concentrated breeding, feeding, resting, or migrating grounds and is limited in availability within Southern California or within the City of Los Angeles. This includes areas that provide for the conservation of relatively undisturbed examples of the original natural biotic communities (i.e., biodiversity) within the City of Los Angeles.
6. Areas where restoration and/or enhancement of the City's original biodiversity components is planned within the foreseeable future.

As part of the early consultation process, ESA and City staff considered whether or not to include areas of marginal value and highly constrained wildlife corridors. The initial decision was to include both marginal habitat (i.e., habitat that has been disturbed and is not pristine) and constrained corridors since both contribute to biodiversity, even if on a limited basis. If these areas met one or more of the selection criteria, then it was included as a PAW.

Additional factors considered included constrained wildlife movement pathways consisting of potential connections (between and within potential PAWs) where wildlife passage may be limited to areas as small as a network of side yards in residential areas, and small but important natural areas that may be home for highly restricted species or for unique resource rareness that occur in localized areas. For wildlife movement, mid- to large-sized mammals were initially the focus for representative wildlife movement since the larger ranges of these species often encompass many of the ranges of smaller terrestrial vertebrates. For purposes of this study, medium mammals include American badger (*Taxidea taxus*), gray fox (*Urocyon cinereoargenteus*), long-tailed weasel (*Mustela frenata*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*). Large mammals include black bear (*Ursus americanus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), mountain lion (*Puma concolor*), and mule deer (*Odocoileus hemionus*). However, the habitat and movement requirements for other taxa (e.g., amphibians, reptiles, birds) and in multiple habitat types (e.g., terrestrial, aquatic) were also considered. In small but important habitat areas, such as the Baldwin Hills where the coastal California gnatcatcher (*Polioptila californica californica*) (a federally threatened species) occurs, habitat sustainability and exchange between populations of "outlying" species are valuable ecological functions.

3.3.2 Data Review and Identification of Potential PAWs

ESA reviewed the City's biological resources and undeveloped areas in order to evaluate important wildlife habitat areas and recommend PAWs for the protection and preservation of the City's biological diversity and natural history heritage. The evaluation began with review of the County SEAs within the City of Los Angeles, which were overlaid onto an aerial photograph in Google Earth.[21] Additional potential City PAWs were then identified and delineated via review of aerial photography based on natural communities and undeveloped areas contiguous or adjacent to existing County SEAs, as well as other Open Space areas and large undeveloped areas with potential to support wildlife within the City.

Literature and databases were then reviewed for information focusing on important areas for connectivity throughout the City and region. Most of the studies reviewed did not focus on urban areas that provide fragmented habitat and are of lower ecological value, but rather focused on large undeveloped habitat blocks that contain habitat conducive to regional movement. Sources included *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*,[22] a collaborative inter-agency effort to identify and conserve a regional network of highest-priority habitat linkages throughout southern California, and *South Coast Missing Linkages: A Linkage Design for the Santa Monica-Sierra Madre Connection*,[23] which focuses on conserving a landscape-level connection between the Santa Monica Mountains and the Sierra Madre Ranges.

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21 Los Angeles County, Department of Regional Planning. 2017. *Significant Ecological Area - SEAs & The General Plan*. SEA Program. Available online (http://planning.lacounty.gov/sea/biological). Accessed November 3, 2017.

22 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

23 Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection*. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

Although it is outside of the City's limits, Ventura County's *Habitat Connectivity and Wildlife Corridor*,[24] an effort which mapped wildlife corridors throughout Ventura County and developed regulations that would protect habitat connectivity and wildlife movement corridors within the non-coastal area of the county, was also reviewed for regional context.

ESA reviewed the *Rim of the Valley Corridor Special Resource Study* (Figure 1), a study to determine the feasibility of designating the Rim of the Valley corridor as a unit of the Santa Monica Mountains National Recreation Area (SMMNRA), and means for the protection and interpretation of this corridor by the NPS, other federal, state, or local government entities, or private or non-profit organizations.[25] Other reviewed references included the *California Essential Habitat Connectivity*, a state-wide study that identified from a broad-brush perspective large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas);[26] and conserved areas owned or managed by the Santa Monica Mountains Conservancy (SMMC)/Mountains Recreation Conservation Authority (MRCA). These areas were considered for expanded or additional areas for potential PAWs.

Additionally, maps and databases were queried for known occurrences of special-status species documented within the City. Special-status species include both plant and wildlife species considered endangered or threatened under the Federal Endangered Species Act or California Endangered Species Act, as well as species that are not yet listed but are becoming increasingly rare within the City or southern California region. Information reviewed included U.S. Fish and Wildlife Service (USFWS) Species Occurrence Data,[27] and USFWS Critical Habitat Mapping, which shows designated Critical Habitat areas important for the conservation of federally-listed species.[28] The California Natural Diversity Database (CNDDB), a CDFW species account database, was also queried for information regarding known observations of special-status species and sensitive habitats (such as Southern Coastal Bluff Scrub along the undeveloped coastline in San Pedro) within the City. The California Native Plant Society (CNPS) Online Inventory was also reviewed for rare plants documented within the City and vicinity. Other locally known locations of special-status species (e.g., least tern and snowy plover nesting locations based on ESA biologists' observations) were also considered. It should be noted that during the preparation of this report, on April 21, 2020, the Fish and Game Commission recommended the Southern California/Central Coast evolutionarily significant unit (ESU) of mountain lions as a candidate

24 Ventura County Resource Management Agency. 2020. Website accessed March 4, 2020. *Habitat Connectivity and Wildlife Corridor*. https://vcrma.org/habitat-connectivity-and-wildlife-movement-corridors.

25 NPS. 2015. *Finding of No Significant Impact, Rim of the Valley Corridor Special Resource Study*. November 2015.

26 CalTrans and CDFG. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared with Funding from: Federal Highways Administration. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18366.

27 USFWS. 2017. *Species Occurrence Data*. Provided by USFWS.

28 USFWS. 2017. *Critical Habitat Mapping*. GIS files provided by USFWS.

species for listing as Threatened under the California Endangered Species Act.[29,30] Thus, for purposes of this report, mountain lion is considered a special-status species. Areas where special-status species occurrences have been documented were considered for potential PAWs, and as part of the selection criteria for determining PAWs.

Other data was collected to determine where common (i.e., not special-status) wildlife have been documented within the City. A literature review was conducted of local wildlife movement studies within the City, including a California State University, Northridge (CSUN) study of wildlife movement across Interstate 405 in the Sepulveda Pass area that was monitored using gypsum powder track stations,[31] and a University of California, Los Angeles (UCLA) study that conducted camera trapping in the eastern Santa Monica Mountains in the vicinity of Mulholland Drive and N. Beverly Glen Boulevard.[32] Additionally, the Griffith Park Connectivity Study motion-triggered cameras detected mule deer, bobcat, coyote, raccoon, striped skunk, and a male mountain lion near State Route 101 on the western side of Griffith Park.[33] This mountain lion detection in February 2012 was the first verifiable record of a mountain lion east of Interstate 405 or State Route 101 in the Santa Monica Mountains. As part of a NPS study, this mountain lion was later captured, radio-collared, and given the identification code of Puma 22 (or P22), and has since become a local celebrity.

NPS biologists provided species and location information for medium and large mammals they were radio-collar tracking within portions of the City.[34] Data was also provided from the UC Davis Road Ecology Center[35] that showed documented locations of roadkill or animal hazards (classified into either fatality, injury, alive/no injury, or fate unknown) reported from volunteer carcass observations between 2009 and 2017 and from accidents reported to the California Highway Patrol between February 2015 and February 2017 (**Figure 2**, *Reported Wildlife Roadkill Observations*). Nearly half of the data was comprised of deer observations.

29 Center for Biological Diversity and the Mountain Lion Foundation. June 25, 2019. A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA). https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=171208&inline.

30 California Fish and Game Commission. April, 21, 2020. *Notice of Findings. Mountain Lion (Puma Concolor).* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=178623&inline

31 Osborn, N. 2009. *Barriers to Movement and Gene Flow in Mid-Sized Carnivores in the Eastern Santa Monica Mountains*. California State University, Northridge. Master of Science in Biology.

32 Albano, G., T. Bitcon, M. Condamoor, S. Lao, G. Lopez, R. Sokolovsky, and A. Vicencio. June 2012. *Large Mammal Movement in the Eastern Santa Monica Mountains*. UCLA Institute of the Environment and Sustainability. Environment 180 – Senior Practicum in Environmental Science. Client: Mountains Recreation and Conservation Authority. Advisors: Dr. Travis Longcore (UCLA) and Dr. Erin Boydston (U.S. Geological Survey).

33 Boydston, E., M. Ordeñana, and D. Cooper. 2014. *Landscape Connectivity for Medium and Large Mammals in the City of Los Angeles*. WatershedWise. Vol. 15, No. 4. Pages 4 -5.

34 NPS. 2018. Personal communication from NPS biologists (Justin Brown and Seth Riley) with Los Angeles Department of City Planning staff (Chris Piña, Michelle Levy, Lena Mik, and Conni Pallini-Tipton) and ESA biologists (Daryl Koutnik and Maile Tanaka). March 21, 2018.

35 University of California, Davis. 2017. *California Roadkill Observation System Occurrence Data*. Department of Environmental Science and Policy. Road Ecology Center. Email correspondence with Fraser Shilling, PhD., Co-Director. December 8, 2017.

Please Note: The reported wildlife roadkill occurrences shown on this map are based on community scientist observations. Although it is representative of where roadkill has been observed, the data is not comprehensive and has limitations (e.g., data may be skewed to indicate roads that people frequent the most, only represents those observations that were reported into the databases). Thus, the absence of reported roadkill observations does not indicate that roadkill or wildlife could not occur there.

4 - Mule (or Black tailed) Deer

2 - Mule (or Black tailed) Deer

2 - Coyote

2 - Mule (or Black tailed) Deer

3 - Mule (or Black tailed) Deer

17 Mule (or Black tailed) Deer

2

City of Los Angeles Boundary

Species

- American Coot
- American Crow
- Axis Deer
- Black-Necked Stilt
- Brown Pelican
- California Ground Squirrel
- Coyote
- Desert Cottontail
- Eastern Fox Squirrel
- Eastern Gray Squirrel
- Golden-Crowned Sparrow
- Gray Fox
- Great Horned Owl
- Mountain Lion
- Mule (or Black tailed) Deer
- Raccoon
- Rock Pigeon
- Rufous Hummingbird
- Striped Skunk
- Virginia Opossum

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0 6

Miles

Path: U:\GIS\GIS\Projects\17xxxx\D17l440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 2 - Reported Wildlife Roadkill Observations - 11x17.mxd, landerson, 3/11/2020

SOURCE: NAIP, 2016 (Aerial); County of Los Angeles, UC Davis Road Ecology Center.

Los Angeles City Protection Areas for Wildlife

Figure 2
Reported Wildlife Roadkill Observations

ESA

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Available "community science" data, collected from databases that local naturalists can contribute to, was also reviewed to determine areas that may be important for preserving biodiversity. These sources included iNaturalist, an online mapping database run by the California Academy of Sciences using citizen science (reported by hikers, hunters, birders, beach-combers, and other professional and recreational naturalists) to collect and share basic information on species observations to help people learn about nature and biodiversity,[36] as shown in **Figure 3**, *Community Science Reported Wildlife Observations (Medium and Large Mammals)*, which shows medium and large mammals documented within the city; eBird, a collaborative effort between the Cornell Lab of Ornithology and National Audubon Society that provides data for basic information on bird abundance and distribution from data collected by recreational and professional bird watchers;[37] and Reptiles and Amphibians of Southern California (RASCals), a citizen science project by the Natural History Museum of Los Angeles County (NHMLAC) and the San Diego Natural History Museum (SDNHM) to document native and non-native reptiles and amphibians throughout the Southern California region.[38] Data was also reviewed from Coyote Cacher, a research project with the University of California Cooperative Extension to collect information on coyote encounters in California using citizen science to inform researchers of trends in human-coyote interactions.[39] Other locally known locations of wildlife species, such as grunion (*Leuresthes tenuis*) spawning beaches on Cabrillo Beach,[40] were also considered. Areas within the City where common wildlife have been observed or recorded, particularly areas with greater concentrations of wildlife occurrences, that may be important breeding grounds, or other areas that may meet the selection criteria, were reviewed for potential wildlife habitat currently existing and were considered for potential PAWs.

3.3.3 Evaluation of Potential PAWs Against Selection Criteria

Each potential PAW identified was then evaluated against the selection criteria to determine whether it should be included as a City PAW. A more detailed rationale for defining each of the selection criteria is provided below:

36 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed November 15, 2017.

37 The Cornell Lab of Ornithology. 2012. *eBird: An Online Database of Bird Distribution and Abundance*. eBird Hotspots (http://ebird.org/ebird/hotspots). eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed: August 30, 2017.

38 Natural History Museum of Los Angeles County (NHMLAC) and San Diego Natural History Museum (SDNHM). 2018. *Reptiles and Amphibians of Southern California (RASCals) Project*. Website accessed January 18, 2018. https://nhm.org/site/activities-programs/citizen-science/rascals.

39 University of California, Division of Agricultural and Natural Resources. 2017. *Coyote Cacher*. Available online (http://ucanr.edu/sites/CoyoteCacher/). Website accessed September 7, 2017.

40 CDFW. 2017. *California Grunion Facts and Expected Runs*. Available online (https://www.wildlife.ca.gov/fishing/ocean/grunion#28352307-grunion-facts-and-faqs). Accessed September 28, 2017.

1. *The habitat of core populations of Endangered or Threatened plant or animal species.* This included plant and wildlife species that are listed as Federal and/or State Endangered and/or Threatened species by the USFWS and/or CDFW.[41, 42]

2. *Biotic communities, vegetative associations, and plant and animal species habitats that are either unique or are restricted in distribution in Southern California.* This included sensitive plant communities that are habitat types considered sensitive by the CDFW due to their rarity and/or decline in the region,[43] as well as other special-status plant and wildlife species, such as those considered rare by the CNPS[44] (i.e., not listed as Federal and/or State Endangered and/or Threatened species under Criterion 1).[45, 46, 47]

3. *Biotic communities, vegetative associations, and plant and animal species habitats that are either unique or are restricted in distribution within the City of Los Angeles.* This included locally important habitat areas, such as Environmentally Sensitive Habitat Areas identified within a Local Coastal Program.[48]

4. *Corridors that facilitate wildlife movement between habitat areas and that may be either constrained with urban or suburban development or unconstrained.* This included important areas for regional connectivity, such as the Los Angeles River, Santa Monica Mountains, and other areas with potential connection to large habitat blocks of undeveloped natural areas and/or open space areas, such as existing SEAs and other potential PAWs. A variety of factors were considered when evaluating the potential for connectivity, such as the range and mobility of various taxonomic groups (e.g., invertebrates, fish, amphibians, reptiles, birds, or mammals), topography, habitat type, land use (e.g., vacant, rural, suburban, urban), and the number and types of barriers to movement (e.g., roads, traffic, fences, human activity). Areas with potential connectivity were identified based on review of aerial photography, and conditions on the ground, such as general habitat types and barriers to movement, were ground-truthed in the field by experienced biologists (as detailed in Section 3.3.4 below) in order to determine suitability to support potential regional wildlife movement.

41 U.S. Fish and Wildlife Service (USFWS). 2017. *Species Occurrence Data*. Provided by USFWS.

42 CDFW. 2017. *California Natural Diversity Database (available by subscription) and RareFind*. CDFW: Sacramento, California. Accessed September 28, 2017.

43 CDFW. 2018. *California Natural Community List*. Vegetation Classification and Mapping Program. October 15, 2018. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities#natural%20communities%20lists.

44 The CNPS is a private plant conservation organization dedicated to the monitoring and protection of special-status species in California.

45 USFWS. 2017. *Species Occurrence Data*. Provided by USFWS.

46 CDFW. 2017. *California Natural Diversity Database (available by subscription) and RareFind*. CDFW: Sacramento, California. Accessed September 28, 2017.

47 CNPS. 2017. *Inventory of Rare and Endangered Plants of California*. California Native Plant Society. Available online (http://cnps.web.aplus.net /cgi-bin/inv/inventory.cgi). Accessed September 28, 2017.

48 City of Los Angeles, Department of City Planning. 2001. *Venice Local Coastal Program*. Land Use Plan. www.lacity.org/PLN. Certified by the Coastal Commission June 14, 2001.

Please Note: The reported wildlife occurrences shown on this map are based on community scientist observations. Although it is representative of where wildlife has been observed, the data is not comprehensive and has limitations (e.g., data may be skewed to indicate locations that people frequent the most, limited to areas generally more accessible to the public, and/or only represents those observations that were reported into the databases). Thus, the absence of reported wildlife observations does not indicate that wildlife could not occur there.

4 - Mule (or Black tailed) Deer

2 - Coyote

17 Mule (or Black tailed) Deer

3 - Mule (or Black tailed) Deer

2

City of Los Angeles Boundary

Species

- Bobcat
- Coyote
- Gray Fox
- Long-tailed Weasel
- Mountain Lion
- Mule (or Black tailed) Deer
- Striped Skunk
- Virginia Opossum

0 6 Miles

Path: U:\GIS\GIS\Projects\17xxxx\D170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 3 - Reported Wildlife Observations - 11x17.mxd_landerson_2/23/2021

SOURCE: NAIP, 2016 (Aerial); County of Los Angeles, UC Davis Road Ecology Center, iNaturalist.org.

Los Angeles City Protection Areas for Wildlife

Figure 3
Community Science Reported Wildlife Observations (Medium and Large Mammals)

ESA

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5. *Habitat that at some point in the life cycle of a species or suite of species serves as concentrated breeding, feeding, resting, or migrating grounds and is limited in availability on either a regional basis or within the City of Los Angeles. This includes areas that provide for the conservation of relatively undisturbed examples of the original natural biotic communities (i.e., biodiversity) within the City of Los Angeles.* This included areas that are locally important for breeding, feeding and resting, such as grunion spawning beaches on Cabrillo Beach[49] and monarch butterfly (*Danaus plexippus*) overwintering habitat.[50] This also included areas important for preserving biodiversity. For observations of avian species, the threshold for meeting this criterion was determined to be areas that supported 100 or more species of birds, as these areas are important for preserving biodiversity.[51, 52, 53, 54]

6. *Areas where restoration and/or enhancement of the City's original biodiversity components is planned within the foreseeable future.* This includes areas where the restoration and/or enhancement of biological resources is planned and will contributed to conserving biodiversity in the City, such as the Los Angeles River Ecosystem Restoration Project, a project of the U.S. Army Corps of Engineers (USACE) and locally sponsored by the City. The restoration project area is known as the ARBOR (Area with Restoration Benefits and Opportunities for Revitalization) reach, which plans to restore 11 miles of the Los Angeles River from approximately Griffith Park to downtown Los Angeles. Restoration measures considered include creation and reestablishment of historic riparian strand and freshwater marsh habitat to support wildlife and enhance habitat connectivity within the area, as well as to provide opportunities for connectivity to other areas, such as the Santa Monica Mountains, Verdugo Hills, Elysian Hills, and San Gabriel Mountains.[55] The City also prepared the Los Angeles River Revitalization Master Plan, a planning area which consists of an approximately one mile-wide, 32 mile-long river corridor and five opportunity areas along that corridor, to improve the general environment of the Los Angeles River by improving natural habitat, water quality, recreation, open space, and economic values.[56] The City also purchased the Taylor Yard, also referred to as the G2 parcel, a 42-acre parcel along the Los Angeles River, which is adjacent to Rio de Los Angeles State Park and the Bowtie, a 18-acre

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49 CDFW. 2017. *California Grunion Facts and Expected Runs*. Available online (https://www.wildlife.ca.gov/fishing/ocean/grunion#28352307-grunion-facts-and-faqs). Accessed September 28, 2017.

50 CDFW. 2017. *California Natural Diversity Database (available by subscription) and Rarefind*. CDFW: Sacramento, California. Accessed September 28, 2017.

51 The Cornell Lab of Ornithology. 2012. *eBird: An Online Database of Bird Distribution and Abundance*. eBird Hotspots (http://ebird.org/ebird/hotspots). eBird, Ithaca, New York. Available: http://www.ebird.org. Accessed: August 30, 2017.

52 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed November 15, 2017.

53 USFWS. 2017. *Species Occurrence Data*. Provided by USFWS.

54 CDFW. 2017. *California Natural Diversity Database (available by subscription) and Rarefind*. CDFW: Sacramento, California. Accessed September 28, 2017.

55 City of Los Angeles. 2016. *Reader's Guide for the LA River Ecosystem Restoration Project*. Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

56 The City of Los Angeles and the U.S. Army Corps of Engineers. 2007. *Final Programmatic Environmental Impact Report/Programmatic Environmental Impact Statement for the Los Angeles River Revitalization Master Plan*. Prepared by the City of Los Angeles Department of Public Works Bureau of Engineering and the U.S. Army Corps of Engineers Los Angeles District Planning Division with technical assistance from Tetra Tech, Inc. http://boe.lacity.org/lariverrmp/CommunityOutreach/LARiverFinalPEIRPEIS_VolumeI_043007.pdf.pdf

parcel owned by California State Parks. The Taylor Yard G2 River Park Project plans to transform the 42-acre parcel into open space.[57, 58]

A comprehensive list of vegetation communities found within the City is included in **Appendix A**, *Representative Vegetation Associations*. Additionally, comprehensive lists of plant species, wildlife species, and special-status plant and wildlife species found within the City are included in **Appendix B**, *Floral Compendium*, **Appendix C**, *Faunal Compendium*, and **Appendix D**, *Special-Status Species*, respectively.

A detailed matrix summarizing the selection criteria met for each potential PAW is provided in **Appendix E**, *PAW Criteria Matrix*.

3.3.4 Field Evaluation of Potential PAWs

From October 18 to November 16, 2017, ESA biologists Daryl Koutnik, Maile Tanaka, Dale Hameister, Matt South, Karl Fairchild, and Karla Flores conducted field site visits to each potential PAW, and conducted habitat assessments to evaluate the potential for each site to support wildlife, with particular focus on medium and large mammals as representative species that have larger range requirements that encompass the ranges of a variety of taxa. For each site, general habitat types were noted, as well as any observations of medium or large mammals or their sign (e.g., tracks, scat). Any human activities (e.g., pedestrians, dog walkers, equestrians, hikers, joggers, bikers, homeless encampments, construction) observed within the potential PAW or the immediate area were noted, as well as potential barriers and hazards to wildlife movement (e.g., fencing, walls, steep terrain or cliffs, noise, freeways, highly-trafficked roads).

A table summarizing medium and large mammal field observations by ESA biologists, or an assessment of potential to occur within each potential PAW, is provided in **Appendix F**, *Potential for Medium and Large Mammal Species to Occur within Potential PAWs*.

3.3.5 Reconciliation of Potential PAWs with City Parcel Map

Upon completing the mapping of the potential PAW boundaries based on the above criteria and field evaluations, a total of 44 PAWs were recommended, and final mapping of the PAW boundaries was modified by matching the boundary of individual property parcels[59, 60] with the limits of the PAWs. It should be noted that public rights-of-way (e.g., transportation circulation and flood control boundaries) are non-parcel areas within the City; thus, in these areas, the PAW boundary was not mapped.

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57 City of Los Angeles Bureau of Engineering. 2020. *Taylor Yard G2 Projects*. Website accessed March 5, 2020. https://tayloryardriverprojects.lacity.org/.

58 Zeiger, Mimi. 2019. *L.A. River planners float three design proposals for a major new park*. Los Angeles Times. July 17, 2019. https://www.latimes.com/entertainment/arts/la-et-cm-river-taylor-yard-park-design-proposals-20190708-story.html.

59 City of Los Angeles, Department of City Planning. 2017. *Zoning/Property Info (ZIMAS)*. Available online (http://zimas.lacity.org/). Accessed November 3, 2017.

60 County of Los Angeles, Office of the Assessor. 2017. *GIS Tax Parcel Boundary Base Map*. Los Angeles County Assessor. Information Technology Division. http://assessor.lacounty.gov/gis-maps/. April 3, 2017.

3.4 PAW Profiles

The 44 PAWs recommended are shown in **Figure 4**, *Protection Areas of Wildlife*. Descriptions of individual PAWs are provided below and are categorized geographically by Area Planning Commissions (APCs). For those PAWs that overlap into multiple APCs, the PAW is described in detail upon initial mention, and subsequent references may elaborate more on resources particular to a specific APC. The descriptions also note any PAWs that are documented as an existing Los Angeles County-designated SEA or an expanded area of existing Los Angeles County-designated SEA. Each PAW description includes a general discussion of representative vegetation communities that comprise the PAW, wildlife (with specific focus on medium and large mammals as representative species that have larger range requirements that encompass the ranges of a variety of taxa), potential for wildlife movement, and sensitive biological resources, including sensitive natural plant communities and special-status plant and wildlife species. For each PAW, the regional biological value is discussed and a table is included which summarizes each criterion and provides the justification for how they are met.

3.4.1 North Valley Area Planning Commission

3.4.1.1 Santa Susana Mountains and Simi Hills PAW

The Santa Susana Mountains and Simi Hills PAW is adapted from the existing Los Angeles County SEA, which includes four areas in the western and northwestern portions of the North Valley APC within the foothills of the Santa Susana Mountains to the northwest and the Simi Hills to the west (**Figure 5**, *North Valley APC - PAWs*). The western portion of the PAW is located south of State Route 118 and west of Chatsworth. The northwestern portion of the PAW is located north of State Route 118 and west of Porter Ranch and north of Granada Hills. The existing Los Angeles County SEA has been expanded to include additional undeveloped areas, including Stoney Point Park, Browns Creek Park, Mormon Canyon, O'Melveny Park, and undeveloped areas south of Sunshine Canyon Landfill. Within the North Valley APC, the Santa Susana Mountains and Simi Hills PAW is approximately 4,486.9 acres.

Vegetation

Natural plant communities within this PAW include non-native grassland, oak woodland, non-native woodland, coastal sage scrub, chaparral, rock outcrop, and sycamore and willow riparian woodland, as well as landscaped areas associated with parks.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote and mule deer were observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Santa Susana Mountains to the northwest and the Simi Hills to the west. This area is identified as part of the Rim of the Valley Corridor, and is adjacent to a Ventura County Wildlife Corridor, a California Essential Habitat Connectivity area,

and a South Coast Wildlands South Coast Ecoregion Missing Linkage (Santa Monica-Sierra Madre).

Sensitive Biological Resources

Sensitive Natural Plant Communities

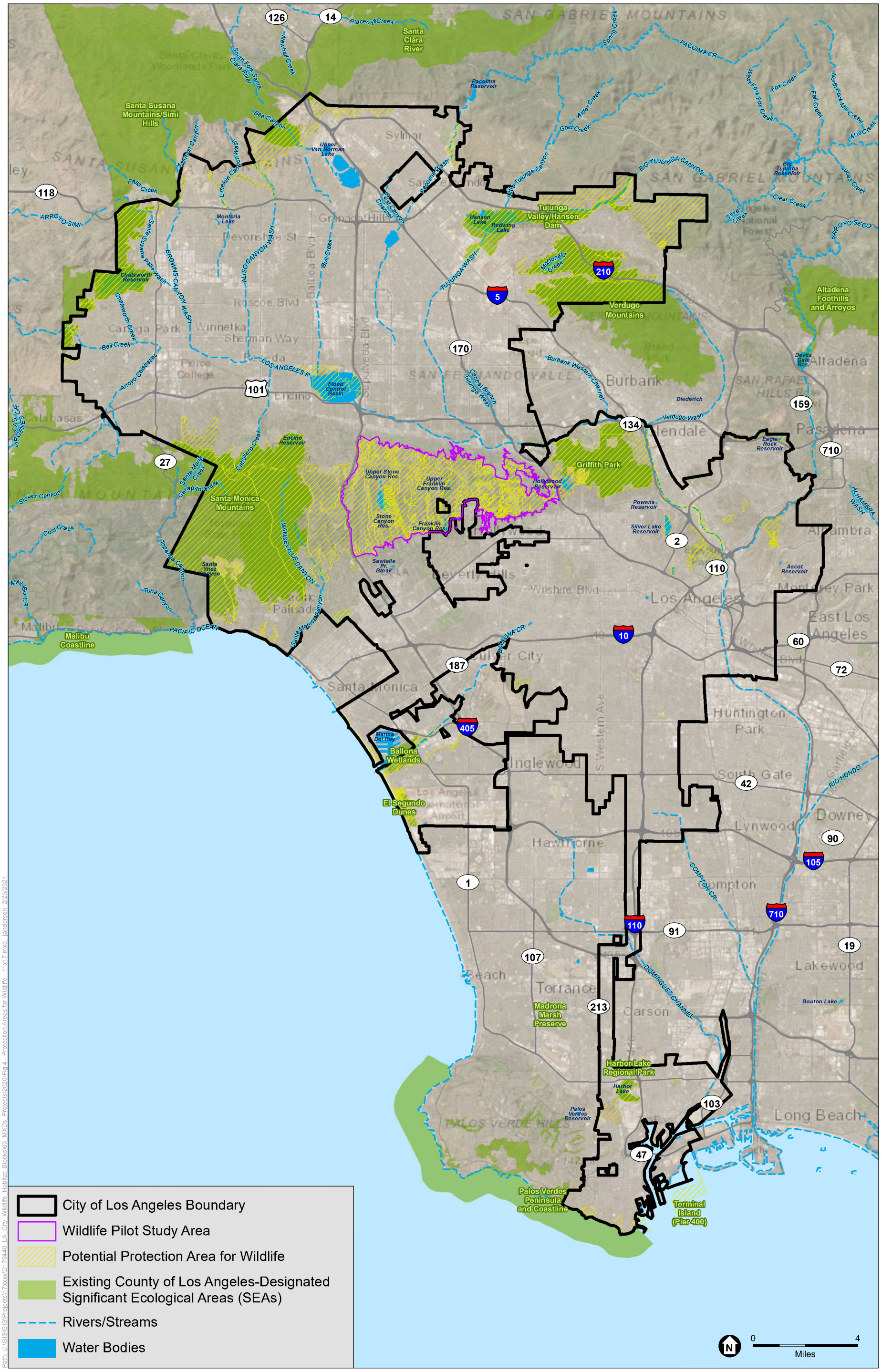
This PAW supports California Walnut Woodland and Southern Sycamore Alder Riparian Woodland, which are two communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

This PAW supports USFWS designated critical habitat for Braunton's milk-vetch (*Astragalus brauntonii*) (Federal Endangered [FE]), and has documented occurrences of Braunton's milk-vetch. Other special-status plant species documented to occur within this PAW include many-stemmed dudleya (*Dudleya multicaulis*) (CRPR 1B.2), Plummer's mariposa lily (*Calochortus plummerae*) (CRPR 4.2), slender mariposa lily (*Calochortus clavatus* var. *gracilis*) (CRPR 1B.2), and Santa Susana tarplant (*Deinandra minthornii*) (State Rare, CRPR 1B.2).

Special-Status Wildlife Species

This PAW supports USFWS designated critical habitat for coastal California gnatcatcher (Federal Threatened [FT], Species of Special Concern [SSC]), and has documented occurrences of tricolored blackbird (*Agelaius tricolor*) (State Candidate Endangered [SCE], SSC). Other special-status wildlife species documented to occur within this PAW include western spadefoot (*Spea hammondii*) (SSC), San Diego desert woodrat (*Neotoma lepida intermedia*) (SSC), western mastiff bat (*Eumops perotis californicus*) (SSC), and burrowing owl (*Athene cunicularia*) (SSC).



SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 4
Protection Areas for Wildlife

ESA

Santa Clara River

Saddletree Ranch (Santa Clara River)

Santa Susana Mountains/Simi Hills

Porter Ranch

Pacoima Wash

Tujunga Valley/Hansen Dam

San Gabriel Mountains

North Valley APC

Santa Susana Mountains/ Simi Hills

Tujunga Valley/Hansen Dam

Santa Susana Mountains/ Simi Hills

Verdugo Mountains

0 2 Miles

City of Los Angeles Boundary

North Valley APC

Potential Protection Area for Wildlife

SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 5
North Valley APC - PAWs

ESA

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Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, critical habitat, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened plant species and USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.1.2 Porter Ranch PAW

The Porter Ranch PAW consists of a network of parks and undeveloped canyons and drainage courses within the Porter Ranch community, including Sesnon Canyon, Moonshine Canyon Park, Limekiln Canyon Park, Wilbur-Tampa Park, Aliso Canyon Park, and Porter Ridge Park (Figure 5). This PAW is located in the northern portion of the North Valley APC, just south of the foothills of the Santa Susana Mountains and north of State Route 118. Within an otherwise developed area, the Porter Ranch PAW provides a network of both live-in and movement habitats for wildlife that connect to larger natural areas (i.e., the Santa Susana Mountains to the north). The Porter Ranch PAW is approximately 367.9 acres.

Vegetation

Natural plant communities within this PAW include coastal sage scrub, chaparral, oak woodland, willow woodland, non-native woodland, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote was observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through the linear network of riparian drainages and upland areas within the canyons of this PAW, as well as to the larger expanses of undeveloped areas Santa Susana Mountains to the north.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Cottonwood Willow Riparian Forest and Southern Sycamore Alder Riparian Woodland, which are two communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW supports USFWS designated critical habitat for coastal California gnatcatcher (FT, SSC) at Sesnon Canyon, Mormon Canyon, and Browns Creek Park.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports critical habitat, sensitive natural plant communities, and linkages that facilitate wildlife movement within and between PAWs.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.1.3 Saddletree Ranch (Santa Clara River) PAW

The Saddletree Ranch PAW contains a small area of the existing Los Angeles County Santa Clara River SEA, but has been expanded to include the undeveloped foothills of the San Gabriel Mountains (Figure 5). This PAW is immediately adjacent to Saddletree Ranch Open Space and the Angeles National Forest, which lie to the north, and includes Stetson Ranch Park. The Saddletree Ranch is located within the northern portion of the North Valley APC, just east of Interstate 5 and north of Interstate 210 and the community of Sylmar. The Saddletree Ranch PAW is approximately 695.8 acres.

Vegetation

Natural plant communities within this PAW include coastal sage scrub, chaparral, oak woodland, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote has been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the larger expanses of undeveloped areas of Saddletree Ranch Open Space and the Angeles National Forest to the north. This area is identified as part of the Rim of the Valley Corridor, and is adjacent to a California Essential Habitat Connectivity area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coast Live Oak Riparian Forest, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Davidson's bush-mallow (*Malacothamnus davidsonii*) (CRPR 1B.2) and Plummer's mariposa lily (CRPR 4.2).

Special-Status Wildlife Species

This PAW supports USFWS designated critical habitat for coastal California gnatcatcher (FT, SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports critical habitat, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.1.4 Pacoima Wash PAW

The Pacoima Wash PAW includes the undeveloped natural areas within Pacoima Wash as well as the foothills of the San Gabriel Mountains that fall within the City's limits (Figure 5). This PAW is located in the northern portion of the North Valley APC, northeast of Interstate 210, north of the community of Pacoima. The Pacoima Wash PAW is approximately 307.5 acres.

Vegetation

Natural plant communities within this PAW include coastal sage scrub, willow riparian woodland, mule fat scrub, and alluvial scrub.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote was observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the larger expanses of undeveloped areas of the San Gabriel Mountains to the east. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Plummer's mariposa lily (CRPR 4.2).

Special-Status Wildlife Species

This PAW has documented occurrences of least Bell's vireo (*Vireo bellii pusillus*) (FE, State Endangered [SE]).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species and special-status species.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered/ Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating		

Criteria	Criterion Satisfied?	Qualifying Evidence
Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.1.5 Tujunga Valley and Hansen Dam PAW

The Tujunga Valley and Hansen Dam PAW is adapted from the existing Los Angeles County SEA, and includes a portion of Big Tujunga Canyon, Tujunga Valley, Hansen Dam, Hansen Dam Park, Hansen Lake, and spreading grounds for the Los Angeles County Flood Control District (Figure 5). This PAW also includes Angeles National Golf Club, Hansen Dam Equestrian Center, and Hansen Dam Golf Course. This PAW is located in the northeastern portion of the North Valley APC, east and west of Interstate 210 between the communities of Lakeview Terrance and Sunland-Tujunga. The Tujunga Valley and Hansen Dam PAW is approximately 3,914.6 acres.

Vegetation

Natural plant communities within this PAW include alluvial fan sage scrub, willow-cottonwood riparian forest, oak woodland, wetlands, ruderal (i.e., non-native herbaceous cover), and open water.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Coyote has been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the San Gabriel Mountains PAW to the east and the larger expanses of undeveloped areas of the San Gabriel Mountains to the north and east. This area is identified as part of the Rim of the Valley Corridor and connects to a South Coast Wildlands Missing Linkage.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Riversidean Alluvial Fan Sage Scrub and Southern Sycamore Alder Riparian Woodland, which are two communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

This PAW has documented occurrences of slender-horned spineflower (*Dodecahema leptoceras*) (FE, SE, CRPR 1B.1) and Davidson's bush-mallow (CRPR 1B.2).

Special-Status Wildlife Species

This PAW supports USFWS designated critical habitat for Santa Ana sucker (*Catostomus santaanae*) (FT), and has documented occurrences of coastal California gnatcatcher (FT, SSC), least Bell's vireo (FE, SE), Santa Ana sucker (FT), southwestern willow flycatcher (*Empidonax traillii extimus*) (FE, SE), southern mountain yellow-legged frog (*Rana muscosa*) (FE, SE). Other special-status wildlife species documented to occur within this PAW include arroyo chub (*Gila orcuttii*) (SSC), Santa Ana speckled dace (*Rhinichthys osculus* ssp. *3*) (SSC), California legless lizard (*Anniella* sp. *1*) (SSC), coast horned lizard (*Phrynosoma blainvillii*) (SSC), coastal whiptail (*Aspidoscelis tigris stejnegeri*) (SSC), western pond turtle (*Emys marmorata*) (SSC), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant and wildlife species, critical habitat, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened plant and wildlife species and USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.1.6 San Gabriel Mountains PAW

The San Gabriel Mountains PAW consists of the surrounding foothills of the San Gabriel Mountains to the north and east of the Tujunga Valley and Hansen Dam PAW (Figure 5). This PAW is located in the northeastern portion of the North Valley APC, northeast of Interstate 210 and north and east of the community of Sunland-Tujunga. The San Gabriel Mountains PAW is approximately 2,731.6 acres.

Vegetation

Natural plant communities within this PAW include chaparral, coastal sage scrub, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the Tujunga Valley and Hansen Dam PAW to the west and the larger expanses of undeveloped areas of the San Gabriel Mountains to the north and east. Portions of this area are identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coast Live Oak Riparian Forest and Southern Sycamore Alder Riparian Woodland, which are two communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Davidson's bush-mallow (CRPR 1B.2), Greata's aster (*Symphyotrichum greatae*) (CRPR 1B.3), and Plummer's mariposa lily (CRPR 4.2).

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (State Candidate Threatened [SCT]) and coast horned lizard (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages. Directly connects to the Tujunga Valley and Hansen Dam PAW to the west.
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.1.7 Verdugo Mountains PAW

The Verdugo Mountains PAW is adapted from the existing Los Angeles County SEA, but has been expanded slightly in some areas to include additional contiguous undeveloped natural areas within the Verdugo Mountains (Figure 5). This PAW is located to the southwest, south, and northeast of Interstate 210, and includes Verdugo Mountain Park, Tuna Canyon Park, McGroarty Park, Haines Canyon Park, Verdugo Hills Golf Course, and Villa Cabrini Park. The Verdugo Mountains PAW is approximately 5,578.8 acres.

Vegetation

Natural plant communities within this PAW include chaparral, coastal sage scrub, oak woodland, and riparian oak forest.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote, gray fox, American black bear, and raccoon were observed, and bobcat has been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the larger expanses of undeveloped areas of the Verdugo Mountains to the south. This area is identified as part of the Rim of the Valley Corridor and connects to a South Coast Wildlands Missing Linkage.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coast Live Oak Riparian Forest and Southern Sycamore Alder Riparian Woodland, which are two communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Davidson's bush-mallow (CRPR 1B.2), Plummer's mariposa lily (CRPR 4.2), slender mariposa lily (CRPR 1B.2), and white rabbit-tobacco (*Pseudognaphalium leucocephalum*) (CRPR 2B.2).

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities, special-status species, and linkages that facilitate wildlife movement within and between PAWs.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 6: Restoration Foreseeable		

3.4.2 South Valley Area Planning Commission

3.4.2.1 Santa Susana Mountains and Simi Hills PAW

The Santa Susana Mountains and Simi Hills PAW is described above in Section 3.1.1.1. This PAW extends into the South Valley APC and is located in along the foothills of the Simi Hills, west of the community of West Hills. Within the South Valley APC, this PAW includes Roscoe-Valley Circle Park, El Escorpion Park, Bell Canyon Park, and Knapp Ranch Park West (**Figure 6**, *South Valley APC - PAWs*). Within the South Valley APC, the Santa Susana Mountains and Simi Hills PAW is approximately 574.1 acres.

Vegetation

Natural plant communities within this PAW include non-native grassland, oak woodland, non-native woodland, coastal sage scrub, chaparral, and sycamore and willow riparian woodland, as well as landscaped areas associated with a park.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote and mule deer were observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Simi Hills to the west. This area is identified as part of the Rim of the Valley Corridor, and is adjacent to a Ventura County Wildlife Corridor, a California Essential Habitat Connectivity area, and a South Coast Wildlands South Coast Ecoregion Missing Linkage (Santa Monica-Sierra Madre).

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coast Live Oak Riparian Forest, which is considered sensitive habitats by CDFW due to its rarity and/or decline in the region.

Special-Status Plant Species

This PAW has documented occurrences of Braunton's milk-vetch (FE). Other special-status plant species documented to occur within this PAW include chaparral nolina (*Nolina cismontana*) (CRPR 1B.2) and Plummer's mariposa lily (*Calochortus plummerae*) (CRPR 4.2).

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, sensitive natural plant communities, and special-status plant species.

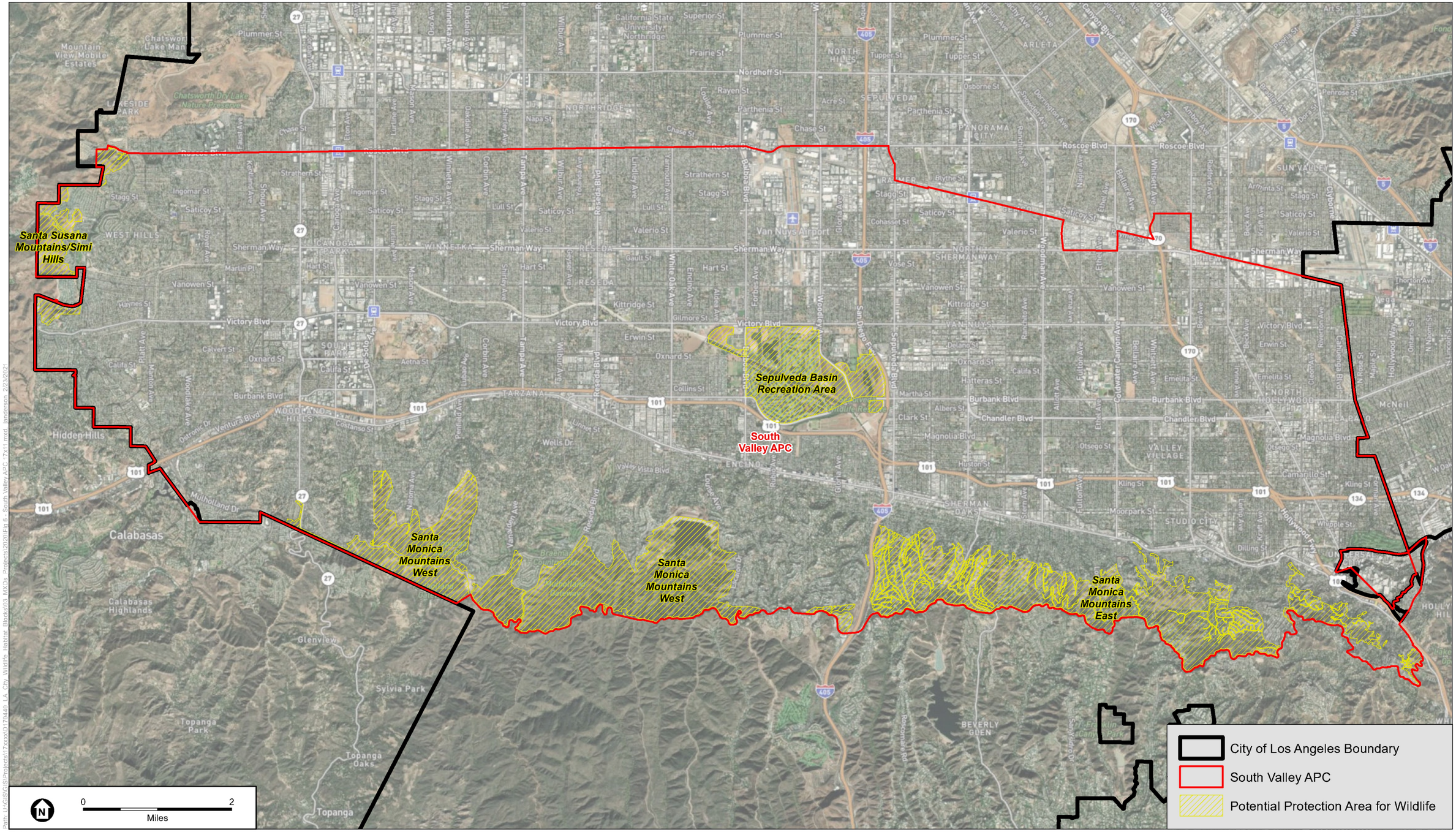
Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened plant species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.2.2 Santa Monica Mountains West PAW

Within the South Valley APC, the Santa Monica Mountains West PAW is adapted from the existing Los Angeles County SEA, but was expanded to include undeveloped natural areas along Topanga Canyon State Park, Marvin Braude Mulholland Gateway Park, and Serrania Avenue Park as Resource areas within the western portion of this PAW (Figure 6). This PAW is located within the southwestern portion of the South Valley APC within the foothills of the Santa Monica Mountains, south of State Route 101. Within the South Valley APC, the Santa Monica Mountains West PAW is approximately 10,769.5 acres.

Vegetation

Natural plant communities within this PAW include chaparral, oak woodland, sycamore woodland, non-native woodland, ruderal, and non-native grassland.



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 6
South Valley APC - PAWs

ESA

Path: U:\GIS\GIS\Projects\17xxxx\D170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 6 - South Valley APC 17x11.mxd, landerson, 2/23/2021

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Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Mountain lion (*Puma concolor*) and coyote has been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the larger expanses of undeveloped areas of the Santa Monica Mountains to the south and west into unincorporated Los Angeles County. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered/ Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating		

Criteria	Criterion Satisfied?	Qualifying Evidence
Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.2.3 Santa Monica Mountains East PAW

The Santa Monica Mountains East PAW is a network of fragmented undeveloped natural areas interspersed with residential development of suburban single-family homes, many of which are aligned along ridges and canyons (Figure 6). Although this fragmented PAW does not contain large, extensive blocks of contiguous natural areas as many of the other PAWs do, this PAW connects larger areas of intact natural habitat within the Santa Monica Mountains West PAW to the west, and the Griffith Park and Hollywood Hills PAW to the east. Within the South Valley APC, the Santa Monica Mountains East PAW includes Deervale-Stone Canyon Park, Johnson Overlook, Fossil Ridge Park, Charles and Lotte Melhorn Overlook, Dixie Canyon Park, Longridge Park, MRCA Open Space, Coldwater Canyon Open Space, Wilacre Park, Coldwater Canyon Park, Fryman Canyon Park, Autry Overlook, Dead Man Overlook, and Universal City Overlook as Resource Areas. This PAW is located within the eastern range of the Santa Monica Mountains, east of Interstate 405 and west of State Route 101. Within the South Valley APC, the Santa Monica Mountains East PAW is approximately 1,570.8 acres.

Vegetation

Natural plant communities within this PAW include chaparral, oak woodland, sycamore woodland, walnut woodland, non-native woodland, ruderal, and non-native grassland.

Wildlife

This PAW has a moderate to high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote and bobcat have been documented within this PAW.

Wildlife Movement

Although fragmented, wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Santa Monica Mountains to the west, fragmented undeveloped areas to the south, and Griffith Park and Hollywood Hills PAW to the east. Large portions of this area are identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities and linkages that facilitate wildlife movement within the PAW.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered/ Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.2.4 Sepulveda Basin Recreation Area PAW

The Sepulveda Basin Recreation Area PAW consists of the Sepulveda Flood Control Basin, Lake Balboa and Anthony C. Beilenson Park, Woodley Park, as well as a vegetated stretch of the Los Angeles River that extends from the Orange Line Busway to Burbank Boulevard (Figure 6). This PAW also includes the Woodley Lake Golf Course, Balboa Golf Course, and Encino Municipal Golf Course. Although this PAW contains little undeveloped natural habitat, the open space areas within this PAW may provide some habitat for wildlife within an otherwise urbanized area of the San Fernando Valley. The Sepulveda Basin Recreation Area PAW is located west of Interstate 405 and north of State Route 101 within a highly developed area northeast of Encino and

southwest of Van Nuys. The Sepulveda Basin Recreation Area PAW is approximately 1,158.1 acres.

Vegetation

Natural plant communities within this PAW include willow riparian woodland, non-native grassland, and landscaped areas and golf courses.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Medium and large mammals may be limited to more urban-adapted species, such as coyote, since this PAW is isolated and surrounded by development, and habitat to support such species is primarily within the dense vegetation within the Los Angeles River. Coyote, raccoon, and Virginia opossum have been documented within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may utilize the concrete-lined portions of the Los Angeles River that lie upstream and downstream of the PAW as a movement corridor. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of least Bell's vireo (FE, SE), western pond turtle (SSC), and burrowing owl (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, special-status species, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status wildlife species (e.g., SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3 West Los Angeles Area Planning Commission

3.4.3.1 Santa Monica Mountains West PAW

The Santa Monica Mountains West PAW is described above in Section 3.1.2.2. The majority of this PAW falls within the West Los Angeles APC and is adapted from the existing Los Angeles County SEA, but was expanded to include adjacent undeveloped natural areas west towards Topanga Canyon and east towards Interstate 405 (**Figure 7**, *West Los Angeles APC - PAWs*). The Santa Monica Mountains West PAW includes Topanga State Park, Santa Ynez Canyon Park, Temescal Gateway Park, Rivas Canyon Park, Will Rogers State Historic Park, Westridge-Canyonback Wilderness Park, and Mountain Gate Country Club as Resource Areas. This PAW contains large extents of undeveloped natural area that are contiguous to the rest of the Santa Monica Mountains to the west in unincorporated Los Angeles County and Ventura County. The Santa Monica Mountains West PAW is located within the western portion of the West Los Angeles APC, west of Interstate 405. Within the West Los Angeles APC, the Santa Monica Mountains West PAW is approximately 8,795.1 acres.

Vegetation

Natural plant communities within this PAW include chaparral, oak woodland, sycamore woodland, non-native woodland, ruderal, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Mountain lion, coyote, and mule deer have been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the large expanses of undeveloped areas of the Santa Monica Mountains to the east and west into unincorporated Los Angeles County. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

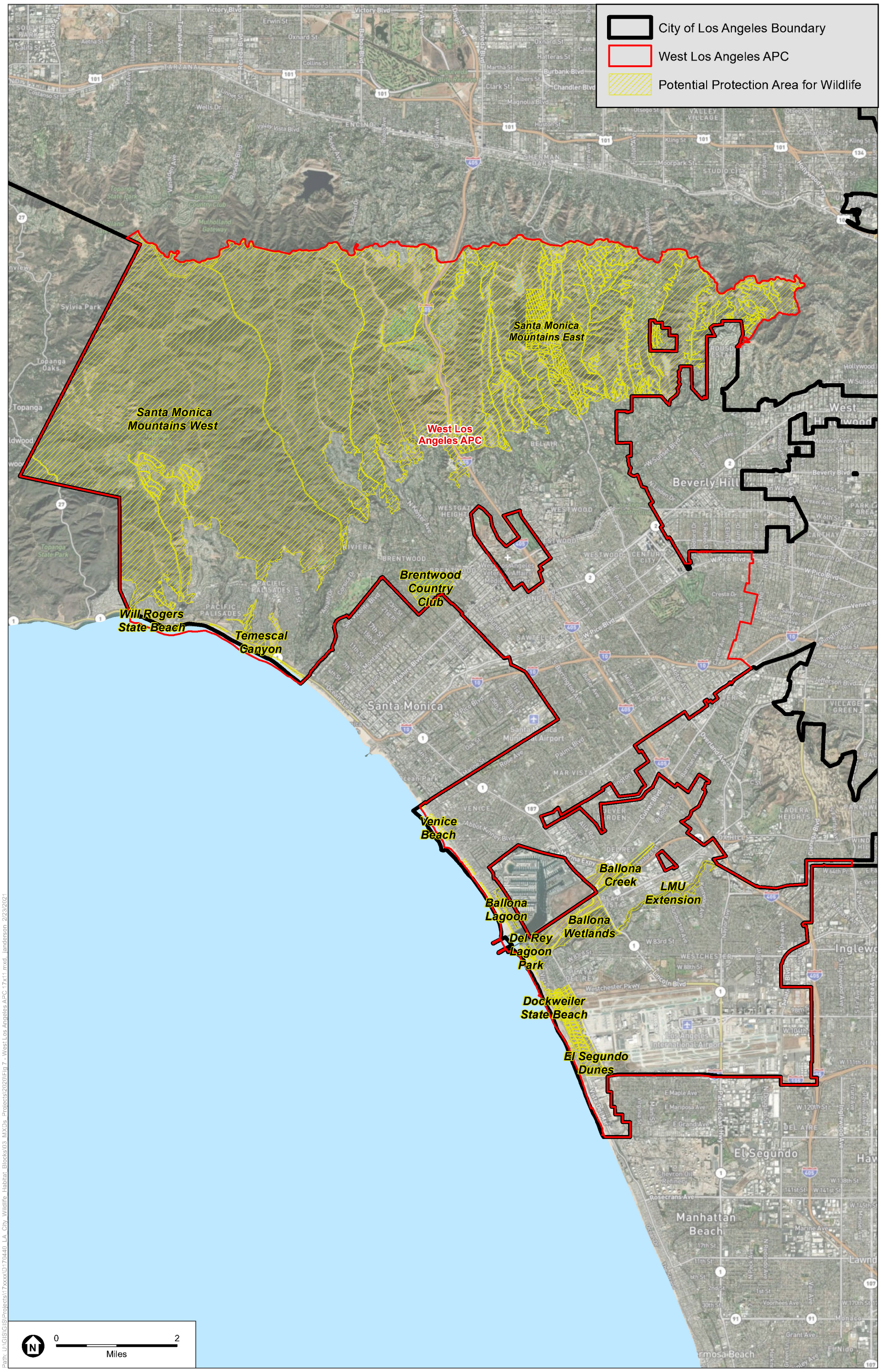
This PAW supports California Walnut Woodland, Southern Coast Live Oak Riparian Forest, and Southern Sycamore Alder Riparian Woodland, which are communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

This PAW supports USFWS designated critical habitat for Braunton's milk-vetch FE, and has documented occurrences of Braunton's milk-vetch. Other special-status plant species documented to occur within this PAW include Santa Monica dudleya (*Dudleya cymosa* ssp. *ovatifolia*) (FT, CRPR 1B.1), Plummer's mariposa lily (CRPR 4.2), and white-veined monardella (*Monardella hypoleuca* ssp. *hypoleuca*) (CRPR 1B.3).

Special-Status Wildlife Species

This PAW has documented occurrences of steelhead (southern California Distinct Population Segment [DPS]) (*Oncorhynchus mykiss irideus*) (FE) and mountain lion (SCT). Other special-status wildlife species documented to occur within this PAW include coastal whiptail (SSC), two-striped garter snake (*Thamnophis hammondii*) (SSC), and western mastiff bat (SSC).



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 7
West Los Angeles APC - PAWs

ESA

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Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, critical habitat, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened plant species and USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species and monarch butterfly habitat, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.2 Santa Monica Mountains East PAW

The Santa Monica Mountains East PAW is described above in Section 3.1.2.3. The majority of this fragmented PAW falls within the West Los Angeles APC (Figure 7). Within the West Los Angeles APC, the Santa Monica Mountains East PAW includes Getty View Park, Stone Canyon Overlook, Stone Canyon Reservoir, Briarwood Park, Beverly Glen Park, Franklin Canyon Park, and Laurel Canyon Park as Resource Areas. This PAW is located within the eastern range of the Santa Monica Mountains, east of Interstate 405 and west of State Route 101. Within the West Los Angeles APC, the Santa Monica Mountains East PAW is approximately 1,424.6 acres.

Vegetation

Natural plant communities within this PAW include chaparral, oak woodland, walnut woodland, non-native woodland, ruderal, and native and non-native grasslands.

Wildlife

This PAW has a moderate to high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Coyote, mule deer, and bobcat have been documented within this PAW.

Wildlife Movement

Although fragmented, wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Santa Monica Mountains to the west and Griffith Park and Hollywood Hills PAW to the east. Large portions of this area are identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Greata's aster (CRPR 1B.3).

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT) and coast horned lizard (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.3 Will Rogers State Beach PAW

The Will Rogers State Beach PAW consists of the coastal stretch of sandy beach from Coastline Drive to southeast of Entrada Drive, just southwest of (and parallel to) Pacific Coast Highway (Figure 7). This PAW includes Will Rogers State Beach and is located within the southwestern portion of the West Los Angeles APC. The Will Rogers State Beach PAW is approximately 102.9 acres.

Vegetation

Natural plant communities within this PAW include sandy beach and coastal sage scrub.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW to beaches of unincorporated Los Angeles County to the north and the City of Santa Monica to the south. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW supports USFWS designated critical habitat for snowy plover (*Charadrius alexandrinus nivosus*) (FT, SSC), and has documented occurrences of this species.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, critical habitat, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species and USFWS designated critical habitat.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.4 Temescal Canyon PAW

The Temescal Canyon PAW includes the undeveloped natural areas within Temescal Canyon Park, Palisades Park, and Potrero Canyon Park (Figure 7). This PAW is located in the southwestern portion of the West Los Angeles APC, just northeast of Pacific Coast Highway in the community of Pacific Palisades. The Temescal Canyon PAW is approximately 98.9 acres.

Vegetation

Natural plant communities within this PAW include coastal bluff, coastal sage scrub, chaparral, and landscaped areas including non-native trees and manicured lawns.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Evidence of coyote was observed within this PAW.

Wildlife Movement

Wildlife species have potential to move along the canyons of this PAW. Although somewhat isolated by surrounding development, this PAW is adjacent to the Will Rogers State Beach PAW and near the Santa Monica Mountains West PAW, so some wildlife (e.g., insect and avian species that can fly in and urban-adapted terrestrial species) may move to and from this PAW from surrounding areas. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.5 Brentwood Country Club PAW

The Brentwood Country Club PAW includes the landscaped golf course within the Brentwood Country Club (Figure 7). This PAW is located in the southwestern portion of the West Los Angeles APC, southwest of Interstate 405 and northwest of the Interstate 10 in the community of Brentwood. The Brentwood Country Club PAW is approximately 128.6 acres.

Vegetation

This PAW contains landscaped areas with non-native trees (pines and eucalyptus) and manicured lawns.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals).

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports monarch butterfly overwintering habitat, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.6 Venice Beach PAW

The Venice Beach PAW consists of the coastal stretch of sandy beach from Marine Court to the Marina del Rey Channel, just southwest of (and parallel to) Ocean Front Walk (Figure 7). This PAW includes Venice Beach and is located within the southern portion of the West Los Angeles APC. The Venice Beach PAW is approximately 165.1 acres.

Vegetation

This PAW includes a coastal stretch of sandy beach.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW to beaches of unincorporated Los Angeles County to the north and the City of Santa Monica to the south.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of snowy plover (FT, SSC) and least tern (*Sternula antillarum browni*) (FE, SE, State Fully Protected [SFP]). In addition, this PAW supports a nesting colony of least terns within an area that has been fenced off for the protection of the colony (e.g., from terrestrial predators, human disturbance, off-leash domestic dogs), which is considered an Environmentally Sensitive Habitat Area (ESHA) within the Venice Local Coastal Program (LCP).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles	X	Venice LCP ESHA (Least Tern Nesting Area)
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.7 Ballona Lagoon PAW

The Ballona Lagoon PAW consists a small lagoon that is fed by Grand Canal to the northwest, and is immediately adjacent to Marina del Rey Channel and surrounded by residential development to the east, north, and west (Figure 7). This PAW is located within the southern portion of the West Los Angeles APC, just northeast of the Venice Beach PAW. The Ballona Lagoon PAW is approximately 18.4 acres.

Vegetation

This PAW includes a coastal marsh community.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW from Venice Beach, which parallels Ballona Lagoon to the southwest, and Ballona Creek to the south.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW. However, Ballona Lagoon is considered an ESHA within the Venice LCP.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*) (CRPR 1B.1).

Special-Status Wildlife Species

This PAW has documented occurrences of least tern (FE, SE, SFP) and California black rail (*Laterallus jamaicensis coturniculus*) (State Threatened [ST], SFP).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles	X	Venice LCP ESHA
Criterion 4: Supports Linkages/Constrained Linkages		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.8 Ballona Wetlands PAW

The Ballona Wetlands PAW includes the undeveloped natural areas of the Ballona Freshwater Marsh and Ballona Wetlands Ecological Reserve that are immediately south of channelized Ballona Creek (Figure 7). The Ballona Wetlands are a remnant of what was the largest coastal lagoon in Los Angeles (Los Angeles County 2012a). This PAW is contiguous to undeveloped areas outside of the City's limits (i.e., within unincorporated Los Angeles County) to the north of Ballona Creek. This PAW is located in the southern portion of the West Los Angeles APC within the community of Playa del Rey. The Ballona Wetlands PAW is approximately 471.6 acres.

Vegetation

Natural plant communities within this PAW include salt marsh, seasonal wetland, salt pan, brackish marsh, freshwater marsh, dune, non-native grassland, and upland scrub.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Coyote, raccoon, striped skunk, and Virginia opossum have been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW from inland drainage channels, the Ballona Creek PAW, and the Loyola Marymount University PAW to the coastal lagoons and beaches to the west (e.g., Ballona Lagoon PAW, Venice Beach PAW, Del Rey Lagoon Park PAW, and Dockweiler State Beach PAW).

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coastal Salt Marsh, which is considered a sensitive habitat by CDFW due to its rarity and/or decline in the region.

Special-Status Plant Species

This PAW has documented occurrences of Orcutt's pincushion (CRPR 1B.1) and southern tarplant (*Centromadia parryi* ssp. *australis*) (CRPR 1B.1).

Special-Status Wildlife Species

This PAW has documented occurrences of El Segundo blue butterfly (*Euphilotes battoides allyni*) (FE), light-footed Ridgway's rail (*Rallus obsoletus levipes*) (FE, SE, SFP), least Bell's vireo (FE, SE), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) (SE), least tern (FE, SE, SFP), and snowy plover (FT, SSC). Other special-status wildlife species documented to occur within this PAW include burrowing owl (SSC) and south coast marsh vole (*Microtus californicus stephensi*) (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species and monarch butterfly overwintering habitat, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.9 Ballona Creek PAW

The Ballona Creek PAW consists of the concrete-lined channelized portion of Ballona Creek from Centinela Avenue to Lincoln Boulevard, as well as undeveloped upland areas to the north of the creek within the City's limits (Figure 7). This PAW is located in the southern portion of the West Los Angeles APC south of Marina del Rey. The Ballona Creek PAW is approximately 58.0 acres.

Vegetation

This PAW includes open water and patches of marsh habitat along the fringes of the water's edge within the concrete-lined channel.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

This PAW provides very limited habitat within the concrete-lined channel, but this waterway serves as a corridor, particularly for shorebirds, from inland areas (e.g., the Ballona Wetlands PAW) to the ocean.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of least tern (FE, SE, SFP) and snowy plover (FT, SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, a linkage that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages; Waterway for shorebirds and coastal access.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.10 Loyola Marymount University PAW

The Loyola Marymount University PAW includes the undeveloped natural areas and a drainage course that flows into the Ballona Wetlands PAW (Figure 7). This PAW is bordered by residential, commercial, and industrial development to the north and Loyola Marymount University and residential development to the south; however, it provides a linear strip of native upland and riparian habitat that connects to the Ballona Wetlands to the west. This PAW is located in the southern portion of the West Los Angeles APC, west of Interstate 405 and south of State Route 90. The Loyola Marymount University PAW is approximately 85.1 acres.

Vegetation

This PAW contains an earthen-bottomed stream with mature canopy of riparian woodland and patches of marsh habitat. The adjacent steep northwest-facing slope is vegetated with upland habitats, including native coastal sage scrub as well as non-native grassland and ruderal communities.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote and raccoon were observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Santa Susana Mountains to the northwest and the Simi Hills to the west.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of least Bell's vireo (FE, SE).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.11 Del Rey Lagoon Park PAW

The Del Rey Lagoon Park PAW includes a small lagoon and landscaped area that is immediately adjacent to Marina del Rey Channel and surrounded by residential development to the east, south, and west (Figure 7). This PAW is located in the southern portion of the West Los Angeles APC between the Dockweiler State Beach PAW and the Ballona Wetlands PAW. The Del Rey Lagoon Park PAW is approximately 12.4 acres.

Vegetation

Natural plant communities within this PAW include open water and landscaped areas.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW from Ballona Creek and the Ballona Wetlands PAW to the Dockweiler Beach PAW to the southwest.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of least tern (FE, SE, SFP) and burrowing owl (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 6: Restoration Foreseeable		

3.4.3.12 Dockweiler State Beach PAW

The Dockweiler State Beach PAW consists of the coastal stretch of sandy beach from Ballona Creek to W. Grand Avenue, just southwest of (and parallel to) Vista Del Mar (Figure 7). This PAW includes Dockweiler State Beach and is located within the southern portion of the West Los Angeles APC. The Dockweiler State Beach PAW is approximately 220.8 acres.

Vegetation

Natural plant communities within this PAW include an open stretch of sandy beach and groomed dunes with little to no vegetation.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Wildlife species have potential to move through this PAW from Ballona Creek and beaches to the south.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of El Segundo blue butterfly (FE), least tern (FE, SE, SFP), snowy plover (FT, SSC), and burrowing owl (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, special-status species, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status wildlife species (e.g., SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.3.13 El Segundo Dunes PAW

The El Segundo Dunes PAW includes the undeveloped natural areas of the El Segundo Dunes just west of the Los Angeles International Airport (Figure 7). This PAW also includes a small landscaped park, Vista Del Mar Park, and is located in the southern portion of the West Los Angeles APC. The El Segundo Dunes PAW is approximately 318.1 acres.

Vegetation

This PAW contains southern dune scrub, which consists of stabilized dunes vegetated with non-native grasses and ruderal vegetation.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects, reptiles, and small mammals).

Wildlife Movement

Although relatively isolated because it is surrounded by development to the north, east, and south, this PAW may support some movement from the adjacent Dockweiler State Beach PAW, as well as insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Dune Scrub, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of El Segundo blue butterfly (FE).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species and sensitive natural plant communities.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.4 Central Area Planning Commission

3.4.4.1 Santa Monica Mountains East PAW

The Santa Monica Mountains East PAW is described above in Section 3.1.2.3. A portion of this fragmented PAW falls within the Central APC (**Figure 8**, *Central APC - PAWs*). Within the Central APC, the Santa Monica Mountains East PAW includes Briar Summit Open Space

Preserve, Trebek Open Space, Wattles Garden Park, and Hollywood Bowl Overlook as Resource Areas. This PAW is located within the eastern range of the Santa Monica Mountains, east of Interstate 405 and west of State Route 101. Within the Central APC, the Santa Monica Mountains East PAW is approximately 1,016.6 acres.

Vegetation

Natural plant communities within this PAW include chaparral, sycamore woodland, and non-native grassland.

Wildlife

This PAW has a moderate to high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote and bobcat have been documented within this PAW.

Wildlife Movement

Although fragmented, wildlife species have potential to move through the various fragments of this PAW, as well as to the larger expanses of undeveloped areas of the Santa Monica Mountains to the west and Griffith Park and Hollywood Hills PAW to the east. Portions of this area are identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities and linkages that facilitate wildlife movement within and between PAWs.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered/ Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.4.2 Griffith Park and Hollywood Hills PAW

The Griffith Park and Hollywood Hills PAW is adapted from the existing Los Angeles County SEA, but has been expanded to include undeveloped natural areas to the west of Griffith Park, including Hollywood Reservoir (Figure 8). This PAW also includes Griffith Park, Lake Hollywood Park, Bronson Canyon, and Bronson Caves. This PAW is located within the northern portion of the Central APC, east of State Route 101, south of State Route 134, and west of Interstate 5. The Griffith Park and Hollywood Hills PAW is approximately 3,844.9 acres.

Vegetation

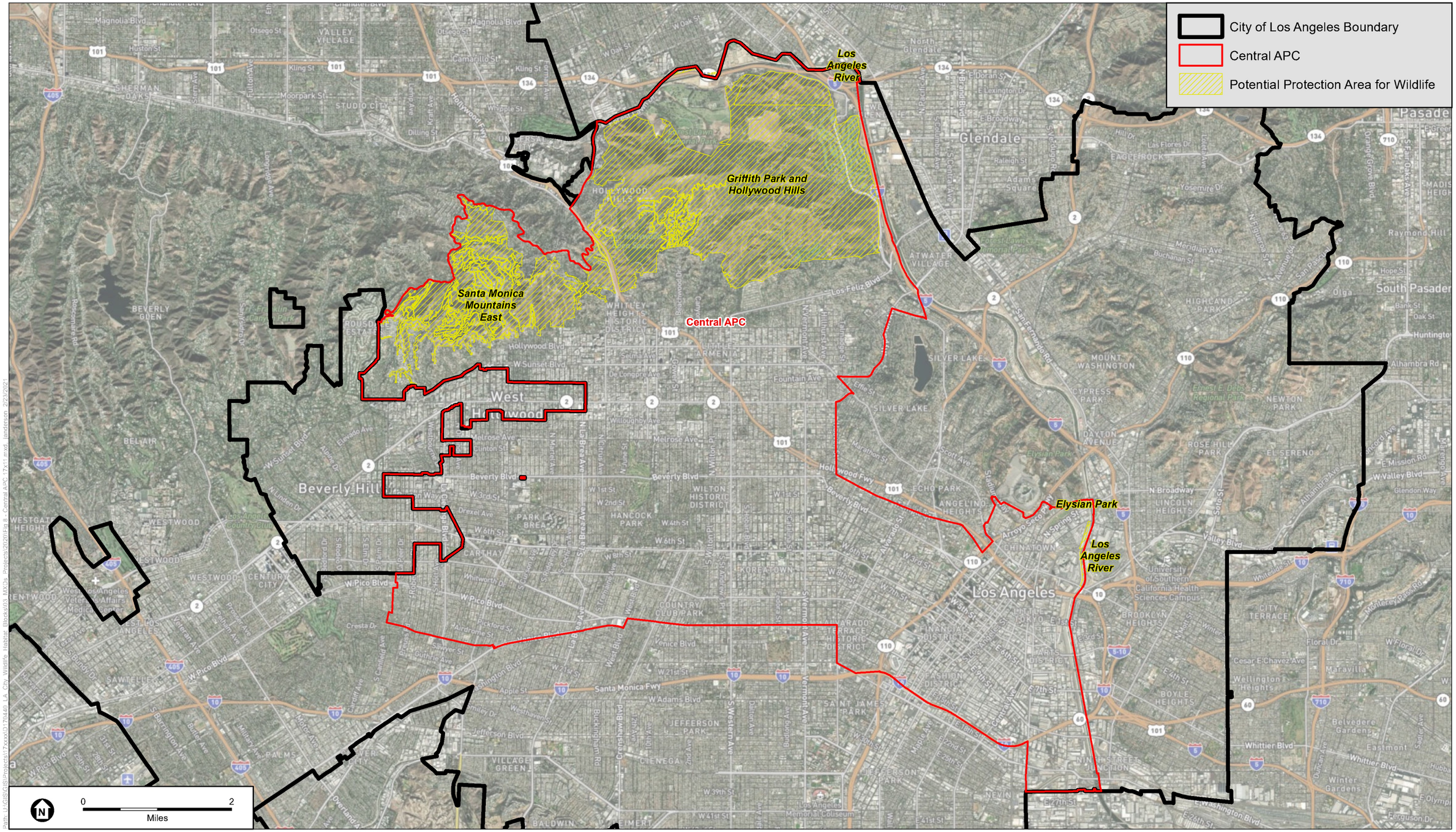
Natural plant communities within this PAW include chaparral, non-native woodland, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Mountain lion, coyote, bobcat, mule deer, raccoon, and Virginia opossum have been documented within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the large expanses of undeveloped areas of the Santa Monica Mountains to the west into unincorporated Los Angeles County. This area is identified as part of the Rim of the Valley Corridor.



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 8
Central APC - PAWs

ESA

Path: U:\GIS\GIS\Projects\17xxxx\170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 8 - Central APC 17x11.mxd, landerson, 2/23/2021

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Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, Southern Coast Live Oak Riparian Forest, and Southern Sycamore Alder Riparian Woodland, which are communities that are considered sensitive habitats by CDFW due to their rarity and/or decline in the region.

Special-Status Plant Species

This PAW has documented occurrences of Nevin's barberry (*Berberis nevinii*) (FE, SE, CRPR 1B.1), as well as mesa horkelia (*Horkelia cuneata* var. *puberula*) (CRPR 1B.1), Plummer's mariposa lily (CRPR 4.2), slender mariposa lily (CRPR 1B.2).

Special-Status Wildlife Species

This PAW has documented occurrences of mountain lion (SCT) and San Diego desert woodrat (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened plant species, sensitive natural plant communities, special-status species, linkages that facilitate wildlife movement within and between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened plant and wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.4.3 Los Angeles River PAW

A small portion of the Los Angeles River PAW lies within the northern portion of the Central APC, just north of the State Route 134 and Interstate 5 interchange (Figure 8). Historically, the Los Angeles River was home to a number of special-status wildlife species, which are currently extirpated from the river, including yellow-billed cuckoo, red-legged frog, and steelhead trout.[61] Although this portion of the PAW is currently a concrete-lined channel, it is anticipated to be restored under the U.S. USACE's Los Angeles River Ecosystem Restoration Project. The ARBOR project will restore 11 miles of the Los Angeles River, from Griffith Park to downtown Los Angeles.[62] The project will reestablish riparian strand, freshwater marsh, and aquatic habitat communities; reconnect the Los Angeles River to major tributaries, its historic floodplain, and the regional habitat zones of the Santa Monica, San Gabriel, and Verdugo Mountains; and maintain existing levels of flood risk management. The ARBOR project will also provide recreational opportunities consistent with the restored ecosystem within this reach of the Los Angeles River. The City also prepared the Los Angeles River Revitalization Master Plan, a planning area which consists of an approximately one mile-wide, 32 mile-long river corridor and five opportunity areas along that corridor, to improve the general environment of the Los Angeles River by improving natural habitat, water quality, recreation, open space, and economic values.[63] Within the Central APC, the Los Angeles River PAW is approximately 20.0 acres.

Vegetation

This portion of the PAW is a concrete-lined channel with no vegetation.

Wildlife

This PAW has a moderate potential to support medium and large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Although this PAW provides very limited habitat within the concrete-lined channel, this waterway serves as a water source and regional movement corridor through the City. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

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61 FoLAR. 2005. *The First State of the Los Angeles River Report*. Towards a Swimmable, Fishable, Boatable River.

62 Battelle Memorial Institute. 2013. *Final Independent External Peer Review Report Los Angeles River Ecosystem Restoration Feasibility Study, Draft Integrated Feasibility Report and Environmental Impact Statement*. Prepared for Department of the Army, U.S. Army Corps of Engineers, Ecosystem Restoration Planning Center of Expertise. November 8, 2013. http://www.spl.usace.army.mil/Portals/17/docs/review_plans/LARiverPeerReview.pdf.

63 The City of Los Angeles and the U.S. Army Corps of Engineers. 2007. *Final Programmatic Environmental Impact Report/Programmatic Environmental Impact Statement for the Los Angeles River Revitalization Master Plan*. Prepared by the City of Los Angeles Department of Public Works Bureau of Engineering and the U.S. Army Corps of Engineers Los Angeles District Planning Division with technical assistance from Tetra Tech, Inc. http://boe.lacity.org/lariverrmp/CommunityOutreach/LARiverFinalPEIRPEIS_VolumeI_043007.pdf.pdf

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that serves as a linkage that facilitate wildlife movement within the PAW, and supports areas important for preserving biodiversity. In addition, this PAW will be restored under USACE's ARBOR project and the Los Angeles River Revitalization Master Plan.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages - Regional movement corridor.
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable	X	ARBOR, Los Angeles River Revitalization Master Plan

3.4.5 East Los Angeles Area Planning Commission

3.4.5.1 Los Angeles River PAW

The Los Angeles River PAW is described above in Section 3.1.4.3. The majority of this PAW falls within the northwestern portion of the East Los Angeles APC, just east of (and parallel to) Interstate 5, from State Route 134 to State Route 110 (**Figure 9**, *East Los Angeles APC - PAWs*). Although the Los Angeles River is a concrete-lined channel, the majority of this portion of the

PAW is vegetated and thus provides some habitat value for wildlife, with future improvements anticipated from restoration with the USACE's ARBOR project. The ARBOR reach was selected for restoration because it contains a large portion of "soft bottom" area (where concrete does not cover the bottom of the riverbed) that hosts existing native riparian habitat and has exceptional promise for restoration. The area also includes two major tributary confluences (the Arroyo Seco and the Verdugo Wash confluences) and connections to three large State Park sites (i.e., Los Angeles State Historic Park, Rio de Los Angeles State Park, and The Bowtie, a 18-acre parcel owned by California State Parks).[64, 65] The Los Angeles River PAW includes the Taylor Yard, (G2 parcel), a 42-acre parcel along the Los Angeles River that will be transformed into open space, and is adjacent to Rio de Los Angeles State Park and The Bowtie.[66, 67] The Los Angeles River PAW is approximately 296.4 acres.

Vegetation

Although the majority of this PAW is a concrete-lined channel with no vegetation, portions of this PAW include patches of marsh habitat along the fringes of the water's edge within the concrete-lined channel and dense stands of riparian woodland.

Wildlife

This PAW has a moderate potential to support medium and large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Although this PAW provides very limited habitat within the concrete-lined channel, this waterway serves as a water source and regional movement corridor through the City. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

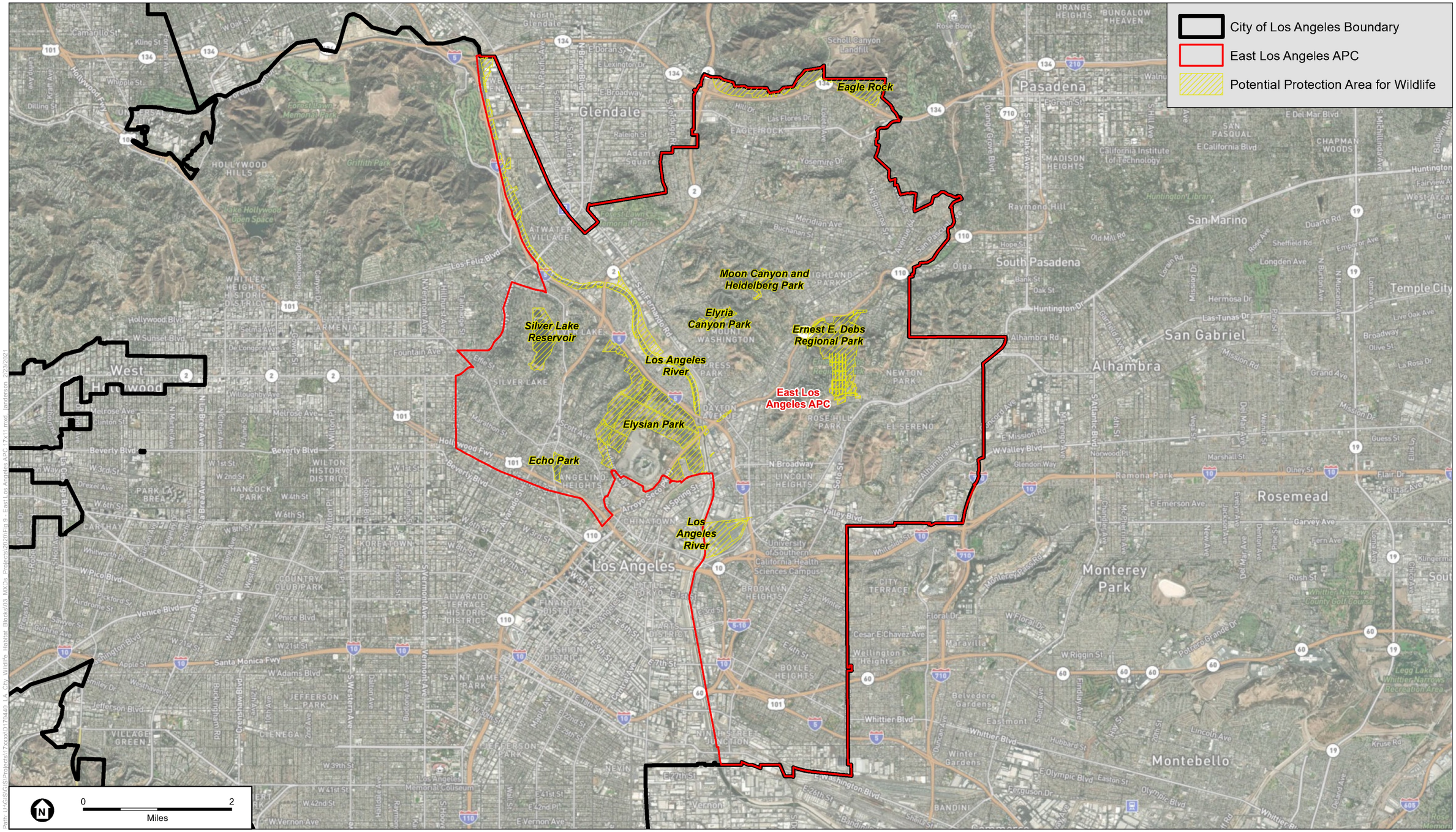
No documented special-status plant species were found within this PAW.

64 City of Los Angeles. 2016. Reader's Guide for the LA River Ecosystem Restoration Project. Final Integrated Feasibility Report (IFR) which includes the Final Environmental Impact Statement / Environmental Impact Report. April 2016. http://eng2.lacity.org/techdocs/emg/docs/lariver/LA_River_Reader_Guide.pdf.

65 Los Angeles River State Park Partners. 2020. *The Parks*. Website accessed March 5, 2020. http://www.larsppartners.org/the-parks.html.

66 City of Los Angeles Bureau of Engineering. 2020. *Taylor Yard G2 Projects*. Website accessed March 5, 2020. https://tayloryardriverprojects.lacity.org/.

67 Zeiger, Mimi. 2019. *L.A. River planners float three design proposals for a major new park*. Los Angeles Times. July 17, 2019. https://www.latimes.com/entertainment/arts/la-et-cm-river-taylor-yard-park-design-proposals-20190708-story.html.



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 9
East Los Angeles APC - PAWs

ESA

Path: U:\GIS\GIS\Projects\17xxxx\D170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 9 - East Los Angeles APC 17x11.mxd, landerson, 2/23/2021

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Special-Status Wildlife Species

This PAW supports least Bell's vireo (FE, SE), mountain lion (SCT), American peregrine falcon (*Falco peregrinus anatum*) (SFP), and Vaux's swift (*Chaetura vauxi*) (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, special-status species, and serves as a linkage that facilitate wildlife movement within the PAW. In addition, this PAW will be restored under USACE's ARBOR project and the Los Angeles River Revitalization Master Plan.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status wildlife species (e.g., SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages - Regional movement corridor.
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable	X	ARBOR, Los Angeles River Revitalization Master Plan, Taylor Yard G2 River Park Project

3.4.5.2 Silver Lake Reservoir PAW

The Silver Lake Reservoir PAW consists of two man-made reservoirs, Ivanhoe Reservoir and Silver Lake Reservoir, and surrounding landscaped areas, including Silver Lake Meadows, within a densely developed residential and commercial area of Silver Lake (Figure 9). Although this PAW does not support native vegetation, it provides an island of landscaped habitat in a highly urbanized area. This PAW is located southwest of Interstate 5 within the western portion of the East Los Angeles APC. The Silver Lake Reservoir PAW is approximately 127.4 acres.

Vegetation

Natural plant communities within this PAW include open water and landscaped areas.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals). Coyote, bobcat, and striped skunk have been documented within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.5.3 Echo Park PAW

The Echo Park PAW consists of a man-made lake and surrounding landscaped areas within a densely developed residential and commercial area of Echo Park (Figure 9). Although this PAW does not support native vegetation, it provides an island of landscaped habitat in a highly urbanized area. This PAW is located southwest of Interstate 5 and northwest of State Route 110 within the western portion of the East Los Angeles APC. The Echo Park PAW is approximately 23.7 acres.

Vegetation

This PAW contains landscaped areas with non-native trees, aquatic plants, and manicured lawns.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.5.4 Elysian Park PAW

The Elysian Park PAW includes a mix of undeveloped landscaped and natural areas that surrounds Dodger Stadium, including Victory Memorial Grove, Montecillo De Leo Politi, Chavez Ravine Arboretum, Elysian Heights Park, Solano Canyon Community Garden, and Radio Hills Gardens (Figure 9). This PAW is located within the western portion of the East Los Angeles APC, south of Interstate 5 and east and west of State Route 110. The Elysian Park PAW is approximately 598.9 acres.

Vegetation

This PAW contains a predominantly landscaped areas with a mixed woodland of non-native ornamental eucalyptus, pine, palm, and pepper trees, as well as native oak trees, with an understory of non-native grassland and a few remnant patches of native chaparral in some areas.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote, bobcat, gray fox, raccoon, and Virginia opossum have been observed within this PAW.

Wildlife Movement

Although this PAW is surrounded by development, it is adjacent to the Los Angeles River, which provides a regional movement corridor for wildlife, such as insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area. This area is identified as part of the Rim of the Valley Corridor.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating	X	Supports a variety of bird species, and is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.5.5 Elyria Canyon Park PAW

The Elyria Canyon Park PAW consists of undeveloped landscaped and natural areas within Elyria Canyon Park in the hills of Northeast Los Angeles (Figure 9). This PAW is surrounded by residential development and is located within the central portion of the East Los Angeles APC, north of Interstate 5, west of State Route 2, and east of State Route 110. The Elyria Canyon Park PAW is approximately 43.2 acres.

Vegetation

Natural plant communities within this PAW include chaparral, walnut woodland, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Evidence of coyote has been observed within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.5.6 Ernest E. Debs Regional Park PAW

The Ernest E. Debs Regional Park PAW consists of undeveloped natural and landscaped areas within Ernest E. Debs Regional Park and Rose Hill Park in the hills of Northeast Los Angeles (Figure 9). This PAW is surrounded by residential development and is located within the eastern portion of the East Los Angeles APC, south of State Route 110. The Ernest E. Debs Regional Park PAW is approximately 318.6 acres.

Vegetation

This PAW includes landscaped areas within the parks with large stands of eucalyptus, pine, and pepper trees, as well as non-native grassland and ruderal habitat. Native chaparral and walnut woodland dominate the north-facing slopes. Wetland vegetation occurs along the edge of the large freshwater pond in Ernest E. Debs Regional Park.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote, bobcat, and raccoon have been observed within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area. This area is identified as part of the Rim of the Valley Corridor, so there may be some potential for regional movement through the Arroyo Seco even though this concrete-lined channel is surrounded by development.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.5.7 Moon Canyon and Heidelberg Park PAW

The Moon Canyon and Heidelberg Park PAW consists of undeveloped natural areas within Moon Canyon Park and Heidelberg Park in the hills of Northeast Los Angeles (Figure 9). This PAW is surrounded by residential development that tends to be concentrated along the ridgelines and canyons within this area, and is located within the central portion of the East Los Angeles APC, northwest of State Route 110. The Moon Canyon and Heidelberg Park PAW is approximately 24.9 acres.

Vegetation

Natural plant communities within this PAW include walnut woodland with an understory of non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote has been documented within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports California Walnut Woodland, which is considered a sensitive habitat by CDFW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports sensitive natural plant communities.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.5.8 Eagle Rock PAW

The Eagle Rock PAW consists of undeveloped natural areas within the hills of Eagle Rock Hillside Park and Alatorre-Eagle Rock View Park (Figure 9). This PAW is located within the northern portion of the East Los Angeles APC, north of State Route 134 and the community of Eagle Rock. The Eagle Rock PAW is approximately 238.3 acres.

Vegetation

Natural plant communities within this PAW includes chaparral intermixed with coastal sage scrub habitats along the steep hillsides, with sycamore and oak woodlands in the bottoms of the canyons. This PAW also contains some large stands of non-native pine and eucalyptus trees.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Bobcat and mule deer have been documented within the immediate vicinity of this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW, as well as to the large expanses of undeveloped areas of the San Rafael Hills and the Rim of the Valley Corridor to the north.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

This PAW has documented occurrences of southern tarplant (CRPR 1B.1).

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports special-status species.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.4.6 South Los Angeles Area Planning Commission

3.4.6.1 Baldwin Hills PAW

The Baldwin Hills PAW includes the undeveloped natural and landscaped areas within Kenneth Hahn State Recreation Area within the South Los Angeles APC (**Figure 10**, *South Los Angeles APC - PAWs*). Although this PAW is bordered by dense residential development to the north and

east, this PAW is contiguous to undeveloped areas outside of the City's limits (i.e., within unincorporated Los Angeles County), including Kenneth Hahn Lower Park to the west and Inglewood Oil Fields to the southwest and south. The Baldwin Hills PAW is located east of Interstate 405 and south of Interstate 10. The Baldwin Hills PAW is approximately 85.8 acres.

Vegetation

This PAW contains a mix of landscaped areas within Kenneth Hahn State Recreation Area and native habitat which is predominantly concentrated along the steeper hillsides and canyons. Natural plant communities within this PAW include coastal sage scrub, chaparral, non-native grassland, and ruderal communities.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Evidence of coyote was observed, and striped skunk and bobcat have been documented within, or within the immediate vicinity of, this PAW.

Wildlife Movement

Wildlife species have potential for some limited local movement through this PAW to larger expanses of undeveloped areas within unincorporated Los Angeles County to the west and south that is otherwise surrounded by development.

Sensitive Biological Resources

Sensitive Natural Plant Communities

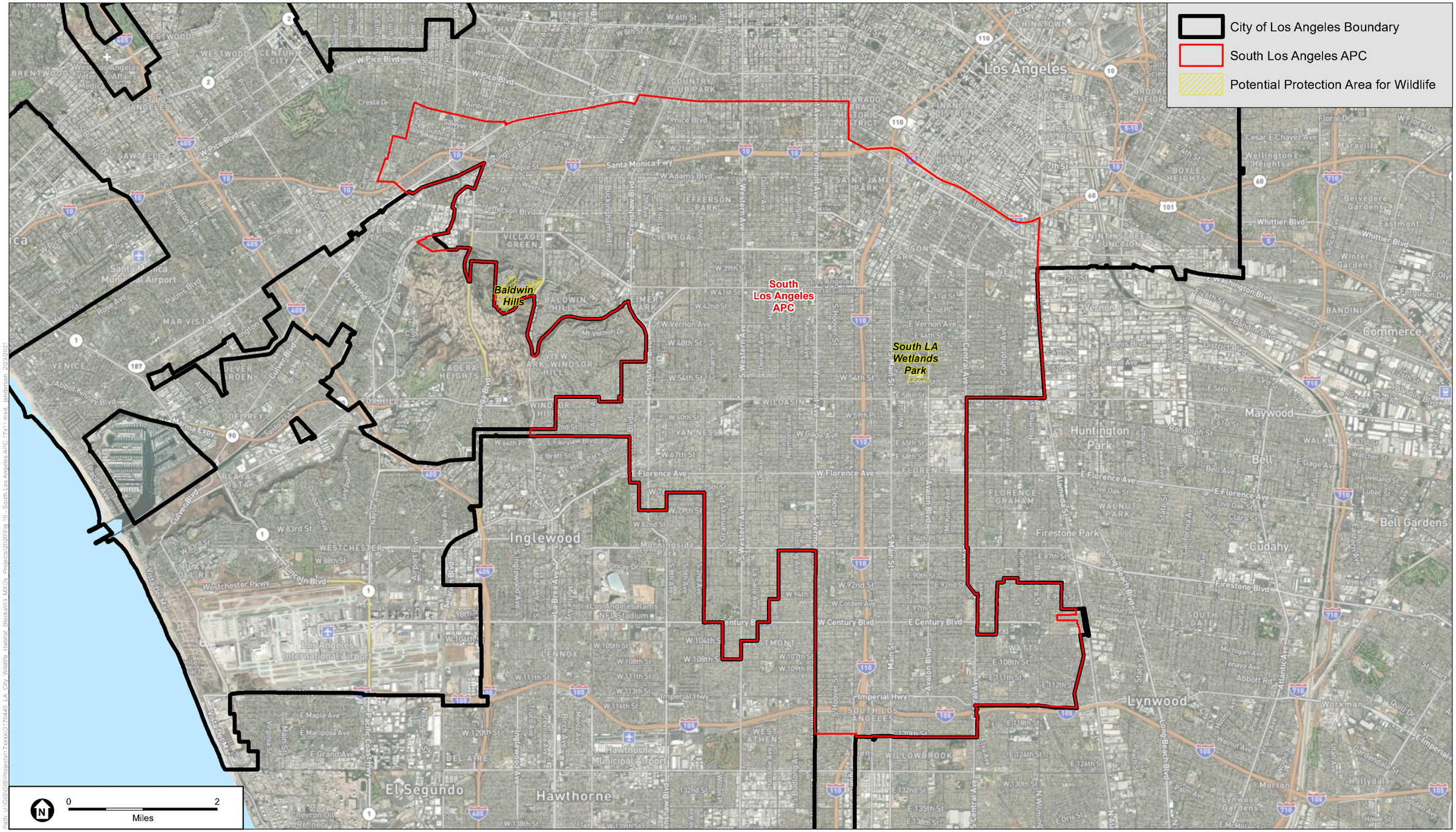
No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of burrowing owl (SSC).



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 10
South Los Angeles APC - PAWs

ESA

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Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status wildlife species (e.g., SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.6.2 South Los Angeles Wetland Park PAW

The South Los Angeles Wetland Park PAW includes a restored wetland area within a densely developed residential area of South Los Angeles (Figure 10). This PAW provides an island of riparian habitat in a highly urbanized area. The South Los Angeles Wetland Park PAW is located east of Interstate 110 and south of Interstate 10. The South Los Angeles Wetland Park PAW is approximately 9.3 acres.

Vegetation

Natural plant communities within this PAW include cattail marsh and willow scrub.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals). Virginia opossum has been documented within this PAW.

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7 Harbor Area Planning Commission

3.4.7.1 Harbor Lake Regional Park PAW

The Harbor Lake Regional Park PAW is adapted from the existing Los Angeles County SEA, and includes undeveloped natural and landscaped areas within Ken Malloy Harbor Regional Park, Harbor Lake, and Harbor Park Golf Course between the communities of Harbor City and Wilmington within the Harbor APC (**Figure 11**, *Harbor APC - PAWs*). This PAW is located west of Interstate 110 and north and south of Pacific Coast Highway within the southern portion of the Harbor APC. The Harbor Lake Regional Park PAW is approximately 305.1 acres.

Vegetation

This PAW contains a mix of landscaped areas, including Harbor Park Golf Course, and natural habitat. Natural plant communities within this PAW include southern willow riparian woodland, open water, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of coyote and raccoon were observed within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW from Wilmington Drain in the north to South Harbor Lake to the southwest.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

Special-status plant species documented to occur within this PAW include Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) (CRPR 1B.1) and mud nama (*Nama stenocarpa*) (CRPR 2B.2).

Special-Status Wildlife Species

This PAW has documented occurrences of tricolored blackbird (SCE, SSC) and least tern (FE, SE, SFP), and was historically used as foraging ground for least terns breeding on Terminal Island.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, special-status species, linkages that facilitate wildlife movement between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status plant and wildlife species (e.g., CRPR plant species, SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.2 South Harbor Lake PAW

The South Harbor Lake PAW is southwest of Harbor Lake Regional Park PAW, and includes undeveloped natural areas within the Defense Fuel Support Point (DFSP) in San Pedro (Figure 11). This PAW is located west of Interstate 110 and south of Pacific Coast Highway within the southern portion of the Harbor APC. The South Harbor Lake PAW is approximately 318.7 acres.

Vegetation

Natural plant communities within this PAW include non-native grassland and coastal sage scrub.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, amphibians, reptiles, birds, and small mammals). Evidence of raccoon was observed, and coyote and striped skunk have been observed, within this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW from Harbor Lake PAW in the northeast.

Harbor APC

Banning Park

Harbor Lake Regional Park

South Harbor Lake

White Point

Point Fermin

Cabrillo Beach

Terminal Island

City of Los Angeles Boundary

Harbor APC

Potential Protection Area for Wildlife

0 2 Miles

SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 11
Harbor APC - PAWs

ESA

Path: U:\GIS\GIS\Projects\17xxxx\D17l0440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 11 - Harbor APC 11x17.mxd landerson 2/23/2021

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Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

This PAW has documented occurrences of southern tarplant (CRPR 1B.1).

Special-Status Wildlife Species

This PAW has documented occurrences of coastal California gnatcatcher (FT, SSC) and Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*) (FE).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, special-status species, linkages that facilitate wildlife movement between PAWs, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports special-status plant species (e.g., CRPR plant species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.3 Banning Park PAW

The Banning Park PAW is a landscaped park located within the community of Wilmington (Figure 11). This PAW is located in the southern portion of the Harbor APC, east of Interstate

110 and immediately south of Pacific Coast Highway. The Banning Park PAW is approximately 21.1 acres.

Vegetation

This PAW contains landscaped areas with non-native trees and manicured lawns.

Wildlife

This PAW has a low potential to support medium and large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in and urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

No documented special-status wildlife species were found within this PAW.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that is important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife		
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species and monarch butterfly overwintering habitat, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.4 White Point PAW

The White Point PAW consists of White Park Nature Preserve and the undeveloped coastal bluffs and stretch of sandy beach parallel to W. Paseo del Mar (Figure 11). This PAW is located along the southern coastline of the Harbor APC in San Pedro. The White Point PAW is approximately 148.1 acres.

Vegetation

This PAW contains a mix of natural habitat and landscaped areas. Natural plant communities within this PAW include coastal sage scrub, coastal bluffs, and non-native grassland.

Wildlife

This PAW has a high potential to support medium and large mammals, as well as a variety of other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote has been documented within this PAW.

Wildlife Movement

Although this PAW is surrounded by development to the west, north, and east, it is adjacent to the San Pedro coastline, and avian species can fly in and it may also be used by urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coastal Bluff Scrub, which is a community that is considered a sensitive habitat by CDFW due to its rarity and/or decline in the region.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of coastal California gnatcatcher (FT, SSC), least tern (FE, SE, SFP), and burrowing owl (SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, sensitive natural plant communities, special-status species, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities and special-status wildlife species (e.g., SSC wildlife species).
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages	X	Supports Linkages/Constrained Linkages – Coastal access between Paseo del Mar SEA and coast/other undeveloped areas to the west.
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.5 Point Fermin PAW

The Point Fermin PAW consists of Fort MacArthur and Angels Gate Park, as well as Point Fermin Park and the undeveloped coastal bluffs along the coastline from Barbara Street to Stephen M. White Drive in Cabrillo Beach (Figure 11). This PAW is located along the southern coastline of the Harbor APC in San Pedro. The Point Fermin PAW is approximately 109.9 acres.

Vegetation

Natural plant communities within this PAW include coastal bluffs, non-native grassland, and landscaped areas with non-native trees, shrubs, and manicured lawns.

Wildlife

This PAW has a moderate potential to support medium mammals and a low to moderate potential to support large mammals. There is a high potential to support other wildlife species (e.g., insects, reptiles, birds, and small mammals). Coyote has been documented within the immediate vicinity of this PAW.

Wildlife Movement

Although this PAW is surrounded by development to the west, north, and east, it is adjacent to the San Pedro coastline, and avian species can fly in and it may also be used by urban-adapted terrestrial species that may be in the area.

Sensitive Biological Resources

Sensitive Natural Plant Communities

This PAW supports Southern Coastal Bluff Scrub, which is a community that is considered a sensitive habitat by CDFW due to its rarity and/or decline in the region.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW had historic occurrences of Palos Verdes blue butterfly (FE) documented at Fort MacArthur, and least tern (FE, SE, SFP) at Point Fermin Park.

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species, sensitive natural plant communities, and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California	X	Supports sensitive natural plant communities.
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species and monarch butterfly overwintering habitat, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.6 Cabrillo Beach PAW

The Cabrillo Beach PAW includes the undeveloped sandy beaches of the Cabrillo Beach Park that are north and south of Cabrillo Beach Pier (Figure 11). This PAW is located along the southern coastline of the Harbor APC in San Pedro. The Cabrillo Beach PAW is approximately 17.1 acres.

Vegetation

Natural plant communities within this PAW include sandy beach, non-native grassland, and landscaped areas with non-native trees and manicured lawns.

Wildlife

This PAW has a moderate potential to support medium mammals and a low potential to support large mammals. There is a high potential to support birds and a moderate potential for other wildlife species (e.g., insects and small mammals). Coyote and raccoon have been documented within the immediate vicinity of this PAW.

Wildlife Movement

Wildlife species have potential to move through this PAW along the coastline to the Point Fermín PAW to the south.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

This PAW has documented occurrences of least tern (FE, SE, SFP) and snowy plover (FT, SSC).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species and areas important for preserving biodiversity.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles	X	Supports a variety of bird species and California grunion spawning beach, and is important for preserving biodiversity.
Criterion 6: Restoration Foreseeable		

3.4.7.7 Terminal Island (Pier 400) PAW

The Terminal Island (Pier 400) PAW includes an open, undeveloped fenced area on the southern tip of Terminal Island, a man-made island located within Los Angeles Harbor that was created from material dredged from the harbor to form the Pier 400 peninsula (Figure 11). This PAW is located along the southeastern coastline of the Harbor APC. The Terminal Island (Pier 400) PAW is approximately 28.5 acres.

Vegetation

Natural plant communities within this PAW include areas of open sand with trace amounts of herbaceous vegetation.

Wildlife

This PAW has a low potential to support medium and large mammals. There is a high potential to support birds and a low potential for other wildlife species (e.g., insects and small mammals).

Wildlife Movement

Because this PAW is isolated and surrounded by development, movement of wildlife species is limited to within the PAW, except for insect and avian species that can fly in.

Sensitive Biological Resources

Sensitive Natural Plant Communities

No documented sensitive natural plant communities were found within this PAW.

Special-Status Plant Species

No documented special-status plant species were found within this PAW.

Special-Status Wildlife Species

Terminal Island was historically a breeding colony for the least tern (FE, SE, SFP).

Regional Biological Value

This PAW contributes to the biological value of the City as an area that supports Endangered or Threatened wildlife species.

Criteria	Criterion Satisfied?	Qualifying Evidence
Criterion 1: Supports Endangered & Threatened Plants/Wildlife	X	Supports Endangered or Threatened wildlife species.
Criterion 2: Supports Unique/Restricted Distribution in Southern California		
Criterion 3: Supports Unique/Restricted Distribution in Los Angeles		
Criterion 4: Supports Linkages/Constrained Linkages		
Criterion 5: Supports Breeding/Feeding/Resting/Migrating Grounds with Limited Availability in Southern California/Los Angeles		
Criterion 6: Restoration Foreseeable		

3.5 Use and Application of PAWs

The 44 PAWs recommended above were based on meeting one or more of the selection criteria and field evaluations. Areas that did not meet any of the PAW selection criteria were not proposed as PAWs. Should conditions change and an area not identified above as a PAW meet one or more criteria in the future, then it is recommended that area should be considered for a

future proposed PAW or an expanded PAW. This may include new observations of important biological resources, new evidence of connectivity or data of wildlife movement patterns not previously known (including across jurisdictional boundaries since the focus of this analysis was habitat and connectivity that fell within the City's limits), or restoration of an area that creates or enhances habitat. Although the majority of the PAWs are comprised of undeveloped areas that support natural communities, many of which consist of native habitat, this can also include areas of marginal habitat (e.g., landscaping) or even built habitats (e.g., concrete-lined channels) if these areas meet one or more of the PAW selection criteria. For example, the City may desire to protect additional areas by connecting and/or expanding PAWs to include areas that may be less ecologically intact on the whole but may otherwise provide important opportunities for wildlife movement. This may be implemented by study of suitable conditions (such as hydrology, vegetation and topography), and physical barriers that may impede wildlife connections, such as major freeways or fully urbanized neighborhoods.

The initial recommendation would be for the City to formally adopt the PAW boundaries as important biological resource areas. Once officially recognized as valuable resource areas, environmental considerations for development standards can be recommended for greater protection of the biological resources and ecological functions of these areas.

Concurrent with the preparation of this study, LA Sanitation and Environment (LASAN) released the 2018 Biodiversity Report, which summarizes biodiversity found within the City based on a set of indicators that make up the "Singapore Index of Cities' Biodiversity" (Singapore Index or SI).[68] Planning should collaborate with LASAN to share data from their biodiversity study and evaluate if any proposed PAWs should be revised based on new data available.

4. Wildlife Movement Pathways (WMPs)

4.1 Background

In addition to identifying important habitat areas for preserving biodiversity within the region, habitat connectivity is just as important for functional regional and local wildlife movement, which is essential to wildlife survival for seeking food, shelter, or mates; dispersal of offspring to find new homes and territories; seasonal migration to find favorable conditions and/or breeding grounds; and gene flow (e.g., to promote genetic diversity and avoid inbreeding depression, or for recolonizing unoccupied habitat after a local population goes extinct).[69] Since habitat areas within and between the PAWs can be fragmented, or even isolated, by the surrounding dense urbanization within the City, the connections between those areas are important to maintain permeability throughout much of the City in order to facilitate movement of multiple species and maintain biodiversity and healthy ecological processes.

68 Isaac Brown Ecology Studio and LA Sanitation & Environment. 2018. *2018 Biodiversity Report*. City of Los Angeles. Measurement of the Singapore Index of Cities' Biodiversity and Recommendations for a Customized Los Angeles Index. https://www.lacitysan.org/san/sandocview?docname=cnt024743.

69 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

Wildlife corridors are generally defined as a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by developed urban areas or other areas unsuitable for wildlife. The size of wildlife corridors and the habitat patches that they connect can vary greatly based on a number of site-specific condition (e.g., topography, habitat, and land use). For example, within the Bow Valley along the Bow River located in southwestern Alberta, Canada, minimum dimensions for a wildlife corridor include a width of 1,150 feet and length of 3,280 feet to connect a local habitat patches (e.g., over 1,100 acres with a minimum width of 0.75 mile),[70] whereas a study in Louisiana showed black bear use of corridors ranging in widths from 164 to 240 feet.[71] Corridors need suitable habitat, and cannot be too narrow or too long to be effective, or animals will be less likely to use it.[72] The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife movement corridors help to reduce or moderate some of the adverse effects of habitat fragmentation by: (1) facilitating dispersal of individuals between substantive patches of remaining habitat, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs.[73, 74, 75, 76]

Wildlife movement activities fall into three categories: dispersal (e.g., juvenile animals moving from natal areas, individuals extending range distributions); seasonal migration; and home range movements (e.g., foraging for food or water, defending territories, searching for mates, breeding areas, or cover).

Because large, undisturbed expanses of natural habitat areas are limited and many habitat areas remaining within the City are fragmented or isolated by dense urbanization, many traditional "wildlife corridors" do not occur within the City. The greatest potential for regional movement within the City is within the PAWs themselves, since the PAWs can not only provide habitat for wildlife to live in and support home range movements and dispersal, but a number of the PAWs

70 Bow Corridor Ecosystem Advisory Group. 2012. *Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley*. Alberta Environment and Alberta Sustainable Resource Development.

71 Anderson 1997 as cited in Henry, A. C., Jr; Hosack, D. A.; Johnson, C. W.; Rol, D.; Bentrup, G. 1999. *Conservation corridors in the United States: Benefits and planning guidelines*. Journal of Soil and Water Conservation; Ankeny Vol. 54, Iss. 4, (Fourth Quarter 1999): 645.

72 St John, T'oth, and Zabinsky. 2015. *Optimizing the Geometry of Wildlife Corridors in Conservation Reserve Design*. Article submitted to Operations Research; manuscript no. tbd. http://pdfs.semanticscholar.org/8cc8/520040f58d2290e44b83e073e99713e086e6.pdf

73 Noss, R. F. 1983. *A Regional Landscape Approach to Maintain Diversity*. BioScience. 33:700-706.

74 Fahrig, L. and G. Merriam. 1985. *Habitat Patch Connectivity and Population Survival*. Ecology. 66:1762-1768.

75 Simberloff, D. and J. Cox. 1987. *Consequences and Costs of Conservation Corridors*. Conservation Biology. 1:63-71.

76 Harris, L. D. and P. B. Gallagher. 1989. *New Initiatives for Wildlife Conservation: The Need for Movement Corridors*. Pages 11-34 in G. Mackintosh, ed. Preserving communities and corridors. Defenders of Wildlife. Washington D.C. 96 pp.

also provide connections to larger adjacent undeveloped natural areas that fall outside of the City's limits, such as the Los Angeles County SEAs; Santa Susana Mountains and Simi Hills; San Gabriel Mountains and Angeles National Forest; and Santa Monica Mountains.

However, within the City's limits, movement between adjacent PAWs, or between fragmented areas of a single PAW, is constricted by the surrounding development of an urbanized environment. Unlike true wildlife corridors, which consist of pieces of habitat connecting larger extensive core habitat patches, the majority of wildlife movement opportunities throughout the City consist of smaller constrained movement pathways many of which contain limited marginal (i.e., low quality) habitat or even some developed areas (e.g., road crossings) connecting PAWs or fragments of PAWs. Thus, the term Wildlife Movement Pathways (WMPs) is used to characterize these likely pathways that are not traditional wildlife corridors, rather they are constrained urban wildlife passage opportunities.

4.2 Purpose of WMPs

The identification of important WMPs within the City is intended to help facilitate connectivity between PAWs within the City and to adjacent undeveloped natural areas. The focus of the WMPs identified are on medium and large mammals, since within the context of wildlife movement in general, this taxonomic group contains indicator species[77,78] representative of the movement of the terrestrial vertebrates found within the City.

4.3 Methodology Used to Define WMPs

A literature review was conducted to determine if any wildlife corridors were documented within the City. Available species occurrence data and roadkill data was also reviewed to determine general trends in wildlife distribution and wildlife-vehicle collisions that may be relevant to determining important wildlife movement areas or concentrations of roadkill. In addition, stakeholders were engaged to obtain information and data about locally known wildlife movement pathways.

These sources included:

1. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*[79]
2. *South Coast Missing Linkages: A Linkage Design for the Santa Monica-Sierra Madre Connection*[80]

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77 Species whose presence denotes either the composition or condition of a particular habitat, community, or ecosystem.

78 Zacharias, M. and J. Roff. 2001. *Use of Focal Species in Marine Conservation and Management: A Review and Critique*. Aquatic Conservation: Marine and Freshwater Ecosystems. 11: 59-76 (2001).

79 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

80 Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection*. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

3. *California Essential Habitat Connectivity Project*[81]
4. *Rim of the Valley Corridor Special Resource Study*[82]
5. *Individual Behaviors Dominate the Dynamics of an Urban Mountain Lion Population Isolated by Roads*[83]
6. *NPS Information (species and location information for radio-collar tracked medium and large mammals)*[84]
7. *USFWS Species Occurrence Data*[85]
8. *California Natural Diversity Database*[86]
9. *Griffith Park to Elysian Park Community Trail and Wildlife Corridor along Red Car ROW*[87]
10. *Santa Monica Mountains Conservancy - Proposed Wildlife Corridors*[88]
11. *iNaturalist*[89]
12. *Coyote Cacher*[90]
13. *California Roadkill Observation System Occurrence Data*[91]

A comprehensive list of references is included in Section 7.0, *References*.

Based on the literature and data review, coordination with stakeholders, and evaluations of the PAWs identified within the City, potential WMPs within and between PAWs were proposed based on aerial photograph mapping of the most direct path with greatest potential wildlife habitat

81 CalTrans and CDFG. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared with Funding from: Federal Highways Administration. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18366.

82 NPS. 2015. *Finding of No Significant Impact, Rim of the Valley Corridor Special Resource Study*. November 2015.

83 Riley, S.P.D., L.E.K. Serieys, J.P. Pollinger, J.A. Sikich, L. Dalbeck, R.K. Wayne and H.B. Ernest. 2014. *Individual Behaviors Dominate the Dynamics of an Urban Mountain Lion Population Isolated by Roads*. Current Biology 24: 1989-1994. September 2014.

84 NPS. 2018. Personal communication from NPS biologists (Justin Brown and Seth Riley) with Los Angeles Department of City Planning staff (Chris Piña, Michelle Levy, Lena Mik, and Conni Pallini-Tipton) and ESA biologists (Daryl Koutnik and Maile Tanaka). March 21, 2018.

85 USFWS. 2017. *Species Occurrence Data*. Provided by USFWS.

86 CDFW. 2017. *California Natural Diversity Database (available by subscription) and Rarefind*. CDFW: Sacramento, California. Accessed September 28, 2017.

87 Santa Monica Mountains Conservancy. 2009. *Griffith Park to Elysian Park Community Trail and Wildlife Corridor along Red Car ROW*. Fletcher Drive to Glendale Boulevard Menlo Apartments Section. Photographic depiction of complete buildable trail alignment on 2600-2750 W. Riverside Drive. A project of: Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority. Submitted to Advisory Agency on December 29, 2009.

88 Edelman, P. from Santa Monica Mountains Conservancy. 2017. Personal communication and email communication with ESA biologists Daryl Koutnik and Maile Tanaka and Tony Tucci from Citizens for Los Angeles Wildlife (CLAW). October 6, 2017.

89 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed November 15, 2017.

90 University of California, Division of Agricultural and Natural Resources. 2017. *Coyote Cacher*. Available online (http://ucanr.edu/sites/CoyoteCacher/). Website accessed September 7, 2017.

91 University of California, Davis. 2017. *California Roadkill Observation System Occurrence Data*. Department of Environmental Science and Policy. Road Ecology Center. Email correspondence with Fraser Shilling, PhD., Co-Director. December 8, 2017.

(i.e., natural communities when available, or landscaped/non-native undeveloped areas) and the least constraints and barriers for wildlife movement. The majority of potential opportunities for wildlife movement throughout the City consist of constrained movement pathways, which include one or more of the following:

1. Narrow areas of very low-quality habitat that are surrounded by adjacent development that connect two PAWs or fragments of a single PAW;
2. Narrow areas of moderate-quality habitat that are surrounded by adjacent development, but that connect to other movement pathways or PAWs with only small patches of habitat rather than PAWs that consist of large habitat blocks;
3. Crossing structures (e.g., bridges, underpasses, culverts) and improved areas (e.g., concrete-lined channels) that were intended for other uses (e.g., to convey traffic, pedestrians, drainage flows) and were not specifically designed for wildlife use, but are, or could be, used opportunistically for movement by wildlife; and/or
4. Pathways connecting two or more PAWs of variable sizes that require crossing one or more roads or other developed areas.

The proposed WMPs were then ground-truthed during field surveys, and the habitat present within each PAW was assessed for potential to support medium and large mammal[92] movement (which were used as representative species that have larger range requirements that encompass the ranges of a variety of taxa) based on a variety of factors, including the on-site and surrounding land uses, topography, habitat type and cover, access to water sources, and width and length of movement pathways. Any observations or evidence (e.g., tracks, scat, or other sign, or anecdotal observations) of medium and/or large mammal use were also documented during field surveys, as well as any potential barriers or hazards to wildlife movement (e.g., fencing, walls, steep terrain or cliffs, number and size of roads to be crossed, traffic, and/or noise) and human activity (e.g., pedestrians, dog walkers, equestrians, hikers, joggers, bikers, homeless encampments, construction).

The barriers to movement and human activity were considered in assessing Wildlife Movement Pathways to differentiate between "Unconstrained", "Constrained", and "Highly Constrained" WMPs.

1. Unconstrained WMPs allow for free movement through the area without barriers.
2. Constrained WMPs recognize that some barriers may be present (e.g., road with little traffic), but movement is not inhibited.
3. Highly Constrained WMPs recognize that a barrier may not be very permeable (e.g., a freeway), or multiple barriers may be present (e.g., chainlink fence, multiple roads), which may deter wildlife movement along this pathway.

92 As was used in the PAWs, medium mammals include American badger, gray fox, long-tailed weasel, raccoon, striped skunk, and Virginia opossum. Large mammals include black bear, bobcat, coyote, mountain lion, and mule deer.

A detailed matrix summarizing each WMP's width and length, vegetative cover, and barriers to movement, as well as a classification of whether each WMP is highly constrained, constrained, or unconstrained, is provided in **Appendix G**, *WMP Matrix*.

4.4 WMP Profiles

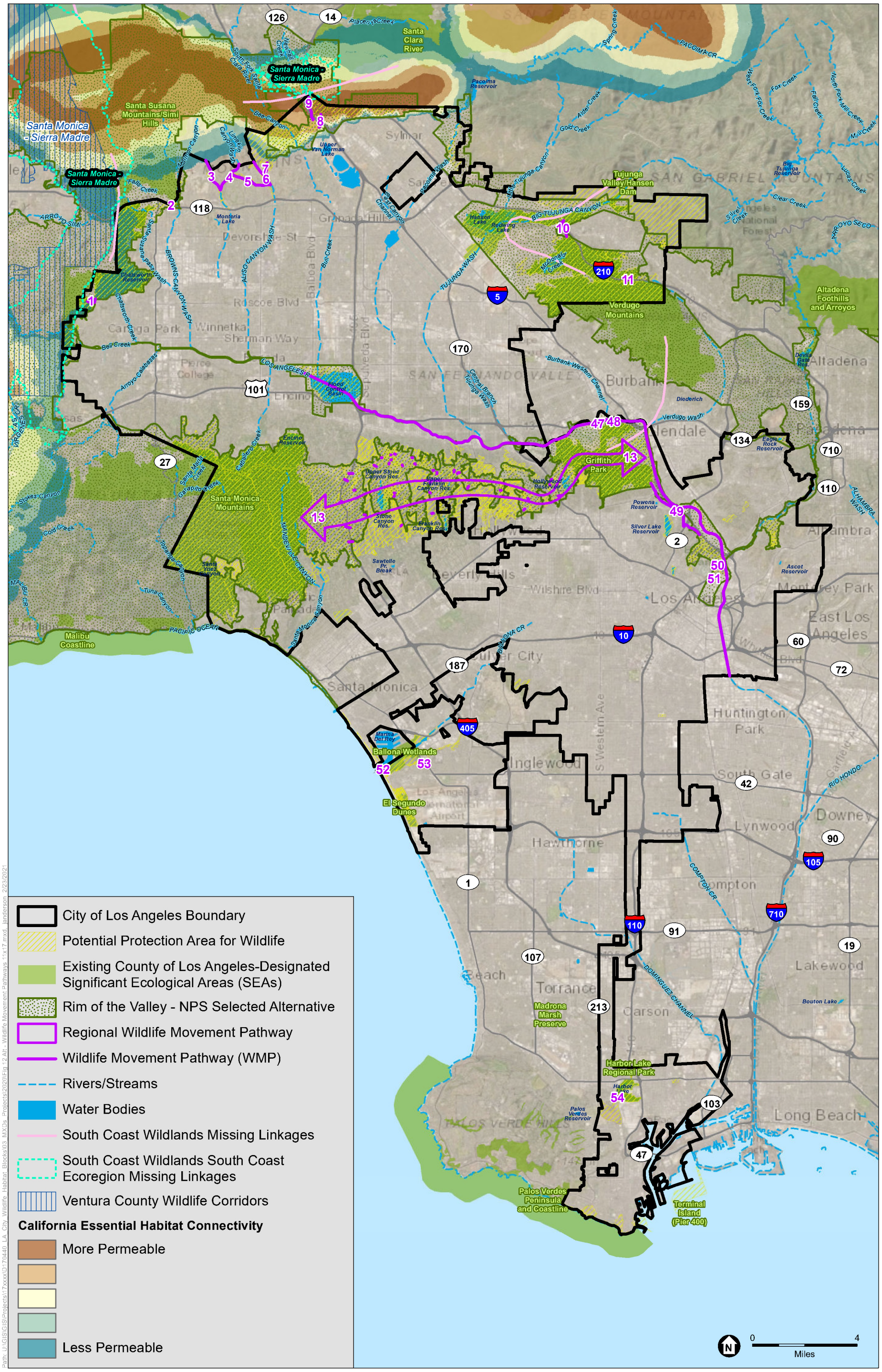
A number of wildlife species have adapted to Los Angeles' urban setting, and are opportunistically moving between the PAWs and fragmented habitat within the City. Although there are numerous travel routes that wildlife can use throughout habitat areas, and even through developed areas (e.g., roads), the WMPs identify opportunities for movement pathways within and between PAWs that wildlife, particularly medium and large mammal species, are likely to use. These WMPs are not meant to be exhaustive, and similar to humans, wildlife will use the "least cost" pathways for movement that are easiest to access considering various factors, such as accessibility, topography, cover, fencing, and hazards.

The 54 WMPs recommended are shown in **Figure 12**, *Protection Areas for Wildlife and Wildlife Movement Pathways*. Descriptions of individual WMPs are provided below. Each WMP description includes an assessment of potential to support medium and large mammal movement and a discussion of barriers to movement, including human activity, that may deter wildlife movement through an area.

4.4.1 WMP 1 – Valley Circle Boulevard

WMP 1 connects Dayton Canyon Open Space Preserve to Chatsworth Nature Preserve, both of which are part of the Santa Susana Mountains and Simi Hills PAW (**Figure 13**, *Protection Areas for Wildlife and Wildlife Movement Pathways – Northwestern Portion*). From the western end, this WMP parallels Dayton Canyon drainage, which is vegetated with some patches of riparian habitat and oak woodland, just north of Dayton Canyon Road. The WMP then turns north and parallels the western side of Valley Circle Boulevard via a narrow strip of undeveloped areas along the road that is currently unvegetated and mostly dirt due to the construction of a residential development. Wildlife would then have to cross Valley Circle Boulevard between Deer Lick Drive and Jensen Drive in a northeast direction to get to Chatsworth Nature Preserve and Chatsworth Reservoir. Evidence of coyote (i.e., scat) was observed along the road and inside the fence of the Chatsworth Nature Preserve, and raccoon has been documented within the vicinity.

WMP 1 is approximately 0.4 mile long and relatively flat, and widths range from approximately 40 to 300 feet. There is residential development to the immediate northwest and southeast of the WMP. The western end of WMP 1 leads to the foothills of the Simi Hills to the west, and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the northeast, Chatsworth Nature Preserve, Chatsworth Reservoir, and the undeveloped natural areas to the north contain non-native grassland, oak woodland, coastal sage scrub, chaparral, and riparian woodland habitats, all of which are a part of the Santa Susana Mountains and Simi Hills PAW within the City's limits, and is contiguous to larger expanses of undeveloped, natural areas within unincorporated Los Angeles County to the north and west.



SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 12
Protection Areas for Wildlife and Wildlife Movement Pathways

City of Los Angeles Boundary
Potential Protection Area for Wildlife
Rim of the Valley - NPS Selected
Existing County of Los Angeles-Designated Significant Ecological Areas (SEAs)
Wildlife Movement Pathway (WMP)
Rivers/Streams
Water Bodies

SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 13
Protection Areas for Wildlife and Wildlife Movement Pathways – Northwestern Portion

Barriers to Movement

Since there is currently construction of a residential development along the western side of Valley Circle Boulevard, it is uncertain what landscaping or potential barriers (i.e., fencing) may be installed upon complete project build-out. There is also a chain link fence along the western edge of Chatsworth Nature Preserve; however, there are some gaps in the fence that small and medium mammals would be able to get through. In addition, there is heavy traffic along Valley Circle Boulevard that may be a hazard for wildlife, or deter them from moving through, particularly during times of day when there is more traffic. However, there may be little or no traffic hazards during the middle of the night when many wildlife species are more active.

4.4.2 WMP 2 – Canoga Avenue

WMP 2 connects undeveloped, natural areas within Stoney Point Park to the southwest to undeveloped, natural areas and riparian drainage within Browns Canyon to the northeast, both of which are within the Santa Susana Mountains and Simi Hills PAW, via a bridge underpass under State Route 118 (Figure 13). The underpass consists of a paved road (Canoga Avenue) with dirt on either side, and paved road transitions into a rural dirt road just north of State Route 118. Evidence of coyote was observed within the vicinity, and mule deer has been documented within the vicinity (both alive and as roadkill).

WMP 2 is less than 0.1 mile long (approximately 300 feet) and relatively flat, and widths of the underpass range from approximately 60 to 70 feet. There is residential development to the northwest and southeast of the WMP. The southwestern end of WMP 2 leads to the Stoney Point Park, and large expanses of undeveloped, natural areas within the Santa Susana Mountains and Simi Hills PAW farther to the southwest. To the northeast, this WMP connects to the undeveloped natural areas to the north within the Santa Susana Mountains and Simi Hills PAW within the City's limits, and is contiguous to larger expanses of undeveloped, natural areas within unincorporated Los Angeles County to the west. The surrounding natural areas contain large rock formations, and support chaparral and oak woodlands.

Barriers to Movement

There is chain link fence and barbed-wire fence along portions of Canoga Avenue; however, there are some gaps in the fence that medium and large mammals would be able to get through. Human activity within the area consists of hiking and rock climbing and some residential traffic. In addition, there is heavy traffic along adjacent roads that may be a hazard for wildlife, or deter them from moving through, particularly during times of day when there is more traffic and noise. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

4.4.3 WMP 3 – Moonshine Canyon Park

WMP 3 is located within Moonshine Canyon Park within the Porter Ranch PAW, and follows Moonshine Canyon from the foothills of the Santa Susana Mountains in the north to its convergence with Limekiln Canyon to the south (Figure 13). This canyon supports a drainage feature vegetated with riparian oak and willow woodland that flows south-southeast, with upland

areas of coastal sage scrub and chaparral communities. Evidence of coyote was observed within the vicinity.

WMP 3 is approximately 1.3 miles long, and widths range from approximately 200 to 500 feet. There is residential development to the immediate east and west of the WMP. The northern end of WMP 3 leads to the foothills of the Santa Susana Mountains and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the south, this WMP converges with Limekiln Canyon within the Porter Ranch PAW, which supports riparian woodland within the canyon, but the native vegetation eventually becomes less dense farther to the south, and then south of State Route 118, the drainage is eventually channelized within a completed developed area.

Barriers to Movement

There are many fences along the tops of the canyons, and most of the residences nearby are within gated communities. Human activity within the area consists of hiking along trails within the canyons of the Porter Ranch PAW.

4.4.4 WMP 4 – Limekiln Canyon Park

WMP 4 is located within Limekiln Canyon Park within the Porter Ranch PAW, and follows Limekiln Canyon from the foothills of the Santa Susana Mountains in the north to its convergence with Moonshine Canyon to the south (Figure 13). This canyon supports a drainage feature vegetated with riparian oak and willow woodland that flows southwest, with upland areas of coastal sage scrub and chaparral communities. Evidence of coyote (i.e., scat) was observed.

WMP 4 is approximately 1.3 miles long, and widths range from approximately 200 to 450 feet. There is residential development to the immediate east and west of the WMP. The northern end of WMP 4 leads to the foothills of the Santa Susana Mountains and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the south, this WMP ends within Limekiln Canyon, which extends farther to the south within the Porter Ranch PAW, and supports riparian woodland within the canyon. The native vegetation within Limekiln Canyon eventually becomes less dense farther to the south, and is channelized south of State Route 118.

Barriers to Movement

There are many fences along the tops of the canyons, and most of the residences nearby are within gated communities. Human activity within the area consists of hiking along trails within the canyons of the Porter Ranch PAW.

4.4.5 WMP 5 – Wilbur Tampa Park

WMP 5 is located within Wilbur Tampa Park (or Palisades Park) within the Porter Ranch PAW, and follows the steep hillside slope between Limekiln Canyon and Aliso Canyon (Figure 13). This hillside slope supports a dirt trail along the length of this WMP within upland areas of non-native grassland, coastal sage scrub, and chaparral communities. Evidence of coyote was observed within the vicinity.

WMP 5 is approximately 1.6 miles long, and widths range from approximately 150 to 900 feet. There is residential development to the immediate northeast and southwest of the WMP. The western end of WMP 5 leads to Limekiln Canyon and the riparian woodland within the drainage. The eastern end of this WMP ends within Aliso Canyon drainage. Both Limekiln Canyon and Aliso Canyon are within the Porter Ranch PAW and both connect to the foothills of the Santa Susana Mountains in the north.

Barriers to Movement

Human activity within the area consists of hiking and walking dogs on leash; however, this is generally a quiet area.

4.4.6 WMP 6 – Aliso Canyon Park

WMP 6 is located within Aliso Canyon Park within the Porter Ranch PAW, and follows Aliso Canyon from the foothills of the Santa Susana Mountains in the north to its convergence with WMP 5 within Wilbur Tampa Park to the south (Figure 13). This canyon supports a drainage feature vegetated with riparian vegetation that flows southeast, with upland areas of coastal sage scrub and non-native grassland communities. Evidence of coyote was observed within the vicinity.

WMP 6 is approximately 1.1 miles long, and widths range from approximately 300 to 550 feet. There is residential development to the immediate east and west of the WMP. The northern end of WMP 6 leads to the foothills of the Santa Susana Mountains and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the south, this WMP ends within Aliso Canyon, which extends farther to the south within the Porter Ranch PAW, which eventually becomes channelized south of State Route 118.

Barriers to Movement

There are many fences along the tops of the canyons, and most of the residences nearby are within gated communities. Human activity within the area consists of hiking along trails within the canyons of the Porter Ranch PAW.

4.4.7 WMP 7 – Longacre Avenue

WMP 7 is located within the Porter Ranch PAW, and connects the foothills of the Santa Susana Mountains in the north to Aliso Canyon to the south via a canyon that crosses Longacre Avenue (Figure 13). This canyon supports some riparian vegetation and upland areas of coastal sage scrub and non-native grassland communities. Evidence of coyote was observed within the vicinity.

WMP 7 is approximately 0.5 mile long, with averages widths of approximately 100 feet or greater since there is little development or barriers to movement within the immediate vicinity. There is residential development to the east and west of the WMP. The northern end of WMP 7 leads to the foothills of the Santa Susana Mountains and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the south, this WMP ends within Aliso Canyon, also within the Porter Ranch PAW.

Barriers to Movement

Wildlife moving through this WMP would have to cross a residential road, Longacre Avenue. There is a small section of chain link fencing along the road immediately surrounding a culvert underneath the road, but wildlife can navigate around it. Human activity within the area consists of hiking and residential traffic.

4.4.8 WMP 8 – Balboa Boulevard

WMP 8 connects the Santa Susana Mountains and Simi Hills PAW in the southwest with the Saddletree Ranch (Santa Clara River) PAW to the northeast (Figure 13). From the western end, this WMP starts within undeveloped areas south of Sunshine Canyon Landfill, then follows a large paved road, Balboa Boulevard, to the northeast, which turns into a bridge over Interstate 5. Once across Interstate 5, this WMP continues along Balboa Boulevard past Foothill Boulevard, where there is fragmented undeveloped hillsides slopes with patches of coastal sage scrub to the north, parallel to the Los Angeles Aqueduct, which lead to undeveloped, natural areas farther north within the Saddletree Ranch (Santa Clara River) PAW. Coyote has been documented (both alive and as roadkill) within the vicinity.

WMP 8 is approximately 0.5 mile long and relatively flat with some hills, and widths range from very narrow (i.e., 5 feet along the sidewalks or margins of the road) to approximately 50 feet (i.e., assuming no traffic is present and wildlife could potentially use the width of the road). There is residential development to the east of the WMP, and industrial development to the south. The southwestern end of WMP 8 leads to the foothills of the Santa Susana Mountains to the west, and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the northeast, the Saddletree Ranch (Santa Clara River) PAW connects to undeveloped coastal sage scrub, chaparral, oak woodland, and non-native grassland habitats within the foothills of the San Gabriel Mountains.

Barriers to Movement

There is heavy traffic and associate noise from Interstate 5, and because the WMP follows a paved road that is traveled by cars, this connection contains hazardous conditions for wildlife and likely would only be used by more urban-adapted species (e.g., coyote) that are opportunistically moving thorough the area at night or early morning when there is less traffic and human activity for wildlife to avoid.

4.4.9 WMP 9 – San Fernando Road

As an alternate route to WMP 8, WMP 9 is a more northern connection between the Santa Susana Mountains and Simi Hills PAW in the southwest with the Saddletree Ranch (Santa Clara River) PAW to the northeast (Figure 13). From the western end, this WMP starts within undeveloped areas south of Sunshine Canyon Landfill, then crosses San Fernando Road, crosses under Interstate 5 via a bridge underpass, and parallels (and eventually crosses) the railroad tracks up to a small access road that joins to Sierra Highway. From Sierra Highway, there are several bridge underpasses under Interstate 5 Truck Route that lead to the east to undeveloped natural areas of the northern end of the Saddletree Ranch (Santa Clara River) PAW. Coyote has been documented within the vicinity.

WMP 9 is approximately 0.9 mile long and relatively flat, and widths are very narrow ranging from approximately 5 feet along margins of the road to 15 feet along the railroad tracks and access roads.

There is residential development to the east of the WMP, and industrial development to the south. The southwestern end of WMP 9 leads to the foothills of the Santa Susana Mountains to the west, and large expanses of undeveloped, natural areas within unincorporated Los Angeles County. To the northeast, the Saddletree Ranch (Santa Clara River) PAW connects to undeveloped coastal sage scrub, chaparral, oak woodland, and non-native grassland habitats within the foothills of the San Gabriel Mountains.

Barriers to Movement

There are a number of hazards to wildlife by crossing or using multiple roads and the railroad tracks, and there is heavy traffic and associate noise from Interstate 5. This WMP would likely only be used at night or early morning when there is less traffic and human activity for wildlife to avoid. There are also chain link fences along San Fernando Road and the access road adjacent to Sierra Highway; however, there are some gaps in the fence that medium and large mammals would be able to get through.

4.4.10 WMP 10 – Tujunga-Verdugo

WMP 10 connects Tujunga Wash in the Tujunga Valley and Hansen Dam PAW to the north to Verdugo Mountains PAW in the south (**Figure 14**, *Protection Areas for Wildlife and Wildlife Movement Pathways – Northeastern Portion*). From its north end, this WMP follows Tujunga Wash west and crosses W. Foothill Boulevard and Interstate 210 via bridge underpasses. From the Tujunga Wash, this WMP turns south into an upland area of coastal sage scrub along the western side of Interstate 210, then crosses Wentworth Street to another steep hillside of coastal sage scrub that parallels the freeway and its off-ramp to Sunland Boulevard. Wildlife would then have to navigate across Sunland Boulevard, through an undeveloped lot, and across a paved Water and Power Road to get to the undeveloped chaparral, coastal sage scrub, oak woodland, and riparian oak forest habitat within the Verdugo Mountains PAW. Evidence of coyote (i.e., scat) was observed, and mule deer has been documented within this WMP, as well as Virginia opossum documented nearby.

WMP 10 is approximately 0.7 mile long and relatively flat with some hills and slopes, and widths range from approximately 20 to 100 feet. There is residential development to the west and Interstate 210 to the east of the WMP. To the north, the Tujunga Valley and Hansen Dam PAW supports alluvial fan sage scrub, willow-cottonwood riparian forest, oak woodland, wetlands, and open water, and is contiguous to larger expanses of undeveloped, natural areas within the San Gabriel Mountains to the north and east. The southern end of WMP 10 leads to the Verdugo Mountains PAW, as well as large expanses of undeveloped, natural areas within the Verdugo Mountains within the Cities of Burbank and Glendale farther to the south.

Barriers to Movement

There is a lot of fencing (mostly chain link fencing) along the river and in the neighborhoods surrounding this WMP, but the slopes make it easy for animals to find ways under the fencing,

and even where solid fencing is found, there are gaps that allow for movement of large mammals. In addition, the neighborhood provides a lot of tree coverage for wildlife. This is a very high vehicle traffic area that may be hazardous for wildlife or deter them from moving through, particularly during times of day when there is more traffic and noise. Human activity also includes pedestrians with dogs on leash. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

4.4.11 WMP 11 – La Tuna Canyon Road

WMP 11 connects two areas of the Verdugo Mountains PAW, which is bisected by Interstate 210, via a bridge underpass along La Tuna Canyon Road (Figure 14). The underpass includes a 4-lane paved road with dirt or vegetated walkways on either side of the road. Evidence of coyote, grey fox, black bear, and raccoon (i.e., scat and tracks) was observed within the vicinity, and mountain lion has been documented nearby.

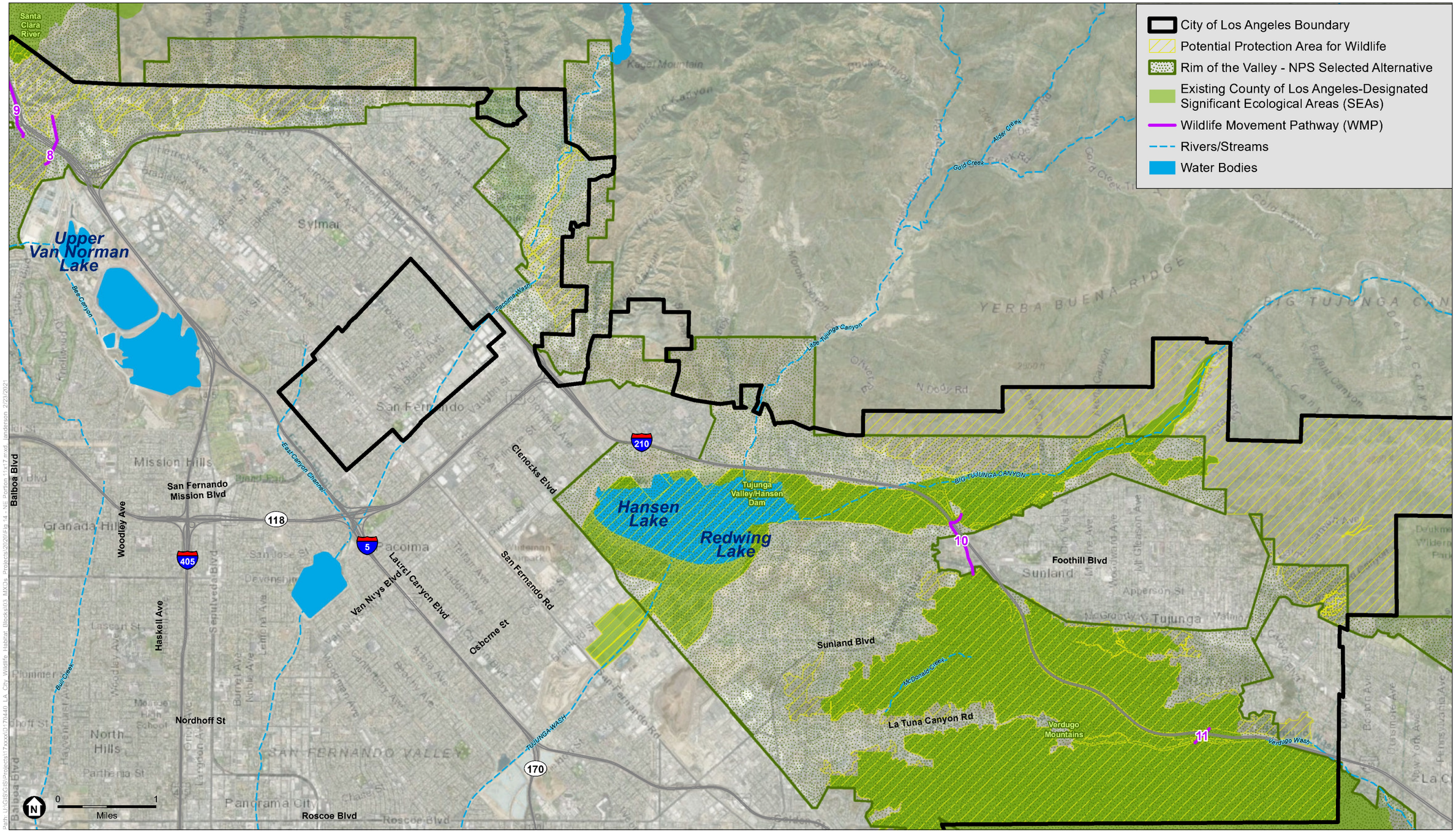
WMP 11 is approximately 0.2 mile long and relatively flat between hilly areas, with a width of approximately 100 feet. Southland Nursery is located just southwest of the WMP; otherwise, there is very little development within the immediate vicinity of the WMP. The surrounding Verdugo Mountains PAW contains large expanses of chaparral, coastal sage scrub, oak woodland, and riparian oak forest habitat to the north and south.

Barriers to Movement

Although there is some chain link fencing along La Tuna Canyon Road near the freeway on-ramps and off-ramps, wildlife movement would not be inhibited by this fencing. The main barrier to movement within this area would be traffic that may be hazardous for wildlife or deter them from moving through, particularly during times of day when there is more traffic and noise. However, there may be little or no traffic hazards during the middle of the night when many wildlife species are more active.

4.4.12 WMP 12 – Los Angeles River

WMP 12 is a regional connection that follows the Los Angeles River along the dense riparian habitat that extends from west of the Sepulveda Basin Recreation Area PAW to the eastern boundary of the PAW, just west of Interstate 405 (**Figure 15**, *Protection Areas for Wildlife and Wildlife Movement Pathways – Central Portion*). WMP 12 continues east via an unvegetated, concrete-lined channel past Interstate 405 and roughly parallel to State Route 101. WMP 12 then turns south, just east of the Griffith Park and Hollywood Hills PAW, and parallels Interstate 5 until its intersection with State Route 110, just east of the Elysian Park PAW; this entire stretch of the Los Angeles River contains vegetated portions of the channel that support patches of riparian habitat within the Los Angeles River PAW. South of State Route 110, WMP 12 continues along an unvegetated, concrete-lined portion of the channel that continues south and parallel to Interstate 5 to the City's limits. Although only portions of WMP 12 are vegetated and thus provide riparian habitat for wildlife, the entire extent of the river provides aquatic resources and a wildlife movement pathway for a variety of avian, terrestrial, and aquatic species. Coyote and raccoon have been documented within the Los Angeles River.



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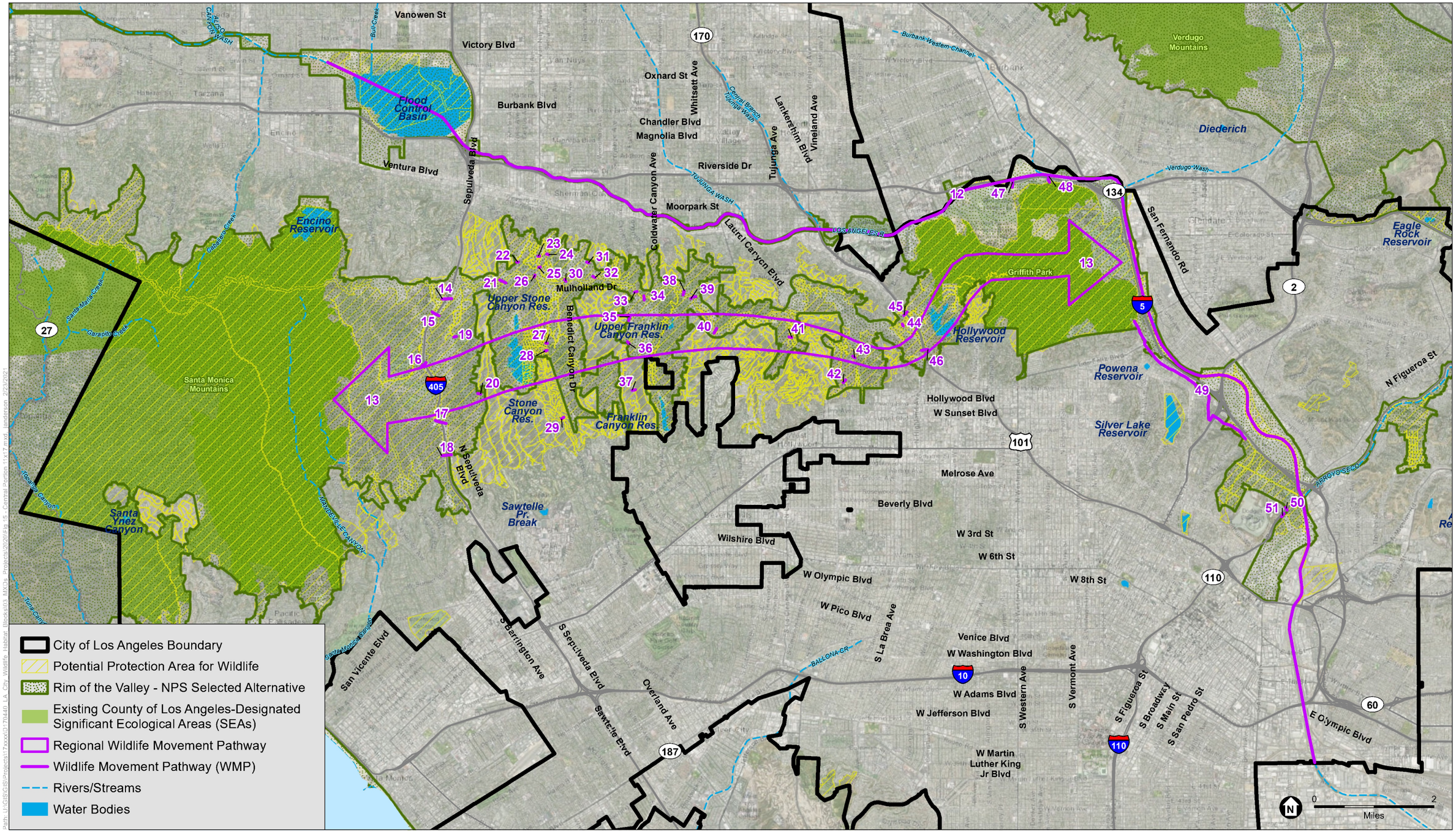
SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 14
Protection Areas for Wildlife and Wildlife Movement Pathways – Northeastern Portion

ESA


Vanowen St
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Oxnard St
Chandler Blvd
Magnolia Blvd
Riverside Dr
Moorpark St
Mulholland Dr
Hollywood Blvd
W Sunset Blvd
Melrose Ave
Beverly Blvd
W 3rd St
W 6th St
W 8th St
Wilshire Blvd
W Olympic Blvd
W Pico Blvd
Venice Blvd
W Washington Blvd
W Adams Blvd
W Jefferson Blvd
W Martin Luther King Jr Blvd
E Olympic Blvd
Whitsett Ave
Lankershim Blvd
Vineland Ave
Tujunga Ave
Coldwater Canyon Ave
Laurel Canyon Blvd
Benedict Canyon Dr
Sepulveda Blvd
N Sepulveda Blvd
S Sepulveda Blvd
S Barrington Ave
San Vicente Blvd
Sawtelle Blvd
Overland Ave
S La Brea Ave
S Western Ave
S Vermont Ave
S Figueroa St
S Broadway
S Main St
S San Pedro St
San Fernando Rd
N Figueroa St
Griffith Park
Hollywood Reservoir
Powena Reservoir
Silver Lake Reservoir
Eagle Rock Reservoir
Diederich
Verdugo Mountains
Encino Reservoir
Upper Stone Canyon Res.
Upper Franklin Canyon Res.
Stone Canyon Res.
Franklin Canyon Res.
Flood Control Basin
Santa Monica Mountains
Santa Ynez Canyon
Sawtelle Pr. Break
Pacific Palisades
Hollywood Bluffs
Los Angeles Country Club
Hillcrest Country Club
Rancho Park Golf Course
Pacific Park Golf Course
Griffith Park Golf Course
Encino Golf Course
Balboa Golf Course
Sherman Oaks Country Club
Los Angeles Equestrian Center
Burbank Western Channel
Central Branch Tujunga Wash
Tujunga Wash
Verdugo Wash
Los Angeles R.
Arroyo Seco
Ballona Cr
Bull Creek
Caballero Creek
Cerapito Creek
Santa Maria Creek
Encino Canyon
Tuna Canyon
Topanga Canyon
Mandeville Canyon
Santa Monica Canyon
Ballona Creek
Hollywood Bowl
Hollywood Memorial Park Cemetery
Forest Lawn Memorial Park
Glendale
Burbank
Tarzana
Encino
Van Nuys
Sherman Oaks
Studio City
Toluca Lake
Universal City
Los Feliz
Silver Lake
Echo Park
Elysian Park
Boyle Heights
Eagle Rock
Highland Park
Mount Washington
Cypress Park
Glassell Park
Atwater Village
Griffith Park
Pacific Palisades
Santa Monica
Venice
Culver City
Westwood
Brentwood
Bel Air
Beverly Hills
West Hollywood
Mid-City
Koreatown
Downtown
Chinatown
Lincoln Heights
Exposition Park
University Park
Vermont Square
Vermont Knolls
Harvard Heights
Arlington Heights
West Adams
Leimert Park
Baldwin Hills
Crenshaw
Hyde Park
Florence-Graham
Westmont
Watts
Willowbrook
Rancho Dominguez
Compton
Lynwood
Paramount
Bellflower
Carson
Gardena
Hawthorne
Inglewood
Lennox
Del Aire
Lawndale
Gardena
Torrance
Redondo Beach
Manhattan Beach
Hermosa Beach
Palos Verdes Peninsula
Rancho Palos Verdes
Rolling Hills Estates
Rolling Hills
Palos Verdes Estates
San Pedro
Wilmington
Harbor City
Harbor Gateway
Carson
Long Beach
Signal Hill
Lakewood
Cerritos
Artesia
Norwalk
Whittier
La Habra Heights
Hacienda Heights
Rowland Heights
La Puente
West Covina
Baldwin Park
Irwindale
Azusa
Duarte
Monrovia
Arcadia
Sierra Madre
Altadena
Pasadena
San Marino
South Pasadena
Alhambra
San Gabriel
Rosemead
El Monte
South El Monte
Montebello
Pico Rivera
Santa Fe Springs
La Mirada
Whittier
Norwalk
Downey
Bell
Bell Gardens
Cudahy
Huntington Park
South Gate
Maywood
Commerce
Vernon
Industry
Walnut
Diamond Bar
Chino Hills
Yorba Linda
Brea
Fullerton
Anaheim
Placentia
Orange
Tustin
Irvine
Lake Forest
Mission Viviente
Foothill Ranch
Rancho Santa Margarita
Laguna Niguel
Dana Point
San Juan Capistrano
San Clemente
Camp Pendleton
Oceanside
Carlsbad
Encinitas
Solana Beach
Del Mar
San Diego
Chula Vista
National City
Coronado
Imperial Beach
Otay Mesa
Tijuana
Mexicali
Ensenada
Rosarito
Tecate
Playas de Rosarito
Baja California
Sonora
Arizona
Nevada
Utah
Colorado
New Mexico
Texas
Oklahoma
Kansas
Missouri
Illinois
Indiana
Ohio
Michigan
Wisconsin
Minnesota
Iowa
Nebraska
South Dakota
North Dakota
Montana
Wyoming
Idaho
Oregon
Washington
Alaska
Hawaii
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
Gulf of California
Sea of Cortez
Baja California Peninsula
Mexico
Canada
United States
North America
South America
Europe
Asia
Africa
Australia
Antarctica
Arctic Ocean
Indian Ocean

WMP 12 is approximately 26.0 miles long, and relatively flat with a very gradual slope to the east and south, with widths range from approximately 275 to 375 feet. The river runs through highly urbanized areas within the City, and is surrounded by a mix of residential, commercial, and industrial development; a network of roads and freeways, a number of which have bridges over the river; and some larger undeveloped areas (e.g., Sepulveda Basin, Griffith Park, Elysian Park). The western end of WMP 12 continues as an unvegetated, concrete-lined channel further upstream, which diverts into multiple smaller unvegetated, concrete-lined channels between the neighborhoods of Canoga Park (to the north), Warner Center (to the south), and West Hills (to the west). These smaller channels eventually connect to undeveloped areas within the Santa Susana Mountains and Simi Hills PAW and areas of the Santa Monica Mountains outside of the City's limits within unincorporated Los Angeles County. These montane areas contribute steep topography that is part of the watershed providing hydrology to these upstream tributaries of the Los Angeles River. At the southern extent of WMP12, which is the downstream extent of the Los Angeles River at the City's limits, the river continues as a generally unvegetated, concrete-lined channel that roughly parallels Interstate 710 until its outlet into the Los Angeles Harbor and the Pacific Ocean.

Barriers to Movement

Many areas of the WMP 12 are difficult to access due to vertical concrete banks, chain link fencing, and some gated culverts. These gates and fencing were installed for human safety, as a deterrent to accessing the river. As such, these barriers may also deter access for wildlife. Portions of WMP 12 are surrounded by roads, railroads, and development on both sides of the river, which provide additional hazards to wildlife moving through an area; thus, if a wildlife species is able to get into the river (e.g., via a culvert or through a gap in the fence), they may use it as a movement pathway between habitat areas rather than traversing through urbanized areas where crossing over roads or railroad tracks may be required, particularly during times of day when there is more traffic. There is relatively little human activity within the river, with the exception of a number of homeless encampments. However, there is a high amount of human activity, and some associated noise, immediately adjacent to portions of the river (e.g., cars on freeways), which may deter movement for less urban-adapted species.

4.4.13 WMP 13 – Santa Monica Mountains-Griffith Park

WMP 13 represents a regional connection across the Santa Monica Mountains East PAW, which connects the Santa Monica Mountains West PAW with the Griffith Park and Hollywood Hills PAW, and beyond to the Los Angeles River PAW (Figure 15). This wildlife movement pathway does not detail a single, specific pathway for wildlife movement. Rather, WMP 13 acknowledges that wildlife moves through the fragmented habitat within the developed and undeveloped ridges and canyons, water bodies, wetlands, riparian areas, open space areas, along roads, and around reservoirs of the suburban Santa Monica Mountains from west of Interstate 405, between Interstate 405 and State Route 101, and east to Griffith Park and the Los Angeles River. Multiple studies and data resources have documented use of WMP 13 by medium and large mammals, among other species.

In a California State University, Northridge (CSUN) study from 2006 to 2007,[93] wildlife movement across Interstate 405 in the Sepulveda Pass area was monitored using gypsum powder track stations that were set up at three crossing points, including the Mulholland Drive bridge, Sepulveda Boulevard underpass, and a drainage culvert on the Getty Museum property. Raccoons and opossums were the only species found using the Getty Museum drainage culvert, but evidence of these species, as well as feline and canine species, was found as the most frequent visitors to the other track stations. For both the Mulholland bridge and Sepulveda underpass, there were less completed crossings recorded than investigations (i.e., where animals would start to cross but turn back), likely due to the dimensions or type of crossing, as well as aversion to human activity. Observations of vehicle mortalities at the Sepulveda underpass of one raccoon, two opossums, and one California mountain kingsnake (*Lampropeltis zonata*) also indicated wildlife movement through the area. The same study also documented gene flow of bobcats within the eastern Santa Monica Mountains from west of Interstate 405 ("Topanga Section"), to the "Mid-Section" between Interstate 405 and State Route 101, to Griffith Park. From these three subpopulations, the study concluded that the Griffith Park subpopulation was not experiencing significant inbreeding; however, the same was not true for the Topanga and Mid-Section subpopulations.

A UCLA study[94] conducted camera trapping in the eastern Santa Monica Mountains in the vicinity of Mulholland Drive and N. Beverly Glen Boulevard. The study captured evidence of coyote and bobcat, which were primarily seen at night, and mule deer, which were largely crepuscular (i.e., active primarily during dawn and dusk). Data collected from this study suggests that coyotes may use Mulholland Drive as a movement corridor between habitats.

The Griffith Park Connectivity Study set up motion-triggered cameras to monitor wildlife movement between Griffith Park and other habitat areas or to access the Los Angeles River.[95] From 2011 to 2012, mule deer, bobcat, coyote, raccoon, striped skunk, and a male mountain lion were detected in cameras in hillside habitat near bridges over State Route 101 at Lakeridge Bridge (also referred to as WMP 44 in this document) and Pilgrimage Bridge (also referred to as WMP 45 in this document). Coyotes were recorded crossing State Route 101 via the Lakeridge Bridge twice a week, and mule deer were also recorded using the bridge, though less frequently. Only one deer crossing was documented on Pilgrimage Bridge, and a raccoon was detected but it could not be confirmed as crossing the bridge. From 2013 to 2014, on the eastern side of Griffith Park, cameras were placed in habitat at the opening of three tunnels under highways between Griffith Park and the Los Angeles River. The same medium and large mammal species, plus gray fox, were detected. Coyotes were documented within all three tunnels, and bobcat, raccoon, and

93 Osborn, N. 2009. *Barriers to Movement and Gene Flow in Mid-Sized Carnivores in the Eastern Santa Monica Mountains*. California State University, Northridge. Master of Science in Biology.

94 Albano, G., T. Bitcon, M. Condamoor, S. Lao, G. Lopez, R. Sokolovsky, and A. Vicencio. June 2012. *Large Mammal Movement in the Eastern Santa Monica Mountains*. UCLA Institute of the Environment and Sustainability. Environment 180 – Senior Practicum in Environmental Science. Client: Mountains Recreation and Conservation Authority. Advisors: Dr. Travis Longcore (UCLA) and Dr. Erin Boydston (U.S. Geological Survey).

95 Boydston, E., M. Ordeñana, and D. Cooper. 2014. *Landscape Connectivity for Medium and Large Mammals in the City of Los Angeles*. WatershedWise. Vol. 15, No. 4. Pages 4 -5.

mule deer were documented using one or more tunnels; however, overall wildlife use was infrequent.

The male mountain lion observed within the Griffith Park area is Puma 22 (P22), which was discovered during the Griffith Park Connectivity Study and later captured and radio-collared by National Park Service (NPS). P22 is the most urban mountain lion known to exist, and based on the results of genetic testing, came from the Santa Monica Mountains.[96] During the day, he generally uses natural areas and remains in remote and inaccessible sections within Griffith Park, then travels mostly at night and feeds on deer.

WMP 13 is approximately 12 miles long through rolling hills and canyons. There is scattered residential development, particularly within the portion through the Santa Monica Mountains East PAW.

Barriers to Movement

Scattered residential development, particularly throughout the Santa Monica Mountains East PAW, has a variety of constraints to wildlife movement including fragmentation of habitat and impermeable ridgelines and canyons in some areas where development and associated structures (e.g., tennis courts, pools), fencing, and walls impede free movement through an area. Urban lighting, noise, and window glare effects associated with residences, as well as lighting and noise associated with roadways, may also deter some wildlife species from moving through an area. Due to the presence of residential development, there is a moderate amount of human activity within the region, including areas such as Hollywood Bowl and Runyon Canyon, a frequented hiking spot. In addition, traffic along windy roads following ridgelines and canyons may be a hazard for wildlife, or deter them from moving through, particularly during times of day when there is more traffic and noise. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

4.4.14 WMP 14 – Mulholland Bridge

Within regional connection WMP 13 across the Santa Monica Mountains, there are a number of smaller WMPs that connect fragmented patches of undeveloped habitat for wildlife between PAWs (Figure 15). WMP 14 connects the Santa Monica Mountains West PAW with Santa Monica Mountains East PAW via the Mulholland Drive bridge over Interstate 405. As mentioned above, the CSUN study recorded evidence of raccoons, opossums, and feline and canine species at the Mulholland bridge, although there were less completed crossings recorded than investigations. Mule deer has been documented (both alive and as roadkill) in this location.

WMP 14 is approximately 0.2 mile long and 80 feet wide spanning over a canyon (i.e., Interstate 405). The bridge is surrounded by a mix of native and non-native habitat, including native walnuts and non-native grassland, and development from multiple schools and roads, as well as Interstate 405.

96 Ordeñana, Miguel. March 31, 2013. *Discovering the Gr¡fith Park Mountain Lion (P22): Looking Back One Year Later*. Urban Carnivores. http://www.urbancarnivores.com/miguels-blog/.

Barriers to Movement

Heavy traffic along Interstate 405 and Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. In addition, because there are multiple schools surrounding the bridge, human activity within the area is high during certain times of day, and fragmented habitat in the surrounding area may make movement through an area difficult. Moderate lighting, human activity, noise, traffic, and lack of cover may deter wildlife from using the bridge.

4.4.15 WMP 15 – Skirball Center Drive

WMP 15 connects the Santa Monica Mountains West PAW with Santa Monica Mountains East PAW via the Skirball Center Drive bridge over Interstate 405 (Figure 15). Mule deer have been documented within the vicinity.

WMP 15 is approximately 0.1 mile long and 85 feet wide spanning over a canyon (i.e., Interstate 405). The bridge is surrounded by mix of native oak woodland and non-native grassland habitat and with some limited development and roads nearby, as well as Interstate 405.

Barriers to Movement

Heavy traffic along Interstate 405 and Skirball Center Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Moderate lighting, human activity, noise, and traffic may deter wildlife from using the bridge.

4.4.16 WMP 16 – Bel Air Crest Road

WMP 16 connects the Santa Monica Mountains West PAW with Santa Monica Mountains East PAW via the Bel Air Crest Road underpass under Interstate 405 (Figure 15). Mule deer, coyote, raccoon have been observed within the vicinity, and there was an anecdotal report of a mountain lion observed in the area.

WMP 16 is approximately 0.1 mile long and 85 feet wide and relatively flat. The underpass is surrounded by native habitat on both sides, chaparral and oak woodland to the west, residential development to the east with some roads nearby, as well as Interstate 405.

Barriers to Movement

Heavy traffic along Interstate 405 and some light traffic along Bel Air Crest Road may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Moderate lighting, human activity, and noise may deter wildlife.

4.4.17 WMP 17 – Sepulveda Boulevard

WMP 17 connects the Santa Monica Mountains West PAW with Santa Monica Mountains East PAW via the N. Sepulveda Boulevard underpass under Interstate 405 (Figure 15). As mentioned above, the CSUN study recorded evidence of raccoons, opossums, and feline and canine species at the Sepulveda Boulevard underpass, although there were less completed crossings recorded than investigations.

WMP 17 is approximately 0.2 mile long and 100 feet wide and relatively flat. The underpass crosses under Interstate 405 is surrounded by non-native grassland and ruderal habitat on both sides with a mix of native and non-native habitat beyond that, and N. Sepulveda Boulevard on either side.

Barriers to Movement

Heavy traffic along Interstate 405 and some moderate traffic along N. Sepulveda Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic and noise.

4.4.18 WMP 18 – Getty Center Drive

WMP 18 connects the Santa Monica Mountains West PAW with Santa Monica Mountains East PAW via the Getty Center Drive underpass under Interstate 405 (Figure 15). The underpass is lit with no dirt edges. Mule deer have been documented within the vicinity.

WMP 18 is approximately 850 feet long and 180 feet wide and relatively flat across the bottom of a canyon. The underpass crosses under Interstate 405 is surrounded by chaparral and oak woodland on both sides with non-native woodland to the east.

Barriers to Movement

Heavy traffic along Interstate 405 and some moderate traffic along Getty Center Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic and noise. There are parking lots on both sides of the WMP, and human activity may be higher during certain times of the week when there are more visitors to the Getty Center, which may deter wildlife.

4.4.19 WMP 19 – Casiano Road

Within the Santa Monica Mountains East PAW, wildlife moves through the fragmented habitat within the developed and undeveloped ridges and canyons, and along roads, of the suburban Santa Monica Mountains (Figure 15). Within this area, several WMPs have been identified where movement from a large, undeveloped area of habitat connects over a ridgeline and/or road to another a large, undeveloped area of habitat. WMP 19 connects two undeveloped areas that are bisected by Earls Court, which is at the end of a cul-de-sac, on Casiano Road.

WMP 19 is approximately 230 feet long and 300 feet wide across a ridgeline surrounded by gradual to steep slopes. WMP 18 is surrounded by residential development along the ridgeline to the north and south, and undeveloped areas to the east and west, with a natural canyon to the east.

Barriers to Movement

There is a wrought iron fence surrounding the property to the south, which may make access difficult for larger mammal species that cannot fit through gaps in the fence. Light traffic along the roads may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat may deter some wildlife movement through the area.

4.4.20 WMP 20 – Linda Flora Drive

WMP 20 connects two undeveloped areas that are bisected by Linda Flora Drive (Figure 15). WMP 20 is approximately 25 feet long and 600 feet wide across a ridgeline flanked by steep slopes. WMP 20 is surrounded by residential development along the ridgeline to the north and south, and undeveloped areas to the east and west, with a natural canyon to the west.

Barriers to Movement

Light traffic along Linda Flora Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development in the canyon and along the ridgeline to the east may deter some wildlife movement through the area.

4.4.21 WMP 21 – Stone Canyon Road

WMP 21 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 21 is approximately 260 feet long and 375 feet wide across a ridgeline flanked by canyons. WMP 21 is surrounded by residential development to the north-northeast and south-southwest, and undeveloped areas, which include oak woodland and walnut woodland, to the northwest and southeast. The undeveloped areas to the north are highly fragmented between residential development along the ridgelines and canyons; however, there is larger area of undeveloped native habitat to the south, which includes Stone Canyon Reservoir. Raccoon has been documented in the vicinity.

Barriers to Movement

Moderate traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.22 WMP 22 – Fawndale Place

WMP 22 connects two undeveloped areas via a ridgeline that is between residential development (Figure 15). WMP 22 is approximately 60 feet long and 125 feet wide along an undeveloped slope. WMP 22 is surrounded by residential development to the north and south, and undeveloped areas to the east and west.

Barriers to Movement

Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.23 WMP 23 – Oakfield Drive

WMP 23 connects two undeveloped areas along a west-facing slope that are bisected by Oakfield Drive (Figure 15). WMP 23 is approximately 40 feet long and 75 feet wide along a very steep slope. WMP 23 is immediately surrounded by residential development to the north, and undeveloped areas to the east and west with chaparral, walnut woodland, non-native woodland,

and non-native grassland on the steep slopes. There is residential development in the canyon to the west, as well as the ridgeline to the east.

Barriers to Movement

There is a chain link fence along the west side of Oakfield Drive; however, larger mammal species that cannot fit through gaps in the fence can go around the northern end of the fence. Light traffic along the roads may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat may deter some wildlife movement through the area.

4.4.24 WMP 24 – Camino de la Cumbre

WMP 24 connects two undeveloped areas along an east-facing slope that are bisected by Camino de la Cumbre (Figure 15). WMP 24 is approximately 75 feet long and 280 feet wide along a very steep slope. WMP 24 is immediately surrounded by a school to the north and residential development to the south, and undeveloped areas to the east and west with walnut woodland and chaparral on the steep slopes. There is residential development along the ridge to the west, and a large, undeveloped natural area within Fossil Ridge Park to the east with high quality oak and sycamore woodland within the canyon bottom.

Barriers to Movement

Moderate traffic along the road may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from the nearby school and residences and the fragmentation of habitat may deter some wildlife movement through the area.

4.4.25 WMP 25 – Beverly Glen Boulevard

WMP 25 connects two undeveloped areas that are bisected by Beverly Glen Boulevard (Figure 15). WMP 25 is approximately 120 feet long and 65 feet wide across a ridgeline with steep slopes on either side. WMP 25 is surrounded by residential development to the north and south, and undeveloped areas vegetated with chaparral, walnut woodland, non-native woodland, and non-native grassland to the east and west. The undeveloped areas to the north are highly fragmented between residential development along the ridgelines and canyons, within larger areas of undeveloped habitat within Fossil Ridge Park to the northeast and Stone Canyon Reservoir to the south.

Barriers to Movement

High traffic along Beverly Glen Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

4.4.26 WMP 26 – Stone Canyon Overlook

WMP 26 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 26 is approximately 130 feet long and 280 feet wide across a ridgeline flanked by steep slopes. WMP 26 is immediately surrounded by undeveloped areas to the north and a larger area of undeveloped undeveloped areas to the south, which includes Stone Canyon Reservoir. Vegetation within the area includes chaparral, walnut woodland, oak woodland, and non-native grassland. The surrounding area is highly fragmented between residential development along the ridgelines and canyons, particularly to the north and east. Evidence of striped skunk was observed nearby, and mule deer have been documented near this location.

Barriers to Movement

Moderate traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.27 WMP 27 – N. Beverly Glen Boulevard - A

WMP 27 connects two undeveloped areas that are bisected by N. Beverly Glen Boulevard (Figure 15). WMP 27 is approximately 70 feet long and 430 feet wide across a canyon bottom flanked by steep slopes with non-native woodland and non-native grassland. WMP 27 is surrounded by residential development to the north, and undeveloped areas to east and west, including Beverly Glen Park (east) and Stone Canyon Reservoir (west). Evidence of coyote (e.g., scat) was observed, and mule deer have been documented within the vicinity.

Barriers to Movement

High traffic along N. Beverly Glen Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.28 WMP 28 – N. Beverly Glen Boulevard - B

WMP 28 connects two undeveloped areas that are bisected by N. Beverly Glen Boulevard (Figure 15). WMP 28 is approximately 70 feet long and 230 feet wide across a canyon bottom flanked by steep slopes with non-native woodland and non-native grassland. WMP 28 is surrounded by residential development to the south, and undeveloped areas to east and west, including Beverly Glen Park (east) and Stone Canyon Reservoir (west). Evidence of coyote (e.g., scat) was observed, and mule deer have been documented within the vicinity.

Barriers to Movement

High traffic along N. Beverly Glen Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.29 WMP 29 – N. Beverly Glen Boulevard - C

WMP 29 connects two undeveloped areas that are bisected by N. Beverly Glen Boulevard (Figure 15). WMP 29 is approximately 70 feet long and 170 feet wide across a canyon bottom flanked by steep slopes with chaparral and walnut woodland. WMP 29 is immediately surrounded by residential development to the north and south, and undeveloped areas to east and west. Evidence of coyote (e.g., scat) was observed, and mule deer have been documented within the vicinity.

Barriers to Movement

High traffic along N. Beverly Glen Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.30 WMP 30 – Mulholland Drive - A

WMP 30 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 30 is approximately 100 feet long and 100 feet wide across a ridgeline flanked by canyons. WMP 30 is surrounded by residential development to the north, and undeveloped areas to the south. The undeveloped areas to the north are highly fragmented between residential development along the ridgelines and canyons; however, there is larger area of undeveloped habitat within Fossil Ridge Park to the north and Beverly Glen Park to the south.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.31 WMP 31 – Benedict Canyon Lane

WMP 31 connects two undeveloped areas that are bisected near the intersection of Durham Road and Benedict Canyon Lane (Figure 15). WMP 31 is approximately 130 feet long and 90 feet wide across a canyon bottom. WMP 31 is surrounded by residential development to the north and south, and undeveloped areas to the east and some limited areas to the west and northwest. Vegetation within the area consists of urban landscaping and chaparral. The undeveloped areas are highly fragmented between residential development along the ridgelines and canyons.

Barriers to Movement

Light traffic along Durham Road and Benedict Canyon Lane may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.32 WMP 32 – Mulholland Drive - B

WMP 32 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 32 is approximately 95 feet long and 90 feet wide across a ridgeline flanked by steep slopes leading to canyons below. WMP 32 is surrounded by residential development to the immediate northeast and southwest, and undeveloped areas to the immediate northwest and southeast. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.33 WMP 33 – Mulholland Drive - C

WMP 33 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 33 is approximately 130 feet long and 150 feet wide across a ridgeline flanked by steep slopes on either side. WMP 33 is surrounded by undeveloped areas to the immediate northwest and southeast, and a residence to the immediate north. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area. Coyote has been documented within the vicinity of this location.

Barriers to Movement

Moderate traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.34 WMP 34 – Mulholland Drive - D

WMP 34 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 34 is approximately 90 feet long and 200 feet wide across a ridgeline flanked by steep slopes on either side. WMP 34 is surrounded by undeveloped areas to the immediate north and south, and a residence to the immediate west. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

Moderate traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. A small section of chain link fencing is located near a culvert; however, wildlife can pass through around the fencing. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.35 WMP 35 – Arby Drive

WMP 35 connects two undeveloped areas via an undeveloped slope at the eastern end of Arby Drive (Figure 15). WMP 35 is approximately 160 feet long and 225 feet wide across a west-facing slope traversing rolling hills. WMP 35 is surrounded by residential development to the immediate east and west, and undeveloped areas to the immediate north and south. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.36 WMP 36 – Summitridge Drive - A

WMP 36 connects two undeveloped areas that are bisected by Summitridge Drive (Figure 15). WMP 36 is approximately 70 feet long and 360 feet wide across a ridgeline flanked by steep slopes on either side. WMP 36 is surrounded by one residence to the immediate north and residential development to the south, and undeveloped areas to the immediate east and west. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

Light traffic along Summitridge Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.37 WMP 37 – Summitridge Drive - B

WMP 37 connects two undeveloped areas that are bisected by Summitridge Drive (Figure 15). WMP 37 is approximately 60 feet long and 200 feet wide near a ridgeline with steep slopes on either side. WMP 37 is surrounded by residential development to the east and west, and undeveloped areas to the north and south, including an extensive undeveloped area of Franklin Canyon Park to the south. However, to the north, east, and west, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

Light traffic along Summitridge Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area. There is also a wrought iron fence along the eastern side of Summitridge Drive, which may make access difficult for larger mammal species that cannot fit through gaps in the fence.

4.4.38 WMP 38 – Mulholland Drive - E

WMP 38 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 38 is approximately 70 feet long and 365 feet wide across a ridgeline flanked by steep slopes on either side. WMP 38 is surrounded by residential development to the east and west, and undeveloped areas to the north and south, including an extensive undeveloped area of Franklin Canyon Park to the south. However, to the north, east, and west, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.39 WMP 39 – Mulholland Drive - F

WMP 39 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 39 is approximately 50 feet long and 130 feet wide across a ridge and down a slope. WMP 39 is surrounded by residential development to the north and south, and undeveloped areas to the immediate east and west, with an extensive undeveloped area of Franklin Canyon Park to the southwest. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area. There are also some nearby chain link fences and walls along the road that may inhibit some movement for larger mammal species; however, there are open areas around those fences and walls.

4.4.40 WMP 40 – Mulholland Drive - G

WMP 40 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 40 is approximately 50 feet long and 100 feet wide across a ridgeline flanked by steep slopes on either side. WMP 40 is surrounded by residential development to the northwest and southeast, and undeveloped areas to the immediate northeast and southwest, with a large undeveloped area of Fryman Canyon Park to the northeast. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby

residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.41 WMP 41 – Laurel Canyon Boulevard

WMP 41 connects two undeveloped areas that are bisected by Laurel Canyon Boulevard (Figure 15). WMP 41 is approximately 100 feet long and 90 feet wide across a canyon surrounded by steep slopes on either side. WMP 41 is surrounded by residential development to the north and south, and undeveloped areas to the immediate east and west, with a large undeveloped area of Laurel Canyon Park to the west. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area. Mule deer has been documented in this location.

Barriers to Movement

High traffic along Laurel Canyon Boulevard may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. The steep slope along the western side of the road may be difficult to traverse, especially for smaller animals. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.42 WMP 42 – Nichols Canyon Road

WMP 42 connects two undeveloped areas that are bisected by Nichols Canyon Road (Figure 15). WMP 42 is approximately 50 feet long and 280 feet wide across a canyon surrounded by steep slopes on either side. WMP 42 is surrounded by scattered rural residential development to the north and south, and undeveloped areas to the immediate east and west, with a large undeveloped area of Trebek Open Space to the east. However, the undeveloped areas are highly fragmented between residential development along the ridgelines and canyons within the area.

Barriers to Movement

Moderate traffic along Nichols Canyon Road may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area. There is also a chain link fence along the western side of the road and portions of the eastern side, which may make access difficult for larger mammal species that cannot fit through gaps in the fence.

4.4.43 WMP 43 – Astral Drive

WMP 43 connects two undeveloped areas that are bisected by Astral Drive (Figure 15). WMP 43 is approximately 50 feet long and 280 feet wide across a ridgeline flanked by steep slopes on either side. WMP 43 is surrounded by residential development to the north and south, and undeveloped areas to the immediate east and west, including a large undeveloped area of Trebek Open Space to the west, and Runyon Canyon Park and Wattles Garden Park to the east.

Barriers to Movement

Light traffic along Astral Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area. There is also a wooden fence along the eastern side of the road, which may inhibit access for medium and large mammal species if they cannot find gaps in the fence or jump over it.

4.4.44 WMP 44 – Mulholland Drive - H

WMP 44 connects two undeveloped areas that are bisected by Mulholland Drive (Figure 15). WMP 44 is approximately 70 feet long and 200 feet wide across a slope. WMP 44 is immediately surrounded by undeveloped areas vegetated with sycamores and chaparral, with pockets of residential development to the northwest, east, and south. Mule deer has been documented within the vicinity of this location.

Barriers to Movement

High traffic along Mulholland Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. Human activity from nearby residences and the fragmentation of habitat due to residential development may deter some wildlife movement through the area.

4.4.45 WMP 45 – Lakeridge Bridge

WMP 45 connects the Santa Monica Mountains East PAW with Griffith Park and Hollywood Hills PAW via the Lakeridge Bridge over State Route 101 (Figure 15). As previously mentioned, the Griffith Park Connectivity Study detected evidence of mule deer, bobcat, coyote, raccoon, striped skunk, and a male mountain lion from their cameras in hillside habitat near the bridge, and coyotes were recorded crossing the bridge regularly twice a week while mule deer were recorded to cross occasionally but less frequently.

WMP 45 is approximately 410 feet long and 30 feet wide spanning over a canyon (i.e., State Route 101). The bridge is surrounded by a undeveloped land vegetated with sycamores and chaparral to the northeast and southwest, and development from State Route 101, as well as from residences, a school, and roads to the northwest and south.

Barriers to Movement

Heavy traffic along State Route 101, Mulholland Drive, and Lakeridge Road may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. In addition, because there are multiple developed areas surrounding the bridge, human activity within the area is likely to be high during certain times of day, and fragmented habitat in the surrounding area may make movement through an area difficult. Heavy lighting, human activity, noise, and traffic may deter wildlife from using the bridge.

4.4.46 WMP 46 – Pilgrimage Bridge

WMP 46 connects the Santa Monica Mountains East PAW with Griffith Park and Hollywood Hills PAW via the Pilgrimage Bridge over State Route 101 (Figure 15). As previously mentioned, the Griffith Park Connectivity Study detected evidence of mule deer, bobcat, coyote, raccoon, striped skunk, and a male mountain lion from their cameras in hillside habitat near the bridge, although only one mule deer crossing was recorded during the study, as well as a possible (but unconfirmed) raccoon crossing.

WMP 46 is approximately 570 feet long and 30 feet wide spanning over a canyon (i.e., State Route 101). The bridge is surrounded by a undeveloped land to the east and west, and development from State Route 101, as well as nearby residences, Hollywood Bowl, and roads to the north and south.

Barriers to Movement

Heavy traffic along State Route 101, Cahuenga Boulevard West, Cahuenga Boulevard East, and across Pilgrimage Bridge may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. In addition, because there are developed areas surrounding the bridge, human activity within the area is likely to be high during certain times of day, and fragmented habitat in the surrounding area may make movement through an area difficult. Heavy lighting, human activity, noise, and traffic may deter wildlife from using the bridge.

4.4.47 WMP 47 – Forest Lawn Drive

WMP 47 connects the Griffith Park and Hollywood Hills PAW with Los Angeles River PAW via the Forest Lawn Drive underpass under State Route 134 (Figure 15). Coyote and mule deer have been documented within the vicinity. In addition, as previously mentioned, the Griffith Park Connectivity Study placed cameras in habitat at the opening of three tunnels under highways between the Los Angeles River and the eastern side of Griffith Park, which detected evidence of mule deer, bobcat, coyote, raccoon, striped skunk, gray fox, and a male mountain lion.

WMP 47 is approximately 640 feet long and 50 feet wide with relatively flat topography that gradually slopes from the hills of Griffith Park down to the Los Angeles River. The underpass is immediately surrounded by undeveloped land with non-native woodland to the north and south, Mount Sinai Memorial Parks and Mortuaries and Forest Lawn - Hollywood Hills Memorial Park and Mortuaries to the southwest, and some scattered development (i.e., museums) to the east. Dense development occurs north of the Los Angeles River, which consists of residential and commercial development, agriculture, and equestrian facilities.

Barriers to Movement

Heavy traffic along State Route 134 and Forest Lawn Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. In addition, because there are developed areas surrounding the underpass, human activity and noise within the area is likely to be high during certain days of the week or times of day. However, there may be little or no traffic hazards or human activities during the middle of the night when

many wildlife species are more active. Fragmented habitat in the surrounding area (i.e., to the north) may make movement through the area difficult, especially since there is little vegetative cover within the Los Angeles River near the underpass, which may deter wildlife from using this WMP. There is also chain link fencing along the Los Angeles River, but wildlife (particularly medium mammals and coyote) would likely be able to pass through large holes in the fencing.

4.4.48 WMP 48 – Los Angeles River Equestrian Trail

WMP 48 connects the Griffith Park and Hollywood Hills PAW with Los Angeles River PAW via a concrete box culvert crossing structure under State Route 134 that is used as an equestrian trail (Figure 15). Evidence of coyote (e.g., tracks and scat) was observed along this WMP, as well as anecdotal observations of coyote and mule deer within the vicinity. In addition, as previously mentioned, the Griffith Park Connectivity Study placed cameras in habitat at the opening of three tunnels under highways between the Los Angeles River and the eastern side of Griffith Park, which detected evidence of mule deer, bobcat, coyote, raccoon, striped skunk, gray fox, and a male mountain lion.

WMP 48 is approximately 550 feet long and 12 feet wide with relatively flat topography that gradually slopes from the hills of Griffith Park down to the Los Angeles River. The underpass is immediately surrounded by riparian woodland and wetland within the river channel to the north, undeveloped land with non-native woodland to the north and south, and some scattered development (i.e., museums) to the west. To the north of the Los Angeles River, there is a park (Bette Davis Picnic Area) and dense development, which consists of residential and commercial development, agriculture, and equestrian facilities.

Barriers to Movement

Heavy traffic along State Route 134 and Zoo Drive may be a hazard for wildlife, or deter wildlife from moving through, particularly during times of day when there is more traffic. In addition, because there are developed areas surrounding the crossing structure, and since the crossing structure is used as an equestrian trail, human activity and noise within the area is likely to be high during certain days of the week or times of day. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active. Fragmented habitat in the surrounding area (i.e., to the north) may make movement through the area difficult, especially since there is little vegetative cover within the Los Angeles River near the underpass, which may deter wildlife from using this WMP.

4.4.49 WMP 49 – Corralitas Red Car Trail

WMP 49 connects the Griffith Park and Hollywood Hills PAW to the Elysian Park PAW via a constrained pathway amidst a heavily developed area just west of and parallel to Interstate 5 (Figure 15). This pathway occurs along vegetated slopes with a mix of non-native woodland, chaparral, and non-native grassland between developed areas and a dirt hiking trail; however, wildlife would have to cross five large roads, and a few smaller ones, from one end to the other. Although this pathway is highly constrained, it is traversable and it is likely that the wildlife that choose to use it may tend to do so during times of day when there is little traffic and human activity. From the northern end, this WMP parallels Crystal Spring Drive along a narrow, densely

vegetated slope. Wildlife would then have to cross over Los Feliz Boulevard, through William Mulholland Memorial park, to the vegetated slopes southwest of and parallel to Riverside Drive. Continuing down these vegetated slopes, wildlife would have to cross Hyperion Avenue, Glendale Boulevard, and Fletcher Drive and an adjacent parking lot. The vegetated slopes closer to Fletcher Drive become open non-native grassland with some large chaparral shrubs, which provides less dense vegetative cover for medium and large mammals to use. Southeast of Fletcher Drive, WMP 48 follows the Corralitas Red Car Trail, a dirt trail following a private right-of-way through Silver Lake where the historic Pacific Electric Red Car route was previously located.[97, 98] The trail terminates at the end of Corralitas Drive, just northwest of State Route 2. From the end of the trail, wildlife could follow Corralitas Drive northeast, then turn southeast towards a series of underpasses under State Route 2 and across Allesandro Drive. Continuing southeast along roads or steep vegetated slopes, wildlife can then access the Elysian Park PAW. Coyote, bobcat, and raccoon have been observed along Corralitas Red Car Trail.

WMP 49 is approximately 30 miles long with widths from approximately 10 to 50 feet, and topography ranges from flat to steep slopes. There is residential development to the immediately surrounding WMP 49 to the northeast and southwest. The northern end of WMP 49 leads to the foothills of the Griffith Park and Hollywood Hills PAW to the northwest, and the Santa Monica Mountains beyond. The southern end of WMP 48 leads to Elysian Park PAW, which is adjacent to the Los Angeles River PAW.

Barriers to Movement

Multiple chain link and wrought iron fences were observed obstructing free movement along portions of WMP 49. However, there are some gaps in the fence that small and medium mammals would be able to get through, and larger mammals may be able to jump over or find ways around the fences. In addition, there is heavy traffic along five major roads that may be a hazard for wildlife, or deter them from moving through, particularly during times of day when there is more traffic and noise. There is also a moderate to high level of human activity during certain times of the day due hikers and proximity to residences and business. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

4.4.50 WMP 50 – Park Row Bridge

WMP 50 connects two portions of Elysian Park PAW via the Park Row Street bridge over State Route 101 (Figure 15). Evidence of coyote (i.e., scat) was observed nearby within Elysian Park.

WMP 50 is approximately 290 feet long, 30 feet wide, and relatively flat. On the north side of the bridge, there is residential development to the immediate northwest. However, to the northeast and on the south side of the bridge are undeveloped areas within the Elysian Park PAW vegetated with a mix of non-native woodland and chaparral.

97 Community Residents' Association for Parks. 2017. *Corralitas Red Car Property.* https://redcarproperty.blogspot.com/.

98 Brightwell, E. April 10, 2013. *Exploring a Section of the Old Glendale and Edendale Red Car Lines.* KCET. History and Society. https://www.kcet.org/history-society/exploring-a-section-of-the-old-glendale-and-edendale-red-car-lines.

Barriers to Movement

There may be light traffic along Park Row Street that may be a hazard for wildlife, or deter them from moving through during times of day when there is more traffic, noise, or human activity from the nearby park or residences. However, there may be little or no traffic hazards during the middle of the night when many wildlife species are more active.

4.4.51 WMP 51 – Solano Avenue

WMP 51 connects two portions of Elysian Park PAW across Solano Avenue (Figure 15). Coyote and striped skunk have been documented within the vicinity.

WMP 51 is approximately 350 feet long, 35 feet wide, with some slopes. State Route 110 is to the immediate north of WMP 51, and there is residential development immediately to the south. However, both sides WMP 51 connect to undeveloped areas within the Elysian Park PAW.

Barriers to Movement

There may be moderate traffic along Solano Avenue and high traffic along State Route 110 that may be a hazard for wildlife, or deter them from moving through during times of day when there is more traffic and noise. There may also be moderate human activity from the nearby residences. However, there may be little or no traffic hazards or human activities during the middle of the night when many wildlife species are more active.

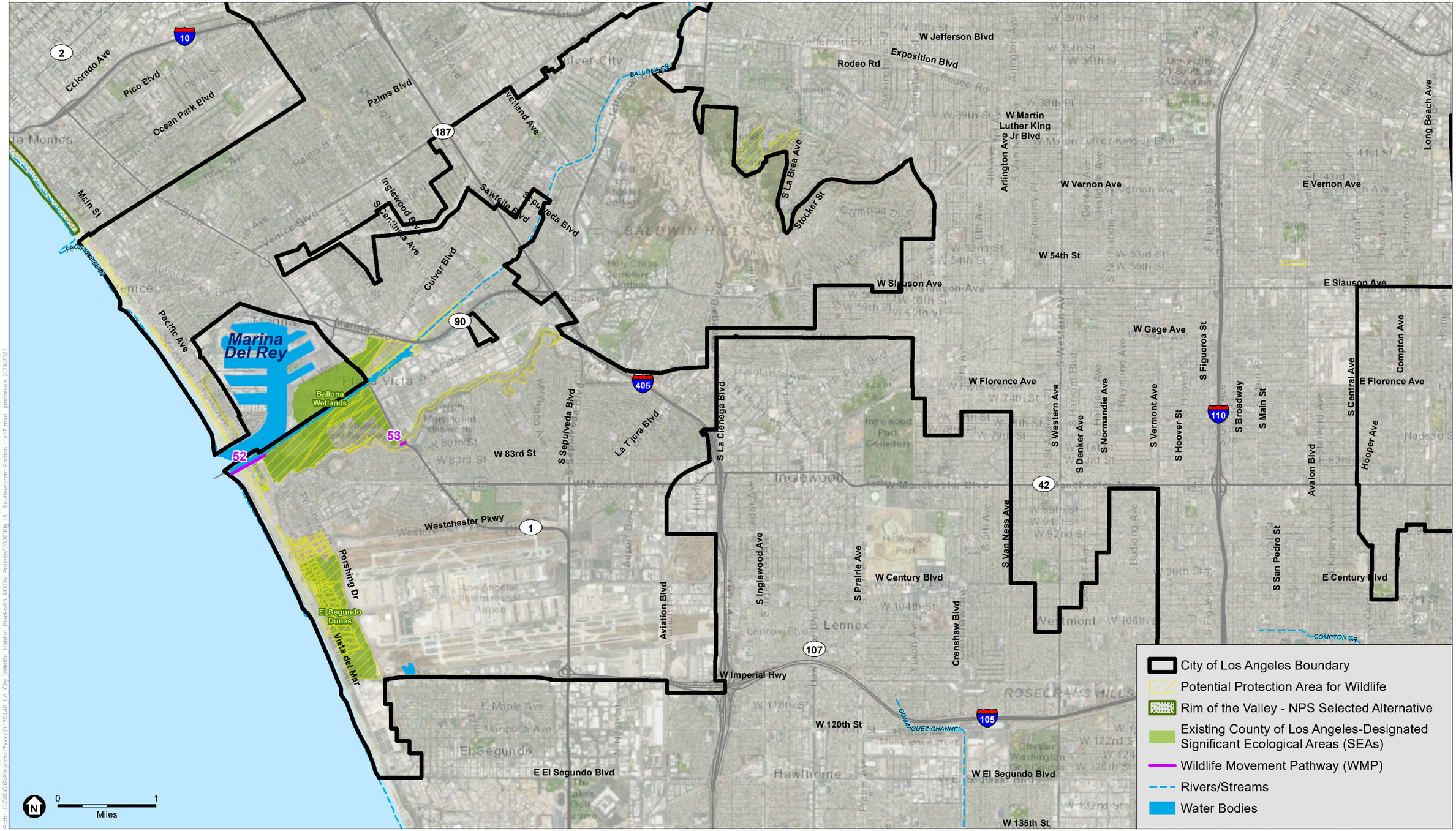
4.4.52 WMP 52 – Ballona Creek

WMP 52 connects the Ballona Wetlands PAW, Del Rey Lagoon Park PAW, and Dockweiler State Beach PAW along a narrow path adjacent to Ballona Creek (**Figure 16**, *Protection Areas for Wildlife and Wildlife Movement Pathways – Southwestern Portion*). From the eastern end, this WMP starts in Ballona Wetland and follows a paved access road along the southern bank of Ballona Creek past a residential area to south to the Del Rey Lagoon. Following the road, the WMP then continues past another residential area through a parking lot to Dockweiler State Beach, and eventually to the Pacific Ocean. Although developed, WMP 52 is adjacent to aquatic habitat and connects wetland habitat to sandy beach and marine habitat. Raccoon has been documented within the vicinity on the north side of Ballona Creek.

WMP 52 is approximately 0.5 mile long, 30 feet wide, and relatively flat. There is residential development to the immediate south of the WMP, and Ballona Creek lies to the north. The eastern end of WMP 52 leads to the Ballona Wetland PAW, which connects to the Ballona Creek PAW upstream. The western ends leads to Dockweiler State Beach PAW, which connects to the El Segundo Dunes PAW and the Pacific Ocean.

Barriers to Movement

There is light traffic along the road, adjacent roads, and parking lot which WMP 52 passes through, as well as moderate to high human activity due to residents and beachgoers. Thus, wildlife may prefer to move through during night or times of day when traffic and human activity are lower or absent.



Path: U:\GIS\GIS\Projects\17xxxx\170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 16 - Southwestern Portion 11x17.mxd, janderson 2/23/2021

SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 16
Protection Areas for Wildlife and Wildlife Movement Pathways – Southwestern Portion

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4.4.53 WMP 53 – E. Pacific Coast Highway

WMP 53 connects the Ballona Wetlands PAW and Loyola Marymount University PAW across E. Pacific Coast Highway (i.e., Lincoln Boulevard) from a dirt trail and paved access road (Cabora Drive) in the west to a dirt trail to the east, which parallels the drainage course within the Loyola Marymount University PAW (Figure 16). There is also a culvert under E. Pacific Coast Highway that is typically inundated with water and may not allow passage for terrestrial species. Thus, these species moving between the Loyola Marymount University PAW and Ballona Wetlands PAW are likely to cross over the road if the culvert is not passable due to the water level. Raccoon has been documented within the vicinity along Cabora Drive, just south of the WMP.

WMP 53 is approximately 250 feet long, 30 feet wide, and relatively flat. There is undeveloped coastal sage scrub and riparian habitat immediately surrounding the WMP to the east within the Loyola Marymount University PAW and to the west within the Ballona Wetlands PAW which connects to Ballona Creek and eventually the Pacific Ocean, and residential development to the north, south, and east.

Barriers to Movement

There is heavy traffic along E. Pacific Coast Highway, associated noise, as well as moderate to high human activity due to residents, bikers, and hikers. Thus, wildlife may prefer to move through during night or times of day when traffic, noise, and human activity are lower or absent.

4.4.54 WMP 54 – Harbor Lake

WMP 54 connects the Harbor Lake Regional Park PAW to South Harbor Lake PAW via a pathway crossing N. Gaffey Street and W. Anaheim Street (**Figure 17**, *Protection Areas for Wildlife and Wildlife Movement Pathways – Southern Portion*). From the western end, this WMP crosses N. Gaffey Street to an undeveloped median between roads, and then passes under W. Anaheim Street via an underpass that connects to the Harbor Lake Regional Park PAW. Evidence of coyote and raccoon (i.e., scat) were observed in the vicinity within the PAWs.

WMP 54 is approximately 410 feet long, and relatively flat, with widths range from approximately 20 to 50 feet. There is residential development to the northwest, industrial to the southeast, and the Defense Fuel Support Point (DFSP) in San Pedro to the south of the WMP. However, WMP 54 connects the Harbor Lake Regional Park PAW in the northeast to South Harbor Lake PAW in the southwest, and both areas are otherwise isolate from adjacent contiguous undeveloped land.

Barriers to Movement

There is heavy traffic along N. Gaffey Street and W. Anaheim Street that may be a hazard for wildlife, or deter them from moving through, particularly during times of day when there is more traffic and noise. However, there may be little or no traffic hazards during the middle of the night when many wildlife species are more active. There is moderate to high human activity due to visitors to Harbor Lake Regional Park. In addition, there are a chain link fences within the Harbor Lake Regional Park PAW and along the eastern edge of South Harbor Lake PAW which may inhibit wildlife movement.

4.5 Use and Application of WMPs

In addition to potential movement within PAWs, the WMPs have been identified as opportunities for wildlife movement pathways between fragmented portions of a PAW, and/or between adjacent PAWs. Thus, it is recommended that the City formally adopt WMPs as important pathways for potential wildlife movement that should be analyzed when considering future development proposals. Even if an area is already developed, future development should not further inhibit potential wildlife movement within these areas. For example, if an area between two PAWs is developed with a two-lane road, which has already constrained movement (i.e., due to hazards such as traffic), and this is the only possible connection between these wildlife habitat areas, any proposals to increase the road width or intensity of use or to develop along that potential movement pathway (e.g., build homes along the road, installing retaining walls) should take wildlife movement opportunities into consideration so as not exacerbate an already constrained connection, but rather to propose ways to ensure movement between PAWs is still feasible, or even propose ways to enhance movement opportunities (e.g., with crossing structures over or under the road where possible, include gaps in the walls, wildlife crossing signage, etc.). Continued data collection could help confirm wildlife use of PAWs and WMPs for movement, and inform other important areas for movement within the City (e.g., new evidence of connectivity not previously known or associated with restoration of an area). Figure 2 shows a map of documented vehicular human-wildlife conflicts that have been reported within the City. However, the data from the UC Davis Road Ecology Center was limited to volunteer carcass observations between 2009 and 2017 and from accidents reported to the California Highway Patrol between February 2015 and February 2017.[99] The City Department of Animal Services was contacted with an inquiry for additional roadkill data, but they primarily deal with live animals and did not have any additional data to contribute. LASAN was also contacted with an inquiry for additional roadkill data. LASAN provides the service of removal and processing of the animal carcasses from the City streets, alleyways, sidewalks, residences, parks, beaches, and waterways, and although they track address information on each carcass, they do not always track the cause of mortality of the animals collected. No additional roadkill data was able to be obtained from LASAN. It would be helpful if the City Department of Animal Services and/or LASAN would record data on human-wildlife interactions (e.g., wildlife documented in urban and suburban areas) and roadkill data (species and GPS location). As previously mentioned, Figure 3 shows medium and large mammals documented within the City based on voluntary reporting by community scientists.[100] Additional wildlife occurrence and mortality data could continually be collected and would be beneficial to expand on the wildlife use and movement information available. Additionally, Planning should collaborate with LASAN to share data from their biodiversity study and evaluate if any proposed WMPs should be revised based on new data available. [101]

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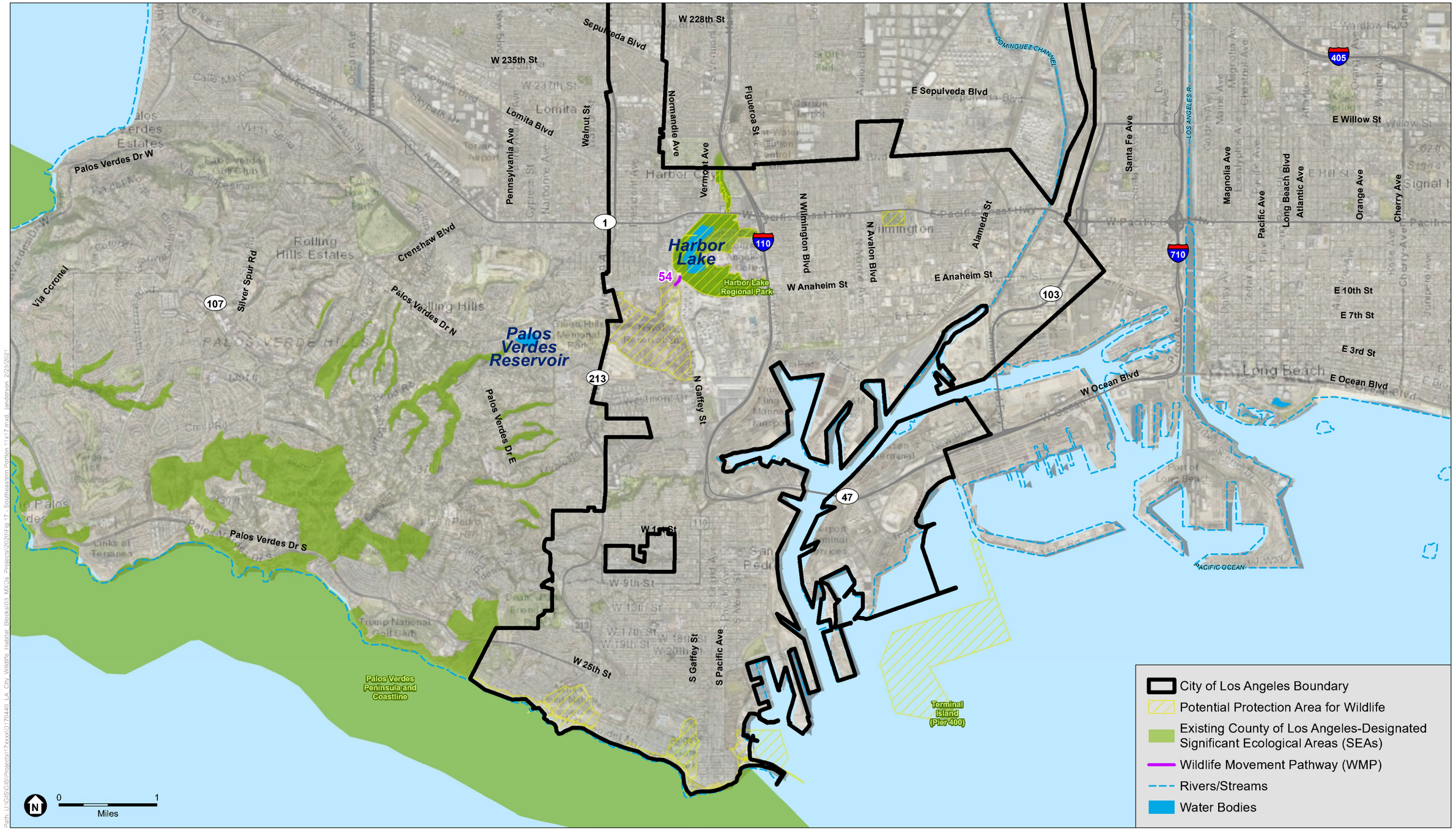
99 University of California, Davis. 2017. *California Roadkill Observation System Occurrence Data*. Department of Environmental Science and Policy. Road Ecology Center. Email correspondence with Fraser Shilling, PhD., Co-Director. December 8, 2017.

100 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed November 15, 2017.

101 Isaac Brown Ecology Studio and LA Sanitation & Environment. 2018. *2018 Biodiversity Report*. City of Los Angeles. Measurement of the Singapore Index of Cities' Biodiversity and Recommendations for a Customized Los Angeles Index. https://www.lacitysan.org/san/sandocview?docname=cnt024743.



Path: U:\GIS\GIS\Projects\17xxxx\170440_LA_City_Wildlife_Habitat_Blocks\03_MXDs_Projects\2020\Fig 17 - Southeastern Portion 11x17.mxd, landerson 2/23/2021

SOURCE: Open Street Map, 2017; County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

ESA

Figure 17
Protection Areas for Wildlife and Wildlife Movement Pathways – Southeastern Portion

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Once movement pathways are better understood and defined, environmental considerations for development standards can be recommended for greater protection of the biological resources and ecological functions of these areas. The City should also work with County of Los Angeles, CalTrans, and others where collaboration between various stakeholders could be beneficial to wildlife and movement. The WMPs identified focused on opportunities for wildlife movement pathways between fragmented portions of a PAW, and/or between adjacent PAWs, within the City's limits. Should additional studies provide evidence of connectivity or data of wildlife movement patterns not previously known, any future WMPs identified could also consider important local and regional movement pathways across jurisdictional boundaries in collaboration with the Los Angeles County and/or other cities.

5. Scientific Research and Rationale for the Development of Policy Recommendations for PAWs and WMPs

5.1 Goals of Recommendations

The primary goal of these policy recommendations is to evaluate the City's existing policies that protect biological resources and habitat connectivity as well as policies and regulations of other jurisdictions to determine best practices that should be considered to reduce the impacts of urbanization on habitat and wildlife, conserve and enhance the ecological health and functions within PAWs and WMPs, and achieve no net loss of biological diversity within the City.

5.2 Methodology Used to Generate Recommendations

To develop recommendations, ESA conducted a comprehensive review of existing City policies, regulations, and nationwide best management practices applicable to habitat and wildlife conservation. Additionally, ESA conducted a review of the best available science as well as existing policies and regulations that have been implemented in other jurisdictions outside the City. This review focused on sources covering focal wildlife species that were selected as target taxa for this study; areas in close geographic proximity to the City (i.e., coastal Southern California); and/or policy, guidance, or mitigation measures related to wildlife movement pathways and the urban-wildland interface. The review focused on the sources listed below. Additional sources were reviewed but are not listed if they were found to have limited applicability for policy development.

Key policy documents reviewed included the following:

- Multiple Species Conservation Program Subarea Plan[102]
- San Diego Municipal Code. Land Development Code. Biology Guidelines[103]

[102] City of San Diego. 1997. *Multiple Species Conservation Program. City of San Diego MSCP Subarea Plan*. March 1997.

[103] City of San Diego. 1999. *San Diego Municipal Code.* Land Development Code. Biology Guidelines. Adopted September 28, 1999, Amended April 23, 2012 by Resolution No. R-307376.

- County of Ventura General Plan[104]
- Ventura County Guidelines for Safe Wildlife Passage[105]
- Western Riverside County Multiple Species Habitat Conservation Program (MSHCP) Urban/Wildlands Interface Guidelines (Section 6.1.4)[106]
- County of San Diego North County MSCP Biological Mitigation Ordinance, Appendix H - Design Criteria for Linkages and Corridors[107]
- Santa Clara Valley Habitat Conservation Program (Chapter 6)[108]
- Sonoma Valley Wildlife Corridor Project Management and Monitoring Strategy[109]
- Wildlife Compatible Fencing[110]
- Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley[111]
- Los Angeles River Design Guidelines[112]
- Resolution No. 13-28. A Resolution of the City Council of the City of Malibu Opposing the Sale, Purchase, and Use of Anticoagulant Rodenticides in Malibu[113]
- Wildlife Crossing Structure Handbook Design and Evaluation in North America[114]
- Model Lighting Ordinance with User's Guide[115]
- Fencing Guidelines and Specifications for Conservation Easements[116]
- Light Pollution Reduction Guidelines[117]

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104 County of Ventura. 2016. *Ventura County General Plan*. Goals, Policies, and Programs. Last Amended by the Ventura County Board of Supervisors on December 13, 2016.

105 County of Ventura. 2005. *Roads and Biodiversity Project: Guidelines for Safe Wildlife Passage*. June.

106 County of Riverside. 2003. *Western Riverside County Multiple Species Habitat Conservation Plan*. Retrieved from http://www.wrc-rca.org/about-rca/multiple-species-habitat-conservation-plan/.

107 County of San Diego. 2010. *Biological Mitigation Ordinance*. Amended April 2. https://www.sandiegocounty.gov/content/dam/sdc/pds/mscp/docs/SCMSCP/BMO_Update_2010.pdf.

108 County of Santa Clara, City of San Jose, City of Morgan Hill, City of Gilroy, Santa Clara Valley Water District, and Santa Clara Valley Transportation Authority. 2012. *Final Santa Clara Valley Habitat Plan*. August. https://scv-habitatagency.org/DocumentCenter/View/136.

109 Sonoma Land Trust. 2014. *Sonoma Valley Wildlife Corridor Project: Management and Monitoring Strategy*. Santa Rosa, CA.

110 Arizona Game and Fish Department. No Date. *Wildlife Compatible Fencing*. http://www.azgfd.gov/hgis/documents/110125_AGFD_fencing_guidelines.pdf.

111 Bow Corridor Ecosystem Advisory Group. 2012. *Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley*. Alberta Environment and Alberta Sustainable Resource Development.

112 City of Los Angeles. No Date. *Los Angeles River Design Guidelines*. http://cityplanning.lacity.org/Code_Studies/RIOproject/RIO_Revised/AppendixD_LA-RIOGuidelines.pdf.

113 City of Malibu. 2014. Resolution No. 13-28. *A Resolution of the City Council of the City of Malibu Opposing the Sale, Purchase, and Use of Anticoagulant Rodenticides in Malibu*. October 20.

114 U.S. Department of Transportation Federal Highway Administration. 2011. *Wildlife Crossing Structure Handbook Design and Evaluation in North America*. Publication No. FHWA-CFL/TD-11-003. March.

115 Illuminating Engineering Society. 2011. *Model Lighting Ordinance with User's Guide*. June 15.

116 Sonoma Ecology Center. 2003. *Fencing Guidelines and Specifications for Conservation Easements*. Prepared for Sonoma County Agricultural Preservation and Open Space District. July.

117 U.S. Green Building Council. No Date. *Light Pollution Reduction*. https://www.usgbc.org/credits/ss8.

Additional scientific studies and papers included the following:

- Effects of Urbanization on Carnivore Species Distribution and Richness[118]
- Urbanization and Anticoagulant Poisons Promote Immune Dysfunction in Bobcats[119]
- Determining Minimum Habitat Areas and Habitat Corridors for Cougars[120]
- Dispersal of Juvenile Cougars in Fragmented Habitat[121]
- Best Management Practices for Wildlife Corridors[122]
- Black Bear Population Information[123]
- Managing Non-Native Species in California - The Red Fox[124]
- Griffith Park Wildlife Connectivity Study[125]
- Determining Wildlife Use of Wildlife Crossing Structure Under Different Scenarios[126]
- Design Recommendations from Five Years of Wildlife Crossing Research Across Utah[127]
- Permeable Fence and Wall Designs that Facilitate Passage by Endangered San Joaquin Kit Foxes[128]
- Activity and Distribution of Gray Foxes (*Urocyon cinereoargenteus*) in Southern California[129]
- Terrestrial Wildlife Crossing Structure Types (By Function)[130]

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118 Ordeñana, M.A., Crooks, K.R., Boydston, E.E., Fisher, R.N., Lyren, L.M., S. Siudyla, et al. 2010. *Effects of Urbanization on Carnivore Species Distribution and Richness*. Journal of Mammalogy, 91(6), 1322-1331. December.

119 Serieys, L.E., A.J. Lea, M. Epeldegui, T.C. Armenta, J. Moriarty, S. VandeWoude, et al. 2018. *Urbanization and Anticoagulant Poisons Promote Immune Dysfunction in Bobcats*. Proc. R. Soc. B 2018 285 20172533; DOI: 10.1098/rspb.2017.2533. Published 17 January 2018.

120 Beier, P. 1993. *Determining Minimum Habitat Areas and Habitat Corridors for Cougars*. Conservation Biology 7(1)94-108.

121 Beier, P. 1995. *Dispersal of Juvenile Cougars in Fragmented Habitat*. The Journal of Wildlife Management, 59(2), 228-237. doi:10.2307/3808935.

122 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January.

123 CDFW. 2018. *Black Bear Population Information*. Accessed at https://www.wildlife.ca.gov/Conservation/Mammals/Black-Bear/Population on February 15, 2018.

124 CDFW. No Date. *Managing Non-Native Species in California*. The Red *Fox*. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=22712.

125 Cooper, D., M. Ordeñana, and E. Boydston. 2012. Griffith Park Wildlife Connectivity *Study*. March.

126 Cramer, P. 2012. *Determining Wildlife Use of Wildlife Crossing Structure Under Different Scenarios*. Utah State University Department of Wildland Resources and Utah Transportation Center. Prepared for Utah Department of Transportation Research Division. May.

127 Cramer, P. 2013. *Design Recommendations from Five Years of Wildlife Crossing Research Across Utah*. Proceedings of the 2013 International Convergence on Ecology and Transportation.

128 Cypher, B.L., and C.L. Van Horn Job. 2009. *Permeable Fence and Wall Designs that Facilitate Passage by Endangered San Joaquin Kit Foxes*. California State University, Stanislaus Endangered Species Recovery Program. March.

129 Farías, V., T.K. Fuller, and R.M. Sauvajot. 2012. *Activity and Distribution of Gray Foxes (Urocyon cinereoargenteus) in Southern California*. The Southwestern Naturalist Jun 2012: Vol. 57, Issue 2, pg(s) 176-181https://doi.org/10.1894/0038-4909-57.2.176.

130 U.S. Forest Service. No Date. *Terrestrial Wildlife Crossing Structure Types (By Function)*. https://www.fs.fed.us/wildlifecrossings/glossary/documents/WildlifeCrossingStructureTypesByFunctionIAWHI.pdf.

- Wildlife Movement Study Canyon Hills Development Project Los Angeles, California[131]
- Analysis of Bobcats in Urban Areas of Orange County, CA[132]
- Habitat Associations of Dusky-Footed Woodrats (*Neotoma fuscipes*) in Mixed-Conifer Forest of the Northern Sierra Nevada[133]
- Griffith Park Mountain Lion Exposed to Poison, Suffering from Mange[134]
- Demographic Factors Contributing to High Raccoon Densities in Urban Landscapes[135]
- California Ground Squirrel Habitat Suitability Models[136]
- Life History Accounts for Focal Species[137]

5.2.1 Identification and Analysis of Focal Species

5.2.1.1 Purpose of Focal Species

Because the City is home to a diverse assortment of species, focal species were chosen to represent the broad range of habitat and movement requirements. Planning for these indicator species and their needs is expected to cover habitat and connectivity needs for the various species and ecosystems they represent.

5.2.1.2 Methodology for Selection of Focal Species

Wildlife species reviewed for policy development focused on medium and large mammals known or expected to occur within some or all of the PAWs. These indicator species included black bear, mountain lion, California mule deer, American badger, bobcat, coyote, red fox (*Vulpes vulpes*), gray fox, long-tailed weasel, ring-tailed cat (*Bassariscus astutus*), raccoon, striped skunk, spotted skunk (*Spilogale gracilis*), and Virginia opossum. Many of these species are also "umbrella

131 Glenn Lukos Associates. 2003. *Wildlife Movement Study Canyon Hills Development Project Los Angeles, California.* April.

132 Ice, I. 2013. *Analysis of Bobcats in Urban Areas of Orange County, CA* (Master's thesis, University of Redlands). Retrieved from http://inspire.redlands.edu/gis_gradproj/210

133 Innes, R.J., D.H. Van Vuren, D.A. Kelt, M.L. Johnson, J.A. Wilson, and P.A. Stine. 2007. *Habitat Associations of Dusky-Footed Woodrats (Neotoma fuscipes) in Mixed-Conifer Forest of the Northern Sierra Nevada.* Journal of Mammalogy, Volume 88, Issue 6, 1 December 2007, Pages 1523–1531, https://doi.org/10.1644/07-MAMM-A-002R.1.

134 NPS. 2014. *Griffith Park Mountain Lion Exposed to Poison, Suffering from Mange.* News Release. April 17.

135 Prange, S., S.D. Gehrt, and E.P. Wiggers. 2003. *Demographic Factors Contributing to High Raccoon Densities in Urban Landscapes*. The Journal of Wildlife Management. Vol. 67, No. 2 (Apr., 2003), pp. 324-333 Published by: Wiley on behalf of the Wildlife Society DOI: 10.2307/3802774 http://www.jstor.org/stable/3802774.

136 Timossi, I.C., and R.H. Barrett. 1995. *Habitat Suitability Models for Use with ARC/INFO: California ground squirrel.* California Department of Fish and Game, CWHR Program, Sacramento, CA. CWHR Tech. Report No. 3. 16 pp.

137 Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. *Life History Accounts for Species in the California Wildlife Habitat Relationships (CWHR) System California's Wildlife*. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

species"[138,139] that tend to have larger range requirements that encompass the ranges of a variety of taxa (e.g., insects, amphibians, reptiles, birds, and other mammals).

Different species have different tolerances to human disturbances and urbanization. Planning for only species that are highly tolerant of urban environments would not meet the needs of all species within the City, such as wildlife species that need extensive home ranges and avoid areas within human activity. Mammalian carnivores, such as mountain lions and bobcat, tend to have large home ranges, lower population densities, and slower population growth rates, making them more susceptible to habitat loss and human disturbances, and good indicators of the overall fate or ecosystems due to their top-trophic position.[140, 141] Conversely, planning for the needs of only species with a low tolerance of urban environments could negate the importance of conserving smaller habitat patches for urban wildlife that could persist and flourish within those areas. Thus, it was recommended that a variety of different indicator species with varying tolerances be used to analyze habitat and connectivity within the City.

Each species was categorized by its tolerance of urban environments, as described in further detail in Section 5.2.1.3, *Species Profiles*, below. Highly urban-tolerant species include raccoon, striped skunk, red fox, and Virginia opossum. Moderately urban-tolerant species include bobcat, coyote, gray fox, and long-tailed weasel, which were also identified as target species for conservation in the Green Visions Plan, which was a joint venture between the University of Southern California and the San Gabriel and lower Los Angeles Rivers and Mountains Conservancy, Santa Monica Mountains Conservancy, Coastal Conservancy, and Baldwin Hills Conservancy, and serves as a guide to habitat conservation, watershed health and recreational open space for the Los Angeles metropolitan region.[142] Low urban-tolerance species include black bear, mountain lion, mule deer, American badger, ring-tailed cat, and spotted skunk. Mountain lion and American badger were also identified as target species for conservation in the Green Visions Plan.

Highly urban-tolerant species were not considered as focal species for policy development because these species have a low sensitivity to urban pressures and may even benefit from urbanization.

138 Species with such demanding habitat requirements and large area requirements that conservation of these species will automatically save many other species.

139 Simberloff, D. 1998. *Flagships, Umbrellas, and Keystones: Is Single-Species Management Passé in the Landscape Era?* Biological Conservation. Vol. 83, No. 3, pp. 247-257.

140 Ordeñana, M.A., Crooks, K.R., Boydston, E.E., Fisher, R.N., Lyren, L.M., S. Siudyla, et al. 2010. *Effects of Urbanization on Carnivore Species Distribution and Richness*. Journal of Mammalogy, 91(6), 1322-1331. December.

141 Ice, I. 2013. *Analysis of Bobcats in Urban Areas of Orange County, CA* (Master's thesis, University of Redlands). Retrieved from http://inspire.redlands.edu/gis_gradproj/210.

142 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

5.2.1.3 Species Profiles

Mammals

A detailed profile of each focal species is provided below. Highly urban-tolerant species include raccoon, striped skunk, red fox, and Virginia opossum. Virginia opossums were introduced to California in the late 1800's from the eastern U.S. and can be considered an invasive species along the West Coast. Red foxes are also an invasive species where they occur within the City of Los Angeles and are thought to be introduced from the Midwest, as opposed to the native Sierra Nevada red fox subspecies (*Vulpes vulpes necator*).[143] Raccoon, striped skunk, and Virginia opossum can persist in urban environments without the presence of natural habit and may actually benefit from the effects of urbanization. Urbanization provides unnatural food sources for these species such as human trash and pet food. A study by Prange et al.[144] noted that raccoon population densities are higher in urbanized areas than in rural landscapes in northeastern Illinois. Unnaturally high populations of predator species supported by human-provided food sources can negatively affect prey species in adjacent natural areas, including small mammals, reptiles, amphibians, and birds.

Moderately urban-tolerant species include those that tolerate some level of urbanization and will occupy the urban-wildlands interface but generally do not occur in exclusively urban landscapes without the presence of natural habitat in the vicinity. These species include bobcat, coyote, gray fox, and long-tailed weasel. These species typically have smaller range requirements and are more generalist than the low urban-tolerance species, thereby allowing them to occur within the smaller habitat fragments that are common in urban areas. Coyotes are even known to frequent urban habitats, but likely require access to sufficient natural areas to persist.[145] While included in this group, gray foxes are more avoidant of developed areas than coyotes and bobcats, possibly due to increased predation by coyotes along the urban-wildland interface.[146]

Low urban-tolerance species generally include mammals that either require larger territories to persist and/or are highly sensitive to the disturbances associated with urbanization. These "urban shy" species include black bear, mountain lion, mule deer, American badger, ring-tailed cat, and spotted skunk. Many of these species are confined to the largest and least developed PAWs and associated WMPs, such as the San Gabriel Mountains, Santa Susana Mountains/Simi Hills, and Santa Monica Mountains West, as these areas have connectivity to large habitat blocks. Low urban-tolerance species occasionally use residential and developed areas for movement between natural habitat areas. Black bears are not believed to be native to the San Gabriel Mountains, with the current population being the result of bears introduced in the 1930s after the extirpation of the

143 Department of Fish and Game. No Date. *Managing Non-Native Species in California: The Red Fox.*

144 Prange, S., S.D. Gehrt, and E.P. Wiggers. 2003. *Demographic Factors Contributing to High Raccoon Densities in Urban Landscapes*. The Journal of Wildlife Management. Vol. 67, No. 2 (Apr., 2003), pp. 324-333 Published by: Wiley on behalf of the Wildlife Society DOI: 10.2307/3802774 http://www.jstor.org/stable/3802774.

145 Crooks 2002 as cited in Ordeñana, M.A., Crooks, K.R., Boydston, E.E., Fisher, R.N., Lyren, L.M., S. Siudyla, et al. 2010. *Effects of Urbanization on Carnivore Species Distribution and Richness*. Journal of Mammalogy, 91(6), 1322-1331. December.

146 Farías, V., T.K. Fuller, and R.M. Sauvajot. 2012. *Activity and Distribution of Gray Foxes (Urocyon cinereoargenteus) in Southern California*. The Southwestern Naturalist Jun 2012: Vol. 57, Issue 2, pg(s) 176-181https://doi.org/10.1894/0038-4909-57.2.176.

grizzly bear from Southern California in the early 1900s.[147] For this reason, and due to the high potential for negative human-wildlife interactions, black bears were not considered as a focal wildlife species for policy development. In the case of mountain lions, confined habitat areas lacking wildlife corridor connectivity to allow for adequate movement can push individuals into human-occupied areas in search of new territories, resulting in more negative wildlife-human interactions, such as vehicle strikes. The lower urban-tolerance and greater habitat requirements of some of these species also make them more susceptible to genetic isolation as a result of urbanization. Population modeling by Beier[148] indicated that in absence of habitat connectivity to allow for occasional replacement of lost individuals, a habitat area of 386 to 850 square miles would be required to support a persistent mountain lion population. For comparison, the habitat area within the Griffith Park/Hollywood Hills PAW is approximately 5.5 square miles, highlighting the importance of habitat connectivity.

Highly Urban-Tolerant Species

Raccoon

Raccoons occur in many different habitats but are most abundant in riparian and wetland areas at low to middle elevations. They are also well adapted to urban areas and are prevalent throughout urban areas of the City, and are also documented in some rural areas of the City.[149] They use cavities in trees, snags, logs, and rocky areas for dens and other cover, and also use cover provided by abandoned buildings and dense vegetation. Raccoons are omnivorous, and highly opportunistic, feeding frequently in agricultural and urban areas. In spring, they primarily eat small animals (crayfish, fish, arthropods, amphibians, a few small mammals, birds, and eggs). In summer and fall, they eat large amounts of grains, acorns, other nuts, and fruits. They forage along all saline and freshwater riparian habitats, in shallow water, in vegetation, and on the ground.

Raccoons are nocturnal, and their home ranges average around 500 acres. They do not migrate, but remain dormant in winter dens. The juxtaposition of riparian and wetland habitats, and forest and shrubland is important to raccoon populations.

Raccoons are very adaptable, and tolerant of most human activity. They are highly opportunistic omnivores that primarily eat crayfish, fish, arthropods, amphibians, a few small mammals, birds, eggs, grains, nuts, and fruits, but also can prey on domestic animals, or consume cultivated fruits, vegetables, and other crops. Raccoons are prey to great horned owls, bobcats, and domestic

147 CDFW. 2018. *Black Bear Population Information*. Accessed at https://www.wildlife.ca.gov/Conservation/Mammals/Black-Bear/Population on February 15, 2018.

148 Beier, P. 1993. *Determining minimum habitat areas and habitat corridors for cougars*. Conservation Biology 7(1)94-108.

149 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41663.

dogs.[150] As this species is well adapted to urban environments, the population is expected to continue to thrive and may actually benefit from the effects of urbanization.

Striped Skunk

Striped skunks are found in nearly all habitats, but they frequent earlier seral stages (i.e., intermediate stages) of conifer and deciduous forests, and brush and shrub areas. They are also commonly found in grass/forb areas of most habitats, riparian areas, and herbaceous shrub and forest ecotones. Striped skunks are somewhat prevalent in both urban and rural areas throughout the City.[151] Striped skunks use cavities and crevices in rock areas, snags, logs, stumps, under buildings, and can excavate burrows or use abandoned ones for cover. They can also den above ground in heavy cover. Striped skunks are omnivorous, and primarily eat insects, small mammals, other small vertebrates, eggs, crustaceans, fruits, seeds, and some carrion. Striped skunks search and dig on ground, in earth, logs, and stumps for food.

Striped skunks do not migrate, and are mostly nocturnal with some crepuscular activity, but they may remain in den during periods of inclement weather. The minimum area required for a population of striped skunks is estimated to be about 640 acres. Great horned owls, mountain lions, eagles, coyotes, badgers, foxes, and bobcats are known to prey upon striped skunks, and urban developments that create open areas, fragmented habitats, and mosaics of vegetation may improve habitat for striped skunks, and allow them to expand their range.[152] As this species is well adapted to urban environments, the population is expected to continue to thrive and may actually benefit from the effects of urbanization.

Red Fox

Red foxes are widely distributed in lowlands in central and southern California within annual and perennial grassland, coastal scrub, wet meadow, emergent wetland, and cropland habitats, and may use chaparral. Red foxes are an invasive species and a have been documented in low numbers in the outskirts of the City, generally somewhat in proximity to open space and undeveloped areas.[153] They use rock outcrops, hollow logs and stumps, and burrows in deep, loose soil within dense vegetation and rocky areas for cover and den sites. For food, red foxes hunt small and medium-sized mammals (such as ground squirrels, gophers, mice, woodrats, and rabbits/hares), birds, and eggs in open habitats like meadows, grasslands, and wetlands.

Red foxes are active year-round, and hunt both day and night. The size of their home range size is influenced by habitat and abundance of food. Lowland populations of red foxes, like those in

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150 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

151 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41880.

152 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

153 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42069.

Southern California, are presumably introduced, and expanding in range and numbers.[154] As this species is an invasive species and that has expanded into to urban environments, the population is expected to continue to persist even with continued urbanization.

Virginia Opossums

Virginia opossums are found in moist woodlands, brushy habitats, riparian, wetlands, and agricultural and residential areas that provide abundant food and cover along the entire coast and interior of California. Virginia opossums are prevalent in both urban and rural areas throughout the City.[155] They are highly opportunistic and eat a wide variety of animal and vegetable foods, including insects, carrion (i.e., scavenge on dead animals), vegetation, and fruits. Their den sites are comprised of a rough nest of leaves and other material constructed in hollow snags, logs, rocks, piles of brush, or in the burrows of other animals. Opossums can also use human-made structures (e.g., buildings and culverts), and prefer to be near water sources.

Virginia opossums are active year-round, and nocturnal. They do not migrate, but are somewhat nomadic and often change den sites. Their home range size can vary greatly, with reports of 11.5 acres up to 200 acres, and they do not defend their home range, but are solitary and aggressive. Virginia opossums are prey to owls and dogs, and traffic and severe winter conditions can also be sources of mortality for this species.[156] As this species is well adapted to urban environments, the population is expected to continue to thrive and may actually benefit from the effects of urbanization.

Moderately Urban-Tolerant Species

Bobcat

Bobcats are found throughout most of California and use nearly all habitats, including chaparral, and conifer, oak, riparian, and pinyon-juniper forests. Bobcats are somewhat prevalent in open space and undeveloped areas within the City, and are typically not found within urban areas.[157] They eat rabbits/hares, rodents, a few deer (mostly young fawns), and some birds, reptiles, amphibians, and invertebrates, and can also eat vegetation (e.g., fruits, grass). Bobcats use cavities in rock areas, hollow logs, snags, stumps, and dense brush for cover and their dens.

Bobcats are active year-round, and are mostly nocturnal and crepuscular with some diurnal activity. They do not migrate, and average home range can be variable (e.g., 10 square miles or greater). Scent marking appears to reduce actual contact, and fighting is very unusual. Researchers speculated that bobcats may be territorial in some situations, but not all, and this flexibility in behavior may result in higher population levels where they are not territorial. Great

154 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

155 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42652.

156 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

157 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41976.

horned owls can prey on young bobcats, and adults occasionally are taken by mountain lions and domestic dogs. Coyote population numbers may also influence bobcat numbers since these species compete with each other.[158] This species is a moderately urban-tolerant species that may tolerate some level of urbanization and occupy the urban-wildlands interface but generally do not occur in exclusively urban landscapes without the presence of natural habitat in the vicinity. This species was also identified as target species for conservation in the Green Visions Plan.[159]

Coyote

Coyotes are found throughout California in almost all habitats, including urban areas. Coyotes are prevalent in urban and rural areas, open space, and undeveloped areas within the City.[160] They inhabit younger stands of forests and woodland, open brush, scrub, and herbaceous habitats, and may be associated opportunistically with croplands. These opportunistic omnivores primarily eat rodents, rabbits/hares, and carrion, but can also eat insects, reptiles, amphibians, fruits, and occasionally birds, eggs, and deer fawns. They use brushy stands of vegetation, and natural cavities in rocky areas, hollow trees and logs, caves and holes for cover and den sites.

Coyotes are active year-round, and are mostly nocturnal and crepuscular with some diurnal activity. They do not migrate, and their movements vary with the seasons. Home ranges can be variable (e.g., ranging from 3 to 39 square miles on average). Great horned owls, and mountain lions occasionally may kill coyotes. Coyotes are adaptable predators, are tolerant of human activities, and adapt and adjust rapidly to disturbances and changes in their environment.[161] This species is a moderately urban-tolerant species that may tolerate some level of urbanization and occupy the urban-wildlands interface but generally do not occur in exclusively urban landscapes without the presence of natural habitat in the vicinity. Coyotes are known to frequent urban habitats, but likely require access to sufficient natural areas to persist.[162] This species was also identified as target species for conservation in the Green Visions Plan.[163]

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158 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

159 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

160 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42051.

161 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

162 Crooks 2002 as cited in Ordeñana, M.A., Crooks, K.R., Boydston, E.E., Fisher, R.N., Lyren, L.M., S. Siudyla, et al. 2010. *Effects of Urbanization on Carnivore Species Distribution and Richness*. Journal of Mammalogy, 91(6), 1322-1331. December.

163 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

Gray Fox

Gray foxes inhabit meadows, shrublands, valley foothill riparian, montane riparian, forest, and woodland habitats and cropland areas throughout California. Gray foxes are somewhat prevalent in open space and undeveloped areas within the City, and are typically not found within urban areas.[164] They are omnivores that feed on rabbits/hares, rodents, fruits, nuts, grains, insects, carrion, and small amounts of vegetation. They use brush, natural cavities (e.g., in rocky areas, snags, logs, brush, abandoned burrows, slash and debris piles), and occasionally human-made structures for cover and dens.

Gray foxes are active year-round, and are mostly nocturnal and crepuscular with occasional diurnal activity. They do not migrate, and home ranges can be variable (e.g., ranging from 0.05 to 8 square miles). Large hawks, great horned owls, domestic dogs, and bobcats may prey on pups, but adult gray foxes have few predators.[165] This species is a moderately urban-tolerant species that may tolerate some level of urbanization and occupy the urban-wildlands interface but generally do not occur in exclusively urban landscapes without the presence of natural habitat in the vicinity. Gray foxes are more avoidant of developed areas than coyotes and bobcats, possibly due to increased predation by coyotes along the urban-wildland interface.[166] This species was also identified as target species for conservation in the Green Visions Plan.[167]

Long-Tailed Weasel

Long-tailed weasels are found in open forest, woodland areas, and shrublands, from sea level to alpine meadows. Long-tailed weasels are very uncommon in open space and undeveloped areas within the City, and are typically not found within urban areas.[168] They are carnivorous, and eat small mammals (e.g., rodents and rabbits/hares), birds, insects, salamanders, and small amounts of fruit. They use small cavities in the ground, rock areas, logs, snags, stumps, and burrows other animals for cover, and can also nest in human structures.

Long-tailed weasel are active year-round, and are nocturnal and diurnal. They do not migrate, and home ranges can be variable (e.g., 25-600 acres). Long-tailed weasel populations respond to small mammal population numbers as their prey, as well as grey fox numbers since they compete with this species, and raptors since they are hunted as prey by these species. They are also preyed upon occasionally by bobcats, coyotes, red foxes, and gray foxes. suggested that sometimes

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164 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42076.

165 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

166 Farías, V., T.K. Fuller, and R.M. Sauvajot. 2012. *Activity and Distribution of Gray Foxes (Urocyon cinereoargenteus) in Southern California*. The Southwestern Naturalist Jun 2012: Vol. 57, Issue 2, pg(s) 176-181https://doi.org/10.1894/0038-4909-57.2.176.

167 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

168 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41810.

control weasel numbers. They are tolerant of most human activities.[169] This species is a moderately urban-tolerant species that may tolerate some level of urbanization and occupy the urban-wildlands interface but generally do not occur in exclusively urban landscapes without the presence of natural habitat in the vicinity. This species was also identified as target species for conservation in the Green Visions Plan.[170]

Low Urban-Tolerant Species

Black Bear

Black bears are found in fairly dense, mature stands of many forest habitats in parts of the South Coast Ranges, and in the San Gabriel and San Bernardino Mountains. Although they can be occasionally found within these areas, black bears are uncommon in other open space and undeveloped areas within the City, and are typically not found within urban areas.[171] They require large trees and various cavities and hollows in trees, snags, stumps, logs, uprooted trees, talus slopes, or in the earth for denning. These habitat elements must be in mature, dense vegetation, and on sheltered slopes for adequate denning. Black bears are omnivorous, and mainly feed on grasses and forbs, fruits, nuts, insects, and carrion. Also consume human refuse. They are seasonal specialists, feeding on grasses and forbs in early spring, insects and fruits (e.g., manzanita berries) in summer, and on acorns and other nuts and fruits in fall. Black bears forage on the ground, and as high as they can reach in shrubs and trees. They also fish, dig, and climb trees for food. They feed in a variety of habitats, including brushy stands of forest, valley foothill riparian, and wet meadow.

Black bears are usually dormant in winter, although they may have brief periods of activity. When they are not hibernating, they are mostly nocturnal and crepuscular, with some daytime activity. Home ranges are variable, but males in the San Bernardino Mountains had average home ranges of 8.6 square miles. They are usually dormant in winter, although may be active for brief periods. It is common for black bears to move seasonally to different habitats, including some altitudinal migration. Black bears are the largest terrestrial carnivore species in California, and adults have few predators other than humans.[172] Black bears are not believed to be native to the San Gabriel Mountains, with the current population being the result of bears introduced in the 1930s after the extirpation of the grizzly bear from Southern California in the early 1900s.[173] This

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169 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program.* Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

170 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

171 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41638.

172 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program.* Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

173 CDFW. 2018. *Black Bear Population Information*. Accessed at https://www.wildlife.ca.gov/Conservation/Mammals/Black-Bear/Population on February 15, 2018.

species is a low urban-tolerant species that require larger territories to persist and are highly sensitive to the disturbances associated with urbanization.

Mountain Lion

Mountain lions are found in riparian areas, and brushy stages of most habitats. Mountain lions are uncommon in open space and undeveloped areas within the City, and are typically not found within urban areas.[174] They are carnivores, and primarily eat mule deer, which make up 60-80% of diet throughout year. They also eat rabbits, rodents, skunks, coyotes, and occasionally domestic stock. They use caves and other natural cavities, and thickets in brush and timber provide cover and denning.

Mountain lions are active year-round, and are nocturnal and crepuscular. They have seasonal movements, which are commonly in response to prey movements, such as following migrating deer herds. Male home ranges are usually a minimum of 15 square miles, with females having smaller ranges. Bobcats, coyotes, and bears are potential competitors. Large hawks and bears may prey on a few young; however, otherwise, mountain lions have few predators other than humans. Fragmentation of habitats by spread of human developments and associated roads, utilities, and other support facilities, restricts movements and increases association with humans, which are detrimental to mountain lion populations.[175] On April 21, 2020, the Fish and Game Commission recommended the Southern California/Central Coast ESU of mountain lions as a candidate species for listing as Threatened under the California Endangered Species Act. [176,177] This species is a low urban-tolerant species that require larger territories to persist and are highly sensitive to the disturbances associated with urbanization. This species was also identified as target species for conservation in the Green Visions Plan.[178]

Mule Deer

Mule deer occur in most forest, woodland, and brush habitats, and prefer a mosaic of vegetation that provides woody cover, meadow and shrubby openings, and water. Mule deer are somewhat prevalent in open space and undeveloped areas within the City, and are typically not found within urban areas.[179] They browse and graze, and prefer tender new growth of various shrubs, forbs,

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174 California Academy of Sciences. 2017. *iNaturalist.* Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42007.

175 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program.* Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

176 Center for Biological Diversity and the Mountain Lion Foundation. June 25, 2019. A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA). https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=171208&inline.

177 California Fish and Game Commission. April, 21, 2020. *Notice of Findings. Mountain Lion (Puma Concolor).* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=178623&inline

178 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning.* University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

179 California Academy of Sciences. 2017. *iNaturalist.* Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=42220.

grasses, and acorns. Brushy areas and tree thickets are important cover for escape from predators and for fawning.

Mule deer can be resident or migratory, and are generally crepuscular, but may be active day or night. Bucks (i.e., males) usually have larger home ranges, and travel longer distances than doe and fawn groups, and home ranges are typically less than 1 mile in diameter. Natural predators of deer have been reduced in numbers in most areas, and mule deer are preyed upon regularly by mountain lions and coyotes, but also occasionally by bobcats, black bears, and domestic dogs. Deer populations can decline in response to fragmentation, degradation, or destruction of habitat caused by urban expansion and disturbances by humans.[180] This species is a low urban-tolerant species that require larger territories to persist and are highly sensitive to the disturbances associated with urbanization.

American Badger

American badgers are found throughout California within drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. American badgers are very uncommon in open space and undeveloped areas within the City, and are typically not found within urban areas.[181] They are carnivores, and their diet shifts seasonally and yearly in response to prey that is available. They eat rodents, reptiles, insects, birds, eggs, and carrion. They dig burrows in relatively dry, often sandy, soil, usually in areas with sparse overstory cover.

American badgers are active year-round, and are nocturnal and diurnal. They do not migrate, and their home ranges vary greatly (e.g., 330-1,550 acres). They are somewhat tolerant of human activities, however predator control using indiscriminate trapping and poisons causes extensive losses to this species. [182] This species is a low urban-tolerant species that require larger territories to persist[183] and are highly sensitive to the disturbances associated with urbanization. This species was also identified as target species for conservation in the Green Visions Plan.[184]

Ring-Tailed Cat

Ring-tailed cats are found in riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Little information is available on distribution and relative abundance among habitats for this species. Ring-tailed cats are very uncommon in open space

180 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

181 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41789.

182 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

183 Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. Life History Accounts for Species in the California Wildlife Habitat Relationships (CWHR) System California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2597&inline=1.

184 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern California. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

and undeveloped areas within the City, and are typically not found within urban areas.[185] They are primarily carnivorous, eating mainly rodents and rabbits, but they also eat birds, eggs, reptiles, invertebrates, fruits, nuts, and some carrion. They use hollow trees, logs, snags, cavities in talus and other rocky areas, and other recesses, as well as abandoned burrows and woodrat nests for cover and nests.

Ring-tailed cats are active year-round, and are nocturnal. They do not migrate, and their home ranges vary greatly (e.g., 109-1,280 acres). Probable predators include bobcats, raccoons, foxes, and especially large owls. Potential competition for food exists between ringtails and raccoons, gray foxes, coyotes, barn owls, great horned owls, rattlesnakes, and gopher snakes.[186] This species is a low urban-tolerant species that require larger territories to persist[187] and are highly sensitive to the disturbances associated with urbanization.

Spotted Skunk

Spotted skunks occur in shrub and brush habitats with moderate canopy-closure, open forest and woodland with scattered openings, and riparian habitats. Spotted skunks are very uncommon in open space and undeveloped areas within the City, and are typically not found within urban areas.[188] They are omnivores, and eat primarily insects and small mammals, along with reptiles, birds, eggs, carrion, fruits, and grains. They use brushy areas, brush piles, slash, rock areas, burrows, and hollow logs, snags, and stumps, as well as underneath buildings for cover and nesting.

Spotted skunks are nocturnal and crepuscular with some diurnal activity, and may remain in their den for several days at a time in winter. They do not migrate, and their home ranges vary greatly (e.g., 160-2,560 acres). The primary predators to the spotted skunk are domestic dogs, great horned owls, and humans. Competitors include long-tailed weasels, ringtails, raccoons, and gray foxes.[189] This species is a low urban-tolerant species that require larger territories to persist and are highly sensitive to the disturbances associated with urbanization.

Other Species

Although medium and large mammal species were targeted as focal species (as representative "umbrella species" that have larger range requirements that encompass the ranges of a variety of taxa), consideration was also given to insects, fish, amphibians, reptiles, birds, and other mammals in the development of PAWs, WMPs, and the policy recommendations provided

185 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41789.

186 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

187 Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. Life History Accounts for Species in the California Wildlife Habitat Relationships (CWHR) System California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2581&inline=1.

188 California Academy of Sciences. 2017. *iNaturalist*. Available online (https://www.inaturalist.org/observations). Website accessed January 18, 2021. https://www.inaturalist.org/observations?place_id=962&taxon_id=41789.

189 CDFW. California Interagency Wildlife Task Group. 2014. *California Wildlife Habitat Relationships System version 9.0 personal computer program*. Sacramento, CA. https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

below. For example, some beaches were included as PAWs even though they are habitats that are not often used by mammals, but they are important breeding and foraging habitat for a variety of invertebrates and a number of bird species, including rare birds. Additionally, aquatic habitats were included, such as Ballona Creek and Los Angeles River, even though these provide marginal habitat for medium and large mammals, since these aquatic resources provide habitat and connectivity for fish and variety of bird species. Although the focal species are good indicators of ecosystem health, the overarching goals of the policy recommendations are to maintain and conserve important local wildlife species of all taxa and in multiple habitat types (e.g., terrestrial, aquatic), and the conservation of these "umbrella species" will automatically provide for the conservation of many other species and the ecological functions and existing biodiversity throughout the City.

Planning could further expand the scope of study in the future to include a wider variety of indicator species beyond those "umbrella species" used in this analysis, that includes multiple taxonomic groups besides mammals. For example, connectivity to the Arroyo Seco, a tributary of the Los Angeles River, could be further assessed for habitat and movement for aquatic fish and bird species. Future expansion of this study could include additional target species recommended by the Green Visions Plan, which includes a suite of invertebrate, amphibian, reptile, bird, and mammal species representing a variety of habitat types,[190] plus also include representative aquatic (e.g., fish), plant, and marine species, and those species being used by LASAN's Biodiversity Index.

5.2.2 Existing Policies and Best Practices Assessment

5.2.2.1 Existing Local Policies

The General Plan is a comprehensive policy document that informs future land use decisions by prescribing policy goals and objectives to shape and guide the physical development of the City. ESA reviewed policies within the City's General Plan, including those contained within the Conservation, Open Space, and Framework Elements. Policies within Chapter 6 (Open Space and Conservation) of the General Plan Framework Element supplement the policies outlined in the Open Space and Conservation Elements. The City also maintains 35 Community Plans, one for each of its Community Plan Areas, which establish neighborhood-specific goals and implementation strategies to achieve the broad objectives that are laid out in the City's General Plan. Together, the 35 Community Plans make up the General Plan's Land Use Element, which plays an important role in bolstering housing and job opportunities, conserving open space and natural resources, and balancing the needs of different neighborhoods. Specific Plans provide geographically precise land use regulations for specific areas within a community.

Wildlife-related policies within Community and Specific Plans were also reviewed. It is important to note that not all community and specific plans contain wildlife-related policies, which is not surprising given the City's diverse setting. The existing policy review found that the

190 Martino, D., C. S. Lam, and T. Longcore. 2005. *Green Visions Plan for 21st Century Southern Cal fornia. 5. Terrestrial Target Species for Habitat Conservation Planning*. University of Southern California GIS Research Laboratory and Center for Sustainable Cities, Los Angeles, California. http://greenvisions.usc.edu/documents/05Species_Report.pdf.

City's General Plan Framework Element does not prescribe many specific design guidelines or many mitigation related to wildlife resources; however, several of the Specific Plans (such as the Cornfield Arroyo Seco Specific Plan, Mulholland Scenic Parkway Specific Plan, Mount Washington/Glassell Park, San Gabriel/Verdugo Hills Scenic Preservation Specific Plan, and Venice Coastal Zone Specific Plan) include design for resource protection such as providing open space areas to facilitate wildlife migration, setbacks from streams, native tree preservation, and directing lighting away from sensitive habitat areas. ESA evaluated the potential for wider applicability within the City of existing Specific Plan policies as well as areas where wildlife would benefit from the addition of new protection policies.

Appendix H, *City of Los Angeles Policy Summary Matrix*, summarizes the existing policies contained within the City's General Plan, as well as within various Community and Specific Plans, where biological resource protection is a primary focus. **Figure 18**, *Existing SEAs, Community Plans, and Specific Plans with Wildlife Protection Policies*, shows plan areas with wildlife protection policies. It should be noted that two of the City's existing policies are being implemented through this study: Policy 6.1.3 and Policy 6.1.5 (see Appendix H for detailed description). Policy 6.1.3 in particular prescribes reassessing the resources and functions within the County-designated SEAs within the City and evaluating potential inclusion of other areas that exhibit equivalent environmental value. Policy 6.1.5 prescribes on-site evaluations to identify sensitive habitats, species and wildlife movement corridors. These policies are the primary land use tools presently available to the City for the protection of wildlife areas in conjunction with the CEQA analysis for discretionary projects. Expanded implementation of these policies will further the protection of wildlife habitat in the City.

Generally, wildlife-related policies were categorized into the following topics: open space/wildlife habitat conservation; habitat linkage conservation; native tree preservation; project design guidelines and mitigation measures; and coordination with regional planning efforts. Each topic area is discussed below with reference to applicable existing City policies.

Open Space/Wildlife Habitat

Policies relating to open space/wildlife habitat focus on identifying and promoting conservation of large, intact blocks of open space that, among other beneficial uses (e.g., recreation), provide natural communities that support diverse populations of wildlife. Open space areas can include both undeveloped areas supporting native habitats as well as areas subject to low-intensity uses that are compatible with natural environmental functions (such passive park space). Since many parks are landscaped with grass and ornamental landscaping, or can include outdoor recreational areas, such as sports fields and playgrounds, there are also varying qualities of potential habitat within these open space areas that can be utilized by wildlife. Within the City limits, open space and undeveloped areas are generally scarce and subject to substantial edge effects (i.e., the abrupt transition between developed areas and natural lands) associated with human activity that reduce overall habitat quality and limit functionality for wildlife. Edge effects may include increased noise from traffic, construction, and other human activities; increased lighting that can affect normal nocturnal behaviors of wildlife; pollutants from urban areas; and the introduction of invasive non-native species that compete with native species. Regardless, despite the highly

urbanized nature of the City, opportunities remain to protect open space for the benefit of wildlife by promoting the conservation of native habitat and connectivity between other open space and undeveloped areas.

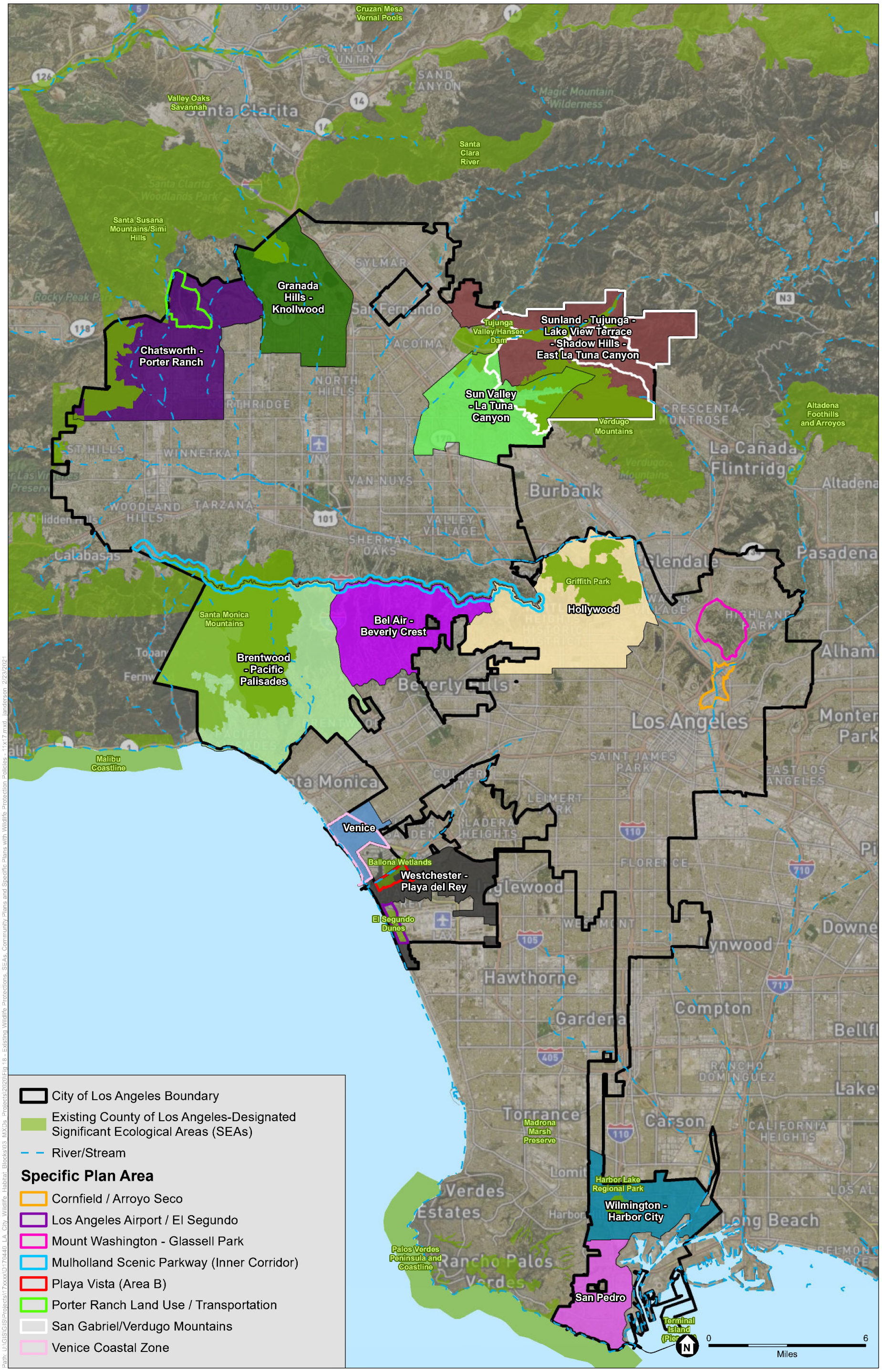
Existing policies of the City's General Plan Framework Element pertaining to open space/wildlife habitat conservation are listed below, particularly Policies 6.1.4 and 6.1.5.

- Protection and conservation of open space (Policies 6.1.2, 6.1.4, 6.1.6, and 6.1.7),
- Assessments of designated SEAs and other areas outside of targeted growth areas (Policies 6.1.3 and 6.1.5), and
- Consideration of methodologies for preservation of open space (Policies 6.1.1 and 6.5.2).

However, the existing policies in the Framework Element do not directly address edge effects that are a common threat to open space and the wildlife that inhabit it in the City. Policy 6.5.2 also recommends establishing a program for the purchase of opens space areas, a role that the Santa Monica Mountains Conservancy and other agencies and organizations have served. This same policy emphasizes open space areas protecting endangered, threatened, or otherwise sensitive species habitats.

Open space and wildlife habitat conservation is provided for within a number of the City's Community Plans and Specific Plans, including the following:

- The Bel Air-Beverly Crest Community Plan provides for Designated Open Space Lands to be considered for wildlife refuge and preservation areas. Open space and park and recreation lands should be considered in calculating the potential density in associated subdivisions, and should be protected by provisions which would prohibit any future construction of non-recreational buildings on the protected areas.
- Policy 4-1.1 of the Brentwood-Pacific Palisades Community Plan emphasizes that natural resources should be conserved on privately-owned land of open space quality and preserved on state parkland.
- The proposed update to the Hollywood Community Plan includes numerous goals and policies for the preservation and enhancement of open space, improving accessibility with greenways and trails, and protecting natural areas and wildlife habitat. Policy PR6.1 emphasizes evaluating existing conditions and identify areas important for supporting habitat and movement for wildlife. Policy PR6.2 promotes the preservation of passive and visual open space that provides wildlife habitat and corridors, wetlands, watershed, groundwater recharge areas, and other natural resources areas. Policy PR6.4 encourages coordination with the County of Los Angeles in identifying significant ecological areas featuring ecological or scenic resources that should be preserved and protected within State reserves, preserves, parks, or natural wildlife refuges. These three policies are being implemented through this study.



SOURCE: Open Street Map, 2017 (Aerial); County of Los Angeles.

Los Angeles City Protection Areas for Wildlife

Figure 18
Existing SEAs, Community Plans, and Specific Plans with Wildlife Protection Policies

ESA

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- In the Westchester-Playa Del Rey Community Plan, protection of sensitive habitats is emphasized for the coastal bluffs and wetland environments, including the vicinity of the Loyola University, and includes a policy (Policy 18-2.1) promoting open space buffer areas between development and sensitive ecological environments, though specific buffer sizes are not prescribed in the policy. These buffers can reduce edge effects associated with human activity. This community plan also emphasizes the importance of preserving the Ballona Wetlands.
- Similarly, the adjacent Playa Vista Area B Specific Plan emphasizes the importance of preserving the Ballona Wetlands and the Venice Coastal Zone Specific Plan provides for habitat restoration adjacent to the Ballona Lagoon and protection of Environmentally Sensitive Habitat Areas.
- Policy 4-6.1 of the Wilmington-Harbor City Community Plan promotes the preservation of wildlife habitats in a natural state.
- Policy 5-1.7 of the San Pedro Community Plan identifies ecologically important areas and designated wildlife refuges.
- The Cornfield Arroyo Seco Specific Plan provides for open space areas of natural habitats.
- The Los Angeles Airport/El Segundo Dunes Specific Plan acknowledges the restoration and maintenance of the dune habitat preserve as open space.
- The Open Space designation for publicly-owned land in the Granada Hills-Knollwood Community Plan is specifically intended for the protection and preservation of natural resources and wildlife habitats.
- The Chatsworth-Porter Ranch Community Plan includes a policy to establish a 100-foot buffer zone from top of channel banks for riparian habitats.
- Policy 1-6.3 of the Sun Valley-La Tuna Canyon Community Plan requires that grading be minimized to reduce the effects on environmentally sensitive areas.
- Policy 18-1.2 of the Venice Community Plan promotes the protection of estuaries and wetlands and the restoration and protection of the Venice Canals. The plan also emphasizes that public works improvements shall be designed to protect sensitive habitat resources.

These applicable existing City policies are listed in Appendix H.

Habitat Linkages

Policies relating to habitat linkages focus on identifying and promoting conservation of linear corridors of native habitat that connect one or more patches of open space or undeveloped habitat areas. Linking habitat together is vital to the health of ecological systems and associated wildlife populations, as connectivity facilitates gene flow, range expansion, seasonal migration movements, and resilience to the effects of climate change throughout the landscape matrix. Ridgelines, canyons, waterways, and associated riparian habitat are often considered important linkages; however, linkages that facilitate wildlife movement may also include man-made infrastructural features, such as constructed undercrossings (e.g. culverts)/overcrossings (e.g. bridges) to link patches fragmented by urban development (such as roads and other transportation corridors).

Existing policies of the City's General Plan Framework Element that recognize the importance of habitat linkages include Policies 6.1.2b and 6.1.5 (refer to Appendix H). In addition, the General Plan Framework Element contains the following policies related to habitat linkages:

- Policy 6.1.3 indirectly pertains to habitat linkages because the 2015 revised County SEA boundaries provided for habitat linkages in order to provide connectivity to wildlife habitats.
- Policy 2 (Chapter 2, Section 12) highlights protecting habitat linkages within City properties.
- Policy 6.5.2 prioritizes habitat corridor protection within a City open space acquisition program.

Policies relating to habitat linkages within the City's Community Plans and Specific Plans include the following:

- The Chatsworth-Porter Ranch Community Plan recognizes the important habitat linkage through the Simi Hills and Santa Susana Mountains to the Santa Monica Mountains, recognizing the importance of these linkages and promoting use of culverts to allow safe wildlife passage under freeways.
- The Porter Ranch Specific Plan promotes the dedication of a wildlife corridor along the northern and western borders of the plan area. Recognition of the use of man-made features to facilitate safe wildlife passage between habitats is particularly relevant to the highly urbanized nature of the City.
- The Cornfield Arroyo Seco Specific Plan provides for open space areas that facilitate local wildlife movement.

These policies recognize the importance of habitat linkages and the applicable City policies are referenced in Appendix H.

Native Trees

In addition to providing aesthetic value, native trees provide food and shelter for wildlife, slope stabilization and erosion control with their roots, and carbon sequestration. The canopies of trees provide shade to cool the air, and also drop leaves that provide a layer of leaf litter that acts as a mulch to keep moisture in the ground, break down to enrich the soil with organic materials, and create microhabitats (i.e., small areas of habitat with differing characteristics from the surrounding more extensive habitat) that wildlife life in. A multitude of insects live in the soil and on the trees, and amphibians, reptiles, birds, and small mammals forage on these species. Trees also provide seeds and nuts for wildlife to forage on, as well as habitat for nesting (e.g., for birds and squirrels). They can also provide habitat for other plant species, such as mistletoe. Even dead trees provide habitat for birds, like woodpeckers to reside in or store their granaries, or snags that raptors will perch on to scope out their next meal. From the tree's debris, woodrats gather sticks, twigs, and leaf litter that are interwoven to create their middens, a large mound of with multiple chambers where they reside, store food, and nest. Native trees, even dead or decaying trees, are an important part of the natural ecosystem.

Policies related to native trees direct protection and planting of native tree species for a variety of benefits. One of the benefits native trees provide is nesting and roosting habitat for birds. Even trees outside of open space areas can provide nesting and roosting habitat for urban-adapted avian species. The City's General Plan Framework Element and community plans do not include policies related to native tree protection. However, the City's municipal code does contain provision for protecting the more prominent native trees within the region, including oak, walnut, sycamore and California bay laurel trees (Ordinance No. 177,404). The City also regulates the removal of "significant trees," which are both native trees and non-native landscaping trees 8 inches or greater in diameter at breast height (DBH), and requires replacement of those trees that are removed, though this requirement is only found in a few specific plan areas (Mount Washington/Glassell Park Specific Plan, San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan). The Mount Washington/Glassell Park Specific Plan promotes the preservation of native and landscape (i.e., significant) trees by regulating removals with permit requirements. Similarly, the Mulholland Scenic Parkway Specific Plan promotes the preservation of oak trees with Environmental Protection Measures. The San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan promotes protection of native oak species. Applicable existing City policies are listed in Appendix H.

Design Guidelines and Mitigation Measures

Policies pertaining to design guidelines and mitigation measures provide standards applicable to projects implemented in proximity to wildlife resources. The City's General Plan Framework Element does not prescribe any specific design guidelines or mitigation measures related to wildlife resources; thus, formulation of such standards is recommended to bolster protection of wildlife resources within the City's limits. That said, a number of Community and Specific Plans include design guideline provisions for resource protection. For example, the Cornfield Arroyo Seco Specific Plan and Venice Coastal Zone Specific Plan include design standards for preventing light trespass into environmentally sensitive habitat areas. The Mulholland Scenic Parkway Specific Plan prohibits project construction within 100 feet of a stream bank without approvals and assurances that the integrity of a stream and any prominent ridges and environmentally sensitive areas will be protected, and prohibits planting a specific list of invasive plant species within the scenic corridor parkway. The Granada Hills-Knollwood Community Plan describes the need for a rare plant and wildlife survey in order to develop specific design requirements/mitigation measures to protect natural resources. The San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan prohibits removal of native vegetation within any Prominent Ridgeline Protection Area with a few exceptions, and prohibits a specific list of invasive plant species for all new projects. Several of the existing applicable City policies and design guidelines are listed in Appendix H.

Regional Planning Coordination

Policies related to regional planning guide coordination and cooperation with other public and private entities that own or manage open space. A regional planning approach to open space conservation is important as wildlife populations are not bound by land ownership or political boundaries. Existing Policy 6.1.1 in the City's General Plan Framework Element promotes

acquisition of open space with private and public partners (Appendix H). However, the existing policy could be strengthened to explicitly promote coordination among private and public partners to ensure conservation and management of wildlife resources is prioritized based on broader regional efforts.

The City is engaged in several policy efforts to enhance and promote biodiversity and conservation of the City's remaining wildlife. Efforts such as the LASAN-led Biodiversity Index study, [191] as well as this study, can help to develop policies to maintain biodiversity and connectivity within the City. These efforts have brought together a number of stakeholders, including the City's Department of Recreation and Parks, LASAN, The Trust for Public Land, Natural History Museum of Los Angeles County, and the National Park Service. Collaboration with these public partners will allow conservation policy implementation to garner broader support and effectiveness. To continue this collaboration, Planning should partner with LASAN to share data from their biodiversity study and evaluate if any proposed PAWs or WMPs should be revised based on new data available. To further promote the biodiversity initiative, as well as water conservation, Planning and LASAN should encourage other City departments (e.g., Bureau of Engineering, Department of Public Works, Bureau of Street Services) to incorporate native landscaping and native hydroseed into their projects wherever possible. Seeds and plants should be from local sources and include a diverse assortment of species endemic to the Los Angeles area. Planning could also team with the Urban Forestry Division and the Department of Recreation and Parks to provide mitigation opportunities within City parks, properties, and right-of-ways for native and significant tree replacement for projects that cannot accommodate it on-site, and encourage planting native trees over non-native landscape trees.

It would also be beneficial if an entity such as LASAN and/or the City Department of Animal Services would record data on human-wildlife interactions (e.g., wildlife documented in urban and suburban areas) and roadkill data (species and GPS location), as more wildlife occurrence and mortality data would help to confirm wildlife use and movement within the City. Such data would also be valuable for identifying areas where wildlife density and/or biodiversity is greater than currently known due to limitations of the data currently available. As previously mentioned, much of the community science data available is limited to what is reported, and what areas are accessible or most frequented by the public; thus, data can be skewed to favor more popular public areas. The City should also coordinate with NPS and/or other governmental and academic organizations (e.g., CDFW, UCLA) for additional wildlife studies within the City's limits. Additional data could also be useful to identify high concentrations of roadkill where the City could evaluate if more crossing structures, signage, speed humps, or other minimization measures might be needed. Since roads, and especially freeways, are major hazards to wildlife and impediment to connectivity and movement, the City should collaborate with Department of Public Works and CalTrans to identify areas to enhance and improve safe crossing for wildlife.

[191] Isaac Brown Ecology Studio and LA Sanitation & Environment. 2018. *2018 Biodiversity Report*. City of Los Angeles. Measurement of the Singapore Index of Cities' Biodiversity and Recommendations for a Customized Los Angeles Index. https://www.lacitysan.org/san/sandocview?docname=cnt024743.

As referenced in the City's General Plan Framework Element, the San Gabriel Mountains, Santa Susana Mountains, Baldwin Hills, and the Santa Monica Mountains are examples of natural open space resources that surround the City. To a large extent, the County's SEA Program is a regional planning approach for conservation of open space pertaining to biological resources. Coordinating the planning and management of open space within the City limits within and adjacent to these large and significant blocks of open space is beneficial as it informs prioritization of City resources in a manner that provides the greatest value towards wildlife conservation and maintaining regional connectivity of these ecosystems.

Additional regional connectivity planning efforts within the City and immediately adjacent areas also include South Coast Wildland's *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*[192] and *South Coast Missing Linkages: A Linkage Design for the Santa Monica-Sierra Madre Connection*;[193] CalTrans and CDFW's *California Essential Habitat Connectivity Project*;[194] NPS *Rim of the Valley Corridor Special Resource Study*;[195] and Ventura County's *Habitat Connectivity and Wildlife Corridor*,[196] which identify important areas for regional connectivity within the open space and undeveloped natural areas of the ranges surrounding the San Fernando Valley. Planning should collaborate with Los Angeles County Department of Regional Planning (and their SEA Technical Advisory Committee [SEATAC]), NPS, and Ventura County Resource Management Agency to work in concert to ensure compatible provisions for the protection of habitat conservation, regional connectivity, and wildlife movement between jurisdictions. Farther afield, the San Diego State University's Connecting Wildlands & Communities (CWC) effort, a comprehensive planning approach to provide an integrated planning and decision-making framework that supports multi-benefit landscape-scale planning and facilitates science-informed climate adaptation and strategies across the region to protect rural communities, mitigate wildfire risk, support water sustainability, and protect biodiversity, should also be consulted to obtain any leading practices or policies to address regional connectivity.[197]

5.2.2.2 Existing Regional Policies

A review was conducted of existing policies and regulations applicable to habitat and wildlife conservation that have been implemented in other jurisdictions outside the City. **Appendix I**, *Best*

192 South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org. March 2008.

193 Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection*. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

194 CalTrans and CDFG. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared with Funding from: Federal Highways Administration. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18366.

195 NPS. 2015. *Finding of No Significant Impact, Rim of the Valley Corridor Special Resource Study*. November 2015.

196 Ventura County Resource Management Agency. 2020. Website accessed March 4, 2020. *Habitat Connectivity and Wildlife Corridor*. https://vcrma.org/habitat-connectivity-and-wildlife-movement-corridors.

197 San Diego State University, Institute for Ecological Monitoring and Management. 2020. Website accessed January 18, 2021. *Connecting Wildlands and Communities*. https://iemm.sdsu.edu/projects/CWC.html.

Practice Policy Matrix, summarizes the existing policies related to wildlife resources within other cities and counties. These best practice policies are limited to policies that would improve/expand upon existing City policies, as some existing City policies are applicable to guiding wildlife habitat protection in the City and do not need revision. The best practice policies presented in Appendix I are verbatim from other jurisdictions and, while conceptually applicable, modification to tailor specifically for the City are appropriate. As discussed for policies within the City, other policies reviewed were generally categorized into the following topics: open space/wildlife habitat conservation; habitat linkage conservation; native tree preservation; project design guidelines and mitigation measures; and coordination with regional planning efforts. These topics are discussed below with references to applicable policies.

Open Space/Wildlife Habitat

Outside of the City, other jurisdictions also emphasize the importance of open space and habitat preservation, though some have more specific requirements tailored to the conservation of their resources.

- The East Alameda County Conservation Strategy provides for the protection a range of environmental gradients (such as slope, elevation, aspect) across a diversity of natural communities (Objective 1.1), and allows for natural disturbance regimes, or management actions that mimic those natural disturbances, required for natural community regeneration and structural diversity and native species germination and recruitment to occur (Objective 1.3). This is useful because a number of native plants are "fire followers" that are adapted to natural fire regimes and require their seeds to be burned in order to germinate. Other plant species are adapted to natural disturbances, such as water scouring a floodplain, and are "pioneer" species that thrive by colonizing open areas. Their conservation strategy also provides for nonnative invasive plants and animals removals using Integrated Pest Management (IPM) principles to enhance natural communities (Objective 1.4).
- In Washington, the City of Kent Municipal Code provides for buffers for fish and wildlife habitat conservation areas.
- The County of San Diego General Plan encourages the formation of volunteer preserve managers that are incorporated into each community planning group to supplement professional enforcement staff in order to protect and manage open space.

The applicable policies are listed in Appendix I.

Habitat Linkages

Other jurisdictions also emphasize the importance of habitat linkages.

- The County of Ventura General Plan requires that discretionary development be sited a minimum of 100 feet from significant wetland habitats, though buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and County approval. The design of road and floodplain improvements are also required to incorporate all feasible measures to accommodate wildlife passage.
- An objective of the Vermont Fish and Wildlife Department Habitat Block Report is the identification and ranking of the relative importance of potential wildlife road crossings statewide based on the structural suitability of adjacent habitat.

The applicable policies are listed in Appendix I.

Native Trees

Policies related to native trees includes the City of Pasadena General Plan, which promotes planting additional trees along the City's sidewalks, civic places, parks, and in private developments to support the health and diversity of wildlife, sequester GHG emissions, and contribute to the reduction of the urban heat-island. The applicable policy is listed in Appendix I.

Design Guidelines and Mitigation Measures

Policies pertaining to design guidelines and mitigation measures provide standards applicable to projects implemented in proximity to conservation lands and wildlife resources.

- The City of San Diego Multiple Species Conservation Plan Subarea Plan and Western Riverside Multiple Species Habitat Conservation Plan include design guidelines to minimize edge effects of proposed development on conserved lands. Guidelines are included for preventing drainage of pollutants (e.g., chemicals, petroleum products) and toxins (e.g., manure for fertilizer); directing lighting away from conserved areas; minimizing noise; installing barriers around conserved lands (e.g., rocks/boulders, non-invasive vegetation, fences, signage); preventing the introduction on invasive non-native plants into conserved lands; and setting brush management back from conserved lands.
- The County of Ventura General Plan requires a qualified biologist to evaluate potential impacts to biological resources and develop mitigation measures as necessary.
- The County of Los Angeles General Plan discourages development in areas with identified significant biological resources, such as SEAs, and requires additional technical review for complex or intensive types of developments within SEAs to evaluate potential impacts to biological resources, determine SEA compatibility, and develop mitigation measures as necessary. The SEATAC is an expert advisory committee that assists the Los Angeles County Department of Regional Planning and the Los Angeles County Regional Planning Commission in assessing applications for SEA Conditional Use Permits (CUPs) by providing recommendations on the biological analyses conducted for SEA CUPs, and on the project's compatibility with SEA resources.

The applicable policies are listed in Appendix I.

Regional Planning Coordination

As mentioned in Section 5.2.2.1 above, regional planning efforts that overlap with the City's boundaries or are immediately adjacent, include the Los Angeles County SEA Program, South Coast Missing Linkages, California Essential Habitat Connectivity Project, Rim of the Valley Corridor, and Ventura County Habitat Connectivity and Wildlife Corridor, and farther afield, the San Diego State University's CWC effort. In addition, the following regional planning efforts are taking place:

- The County of Los Angeles General Plan supports the acquisition of new available open space areas, and they aim to leveraging County resources in concert with the compatible open space stewardship actions of other agencies, as feasible.
- The County of San Diego General Plan promotes collaboration with other jurisdictions and federal, state, and local agencies to identify regional, long-term funding mechanisms that achieve common resource management goals.

- In their "Climate Change Response Strategy," one of the National Park Service's objectives is to collaborate to develop cross-jurisdictional conservation plans to protect and restore connectivity and other landscape-scale components of resilience and develop cross-jurisdictional conservation.
- The City of Sacramento General Plan support the efforts of The Natomas Basin Conservancy and other habitat preserve managers to adaptively manage wildlife preserves to ensure adequate connectivity, habitat range, and diversity of topographic and climatic conditions are provided for species to move as climate shifts.
- The Department of Interior's Subcommittee on Land and Water Management also promotes regional partnerships to enhance the success of species migration and relocation in response to climate change.

The applicable policies are listed in Appendix I.

5.3 Recommendations to Inform Policy and Planning

ESA considered how focal species' use of the PAWs and WMPs proposed could be impacted or impeded by urbanization and development. Factors that were considered include physical barriers to movement such as structures, fences, walls, and windows; behavioral hindrances to movement such as lighting, noise, proximity to development, and lack of vegetative cover; and direct physical threats to wildlife within PAWs and WMPs such as dangerous fencing materials, poisons, and traffic. These categories served as the primary focus of recommendations for policy development.

Based on the PAWs and WMPs proposed, a number of recommendations are proposed for developing guidelines and regulations for conserving and managing biological resources within these areas. Recommendations are provided for the following categories:

- Setback and Buffers from open spaces and natural resource areas
- Fencing and Physical Barriers
- Vegetation, Landscaping (and Brush Management)
- Lighting
- Windows
- Noise
- Poison
- Traffic
- Education

These recommendations should be considered by Planning for the development of regulations to be applied on future projects, which will help to balance needs for development with needs for wildlife habitat and connectivity.

5.3.1 Setback and Buffers

Establishing development regulations that include a proportional limitation between natural open space and building area/non-natural open space within PAWs and WMPs would conserve some of the existing habitat functions provided by areas with low and very low density development and reduce fragmentation effects. In a study of fragmentation effects in rural San Diego County, the effects were negligible in areas with less than 1 dwelling unit per 80 acres, and severe in areas with greater than 1 dwelling unit per 40 acres.[198] While many of the PAWs and WMPs within the City are in areas that already exceed this threshold, the effects of fragmentation can be reduced by introducing regulations that buffer development away from open space areas and encouraging the conservation of existing habitats, native vegetation, water resources and undeveloped ridgelines that may serve as natural pathways for wildlife.

Recommendations:

- *WMPs should be maintained at the existing widths, or provide a minimum of 30 feet of open access.*[199,200]
  - *If a WMP is already constrained (i.e., is a crossing structure under a road, or road crossing without a crossing structure), then the enhancement or installation of a crossing structure should be considered. Since different species have different preferences for crossing structures that they would use, site-specific conditions should be assessed to address the species that have potential to occur and to use the pathway for movement. For example, larger mammals such as deer prefer larger, open structures (like a bridge undercrossing); medium-sized mammals, black bear, and mountain lions prefer large box culverts with natural earthen bottoms; while smaller amphibians, reptiles, and mammals may prefer smaller pipe culvert crossing structures (from 1 to 3 feet in diameter) with less exposure to predators.*[201] *Multiple types of crossing structures can also be implemented within a single area to accommodate multiple species preferences.*
- *Unconstrained WMPs should be maintained at an average minimum width that should be determined on a case-by-case basis based on factors that include, but are not limited to: the species present, local topography, level of disturbance adjacent to the corridor, length of the corridor, and overall ecological significance of the corridor. The following guidelines should be applied to determine minimum WMP widths, as applicable:*
  - WMP minimum widths should be designated to include a variety of habitats, where available, to provide for the habitat preferences of various species (i.e. include areas with dense vegetation for cover as well as open areas to allow for the movement of larger mammals).

198 CBI 2005 as cited in Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January.

199 WMPs should be assessed on a case-by-case basis depending on the conditions of the WMP (e.g., natural area or fragmented/constrained), habitat and biological resources present throughout the WMP and surrounding vicinity, and the potential threats and barriers to movement. The recommended minimum width is based on the recommended minimum width for bridges or culverts as used in the City of San Diego MSCP Subarea Plan and discussed further in Section 5.3.8 below.

200 City of San Diego. 1997. *Multiple Species Conservation Program. City of San Diego MSCP Subarea Plan*. March 1997.

201 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January.

  - *WMP minimum widths should be designated to include areas with slopes of less than 40 percent, where available. In areas of high topographic relief, WMPs should include ridgeline and/or valley bottom habitat to the extent feasible.*
  - *WMP minimum widths should be designated to include adequate buffers from the effects of existing adjacent land uses, including lighting and noise. Adequate buffer widths should be determined based on the presence of barriers such as vegetation, topography, walls, and berms and may range from approximately 50 feet to 500 feet.*

- *Within PAWs, the proportional limitation between natural open space and the amount of building area (i.e., structures and impervious area)/non-natural open space should be based upon the size of the parcel as follows:*
  - *< 7,500 square feet- 1:1 ratio*
  - *7,501 to 15,000 square feet- 2:1 ratio*
  - *15,001 to 43,560 (1 acre) – 3:1 ratio*
  - *Greater than one acre- 4:1 ratio- (note: Subdivisions would be subject this ratio and are required to cluster development)*
  - *If the lot is adjoining a natural open space area, no more than 25% of the building area/non-natural open space should be located on the portion of the lot that is proximal to the adjoining natural open space, as feasible and with consideration for access and other limitations.*
  - *If the lot contains a naturally-occurring perennial or intermittent water feature that is considered a key water source for wildlife, then the natural open space portion of the lot should include this feature and include the conservation of natural open space to allow for wildlife access to the feature.*
- *The building area/non-natural open space should be established within a minimum setback from WMPs or PAWs of 25 feet or 25 percent of the average lot diameter,[202] whichever is greater. The setback should be established with the intent to retain connected corridors of natural open space between adjoining lots within WMPs, regardless of lot orientation.*
- *Setbacks for sensitive biological resources within a PAW or WMP (e.g., sensitive habitats, habitat that supports special-status plant or wildlife species) should range from 35 to 250 feet to minimize edge effects from future development, and balance the need to protect ecological functions with surrounding land uses and private property constraints.[203] A 100-foot buffer is*

202 Calculated based on the square root of the lot area.

203 County of Santa Clara, City of San Jose, City of Morgan Hill, City of Gilroy, Santa Clara Valley Water District, and Santa Clara Valley Transportation Authority. 2012. Final Santa Clara Valley Habitat Plan. August. https://scv-habitatagency.org/DocumentCenter/View/136.

the recommended setback for riparian corridors, streams, lakes, and wetlands. [204,205,206,207] *A 60-foot buffer is the recommended setback for prominent ridgelines.* [208,209]

- *Along major perennial and intermittent stream systems, maintain a 500-foot buffer of native vegetation along each side of the low-flow channel to provide wildlife cover and protect wildlife during periods of flooding.*

5.3.2 Fencing and Physical Barriers

Physical barriers such as fences, berms, walls, and steeply cut slopes can interfere with wildlife movement within WMPs. Additionally, certain fence materials and designs present risks of entanglement and impalement of wildlife. Medium- to large-size mammals, such as deer, as well as flying creatures can become impaled on sharp fencing top posts or tangled in fences topped with barbed or razor wire while woven wire fencing can trap wildlife trying to fit through the wire openings. Fencing that extends to ground can impede the movement of ground-dwelling animals, such as deer fawns and other mammals where they are unable to jump, dig, or climb. Steeply cut slopes and berms can also reduce WMP function.

Physical barriers can also be beneficial to wildlife when used for directing wildlife movement to safe crossing locations, reducing negative wildlife-human interactions, and buffering the effects of noise and lighting. To ensure guidelines are beneficial to wildlife, it is recommended that location-specific parameters be applied on a case-by-case basis to distinguish between areas where wildlife movement should be encouraged (e.g., fencing/barriers funneling wildlife towards a wildlife crossing structure or open natural area) versus locations where wildlife movement should be discouraged (e.g., away from road hazards, developed areas).

Recommendations:

- *Within natural open space areas, fencing should be wildlife-permeable (i.e., that wildlife can pass through, such as a split-rail fence). Within developed/non-natural open space areas, fencing should be wildlife-friendly (i.e., that is not likely injure, impale, or entangle wildlife). Any non-permeable fencing within non-natural open space areas should not intersect WMPs or otherwise obstruct wildlife movement within the WMP.*

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204 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January

205 City of Los Angeles. 1992. Mulholland Scenic Parkway Specific Plan. Ordinance No. 167,943. Adopted May 13, 1992. Specific Plan Procedures Amended pursuant to L.A.M.C. Section 11.5.7. Design Review Board Procedures Amended pursuant to L.A.M.C. Section 16.50. A Part of the General Plan - City of Los Angeles. www.lacity.org/pln/index.htm.

206 City of San Diego. 1999. San Diego Municipal Code. Land Development Code. Biology Guidelines. Adopted September 28, 1999, Amended April 23, 2012 by Resolution No. R-307376.

207 County of Ventura. 2016. Ventura County General Plan. Goals, Policies, and Programs. Last Amended by the Ventura County Board of Supervisors on December 13, 2016.

208 City of Los Angeles. 1992. Mulholland Scenic Parkway Specific Plan. Ordinance No. 167,943. Adopted May 13, 1992. Specific Plan Procedures Amended pursuant to L.A.M.C. Section 11.5.7. Design Review Board Procedures Amended pursuant to L.A.M.C. Section 16.50. A Part of the General Plan - City of Los Angeles. www.lacity.org/pln/index.htm.

209 City of Los Angeles. 2004. San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan. Ordinance No. 175,736. Adopted December 19, 2003; Effective February 8, 2004. Specific Plan Procedures Amended pursuant to L.A.M.C. Section 11.5.7. A Part of the General Plan - City of Los Angeles. www.lacity.org/pln/index.htm.

- *All fencing should be wildlife-permeable where wildlife movement "funnels" (i.e., impassable obstacles or barriers to movement that guide wildlife towards another area, such as an open natural area) are present within PAWs and WMPs, such as those created by steep topography, existing development, highways, walls, etc.*
- *Wildlife-friendly fencing should avoid use of the following materials: barbed wire, razor wire, and fencing with pointed or narrow extensions on top (e.g. metal pickets). Woven wire fencing is also hazardous to wildlife and should be prohibited. Horizontal fence wires should be spaced at least 12 inches apart to reduce the risk of entanglement. Regardless of location, all hollow fence and sign posts, or posts with top holes, such as metal pipes or sign posts with open bolt holes, should be capped and the bolt holes filled to prevent the entrapment of bird species.*
- *Wildlife-permeable fencing should be no more than 42 inches high with a bottom opening of at least 18 inches above the ground for passage of small- to medium-sized mammals, such as deer fawns.[210,211] All wildlife-permeable fencing should incorporate wildlife-friendly fencing specifications (listed in the bullet above). Post and rail fencing is recommended as a wildlife-friendly and wildlife-permeable fence design.*
- *Walls, berms, and steep slope cuts that could potentially obstruct wildlife movement should not be installed within WMPs. If overriding circumstances require these structures, wildlife permeable designs should be used.*
  - *Wildlife permeable walls should either be less than 42 inches high with minimum 18-inch by 18-inch bottom openings every 150 to 300 feet[212,213] and at locations that funnel wildlife movement or, if over 42 inches high, should include wall breaks or ramps for wildlife passage every 150 to 300 feet and at locations that funnel wildlife movement.*
  - *Berms, embankments, and slope cuts over 42 inches high should include segments with slopes of 45 degrees or less.*
  - *Alternative fence, wall, and berm/slope designs based on publicly-available guidance and best available science to allow for the passage of the applicable wildlife species are also acceptable.*

5.3.3 Landscaping

The natural landscape of southern California is comprised of a variety of natural communities, including pine forests in the mountains; chaparral on steep hillsides; oak woodlands, coastal sage scrub, and native grasslands in the foothills; marshes, and riparian woodlands and forests in the valleys; and coastal bluffs and beaches along the coastline. Native vegetation has evolved with our local climate, soil types, and animals. Even areas that are currently developed once contained these natural habitats.

The native plants that make up these communities provide food and shelter for wildlife, stabilize slopes with their roots, sequester carbon, and filter pollutants from streams, among many other

210 Sonoma Land Trust. 2014. *Sonoma Valley Wildlife Corridor Project: Management and Monitoring Strategy*. Santa Rosa, CA.

211 County of Ventura. 2005. *Roads and Biodiversity Project: Guidelines for Safe Wildlife Passage*. June.

212 County of Ventura. 2005. Roads and Biodiversity Project: Guidelines for Safe Wildlife Passage. June.

213 Sonoma Land Trust. 2014. *Sonoma Valley Wildlife Corridor Project: Management and Monitoring Strategy*. Santa Rosa, CA.

ecological benefits. Although many types of vegetation can provide such ecosystem services, native plants in particular have evolved with local native wildlife species and provide habitat and resources to these animals. Additionally, native plants and natural communities require less water and maintenance than non-native landscaping plants.

Development has altered and in many ways negatively impacted natural habitats by replacing native habitat with structures and hardscape, and replacing native plants with non-native landscape plantings. Planting gardens, parks, and roadsides with plants native to southern California can help provide an important bridge to nearby remaining wildlands; however, most public areas such as parks that are not natural open space areas are landscaped with non-natives.

Landscaping can provide habitat to wildlife, but since the majority of landscaping is comprised or non-native "ornamental" species that have been imported from various regions around the world and planted for aesthetics, these non-native species do not necessarily support the native wildlife in the same way as natural communities do, and can alter the natural landscape of an area. Some landscaping does incorporate native species, but the majority of landscaped areas around developed areas, within residents' backyards, within landscaped parks, and along City streets are not native. Thus, wildlife that flourish in landscaped environments tend to be those species that are more urban-tolerant species. The conversion of natural areas to ornamental landscaping can degrade habitat within PAWs and WMPs can reduce their function, in addition to loss of habitat due to development, and other types habitat degradation associated with urbanization, including trespassing and unauthorized recreation (i.e., dirt bike trails, homeless camps), the introduction of invasive species, and brush clearing and thinning to maintain fire management zones.

Landscaping can also lead to the introduction of invasive species, which are species that generally not native to a specific location and spread prolifically to a degree believed to cause damage to the natural environment, and can degrade habitat quality and disrupt wildlife movement by forming dense impenetrable monocultures, providing unnatural fuel loads and increasing the risk of fire, and competing with native vegetation that would otherwise provide food and cover for wildlife. For example, Russian thistle (*Salsola tragus*) a common invasive plant on disturbed lands, creates "tumbleweeds" that can accumulate in drainages and culverts and impede wildlife movement. Giant reed (*Arundo donax*) can form dense stands in riparian corridors, blocking the movement of larger mammals. Invasive plants can also change natural community composition, which not only reduces habitat for native species to thrive, but also changes natural processes (such as wildfire frequency and intensity). A number of non-native grasses are highly invasive, and after decades of historic grazing of livestock throughout southern California that has removed native plants and spread invasive species, these non-native grasses provide fuel loads for the rapid spread of fire.

Wildfire

Fires have always been a natural component of ecosystems (e.g., from lightning and volcanic activity), and like wind, rain, and other natural forces, fires help create a patchwork of vegetation types, enrich the soil with organic nutrients, and start the succession (i.e., colonization) of pioneer plant species (e.g., allowing understory species to grow). Many native plants are well-adapted to fire, and can even help some native plant seeds to germinate. Fires also clear the forest of

underbrush, leaving ash and debris to supply nutrients to the soil, and opening the forest floor up to sunlight, which allows grasses, herbs, and regenerated shrubs to provide food for many wildlife species. Native Americans also regularly burned the vegetation to open up areas and to favor plants that attract game animals. Thus, these natural and human-caused fires have helped select vegetation types that have adapted to fire, and may depend on fires for their existence, such as heat-resistant seeds that need fire to germinate, or help them survive and reestablish after fires, such as "fire-resistant" roots also enable the plant to resprout quickly in recently burned areas.[214]

However, with the spread of development and infrastructure, the current number and frequency of unnatural human-caused wildfires (e.g., from arson, sparks from vehicles, and downed power lines) is becoming more prevalent in southern California annually with the wildland–urban interface being impacted the most by the destruction of wildfires.

Causes of Wildfires

Wildfires can start in a variety of ways but the majority of wildfires are caused by anthropomorphic (i.e., human-induced) means. Wildfires have been ignited by arson, sparks from vehicles or other equipment, and downed power lines and faulty electrical equipment. A study published in 2017 found that 84% of wildfires in the U.S were caused by human-related activity; the remaining 16% were caused by lightening.[215] In California, about 95% of fires that CalFire responds to are caused by humans. Anthropogenic ignitions tend to be concentrated near infrastructure with more fires now occurring at the wildland–urban interface than in the backcountry.[216]

Very High Fire Hazard Severity Zone

The California Department of Forestry and Fire Protection (CalFire) classified portions of the City of Los Angeles (City) as being a Very High Fire Hazard Severity Zone (VHFHSZ). The VHFHSZ is considered "any area within the City that poses a significant threat of fire from adjoining natural brush hillside areas and which is determined by the following factors: topography, infrastructure, fire protection, population density, types of construction, weather, existing fire codes and ordinances, and fire history."[217] Approximately 32% of the City is within the VHFHSZ designation. These areas include the Santa Monica Mountains, San Gabriel Mountains, Verdugo Mountains, and Palos Verdes Peninsula.

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214 California Department of Forestry and Fire Protection (Cal Fire). 1999. *Learning to Live with Fire*. August 1999. https://www.fire.ca.gov/media/8657/live_w_fire.pdf.

215 Balch, Jennifer K., et al. 2017. *Human-Started Wildfires Expand the Fire Niche across the United States*. PNAS, National Academy of Sciences, February 22, 2017. www.pnas.org/content/early/2017/02/21/1617394114.

216 Pyne, S. J. 2001. *Fire in America*. Princeton University Press. Princeton, New Jersey, USA.

217 City of Los Angeles. 1936. *City of Los Angeles Municipal Code*. Effective November 12, 1936. Current through December 31, 2019. Accessed January, 26, 2020. http://library.amlegal.com/nxt/gateway.dll/California/lamc/municipalcode/chapterxvrentstabilizationordinance?f=templates$fn=default.htm$3.0$vid=amlegal:lamc_ca$anc=JD_151.28.

Fuel Modification

A fuel modification zone is an area of defensible space around structures, such as buildings and road, where combustible native or ornamental vegetation has been cleared, modified, or partially or totally replaced with drought tolerant, fire retardant plants and maintained per local Fire Code requirements. Many cities and counties within southern California have set up requirements for fuel modification surrounding structures and building. Each fire department has specific guidelines for fuel modification including distances from a structure that fuel modification is required, landscaping and planting guidelines, and maintenance requirements.[218, 219, 220] However, all fire departments follow the same principles of 1) creating a defensible space surrounding the structure and 2) minimizing sources of ignition. A defensible space is the required clearance between a structure and surrounding natural vegetation that provides firefighters the room they need to defend a structure. The defensible space, which ranges from 100 feet to 200 feet depending on jurisdiction, creates a sufficient buffer around a structure that reduces the amount of direct flame and radiant heat from a wildfire. Most fire department separate the defensible space into "zones" with distance and clearance requirements for each zone.

Fuel Modification Requirements within the City of Los Angeles

The Los Angeles County Fire Code, which the City has adopted, requires the defensible space be separated into three zones, A, B, and C.[221] Within each of these zones, the sources of ignition, typically combustible vegetation, must be modified and/or partially or totally replaced with drought tolerant, fire resistant plants. The zone closest to the structure, Zone A, which extends 30 feet from any qualifying structure or the property line, is typically cleared of large shrubs and trees (including ornamental plants and trees known to be flammable), allowing only small herbaceous or succulent species to remain. Zone B, which extends 30 feet to 100 feet from any qualifying structure or the property line, is typically slightly denser in vegetation than Zone A but the creation of "ladder fuels" (i.e., low-level vegetation that allows the fire to spread from the ground to the tree canopy) is discouraged within this zone. Zone C, which extends 100 feet to 200 feet from any qualifying structure or the property line, requires routine maintenance for structures that are deemed an "extra hazard" according to Section 325.2.2 of the Los Angeles County Fire Code. The County also has Plant Selection Guidelines by Zone, which includes plant species that are not acceptable within a Fuel Modification Plan, as well as a Fuel Modification Plant List of acceptable plants.[222]

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218 Los Angeles County Fire Department. 2020. *Fuel Modification Guidelines*. www.fire.lacounty.gov/wp-content/uploads/2019/10/Plant-Selection-Fuel-Modification-Guidelines.pdf. Accessed January, 26, 2020.

219 Ventura County Fire Department. 2020. *Defensible Space and Field Modification Zones*. vcfd.org/images/FHRP/Standard-515---Defensible-Space-and-Fuel-Modification-Zones.pdf. Accessed January, 26, 2020.

220 San Diego City Fire Department. 2020. *Brush Management Requirements*. www.sandiego.gov/sites/default/files/legacy/fire/pdf/brushpdf.pdf. Accessed January, 26, 2020.

221 Los Angeles County Fire Department. 2020. *Forestry: Fuel Modification*. www.fire.lacounty.gov/forestry-division/forestry-fuel-modification/. Accessed January, 26, 2020.

222 Los Angeles County Fire Department. 2017. *Plant Selection Guidelines by Zone*. www.fire.lacounty.gov/wp-content/uploads/2017/03/Plant-List.pdf.

Fuel Modification Requirements within Other Areas

Other cities and counties follow similar requirements for maintaining defensible space around structures, though specific requirements vary by jurisdiction.

Ventura County Fire Protection District requires "an effective firebreak" within 100 feet of structures by removing and clearing away all combustible material, excluding protected species of trees, ornamental shrubbery, or similar plants used in landscaping and ground covers, provided they do not form a means of transmitting a fire from the native growth to a structure.[223,224] The Ventura County Fire Protection District also has a Prohibited Plant List,[225] which lists plants and trees that must be thinned and/or removed from existing defensible spaces or fuel modification zones, and are not allowed within a new required defensible spaces or fuel modification zones.

Within a hazardous fire area, San Diego County Fire Authority requires the area within 50 feet of a building or structure to be cleared of vegetation that is not fire resistant and re-planted with fire-resistant plants. For the area between 50 to 100 feet from a building all dead and dying vegetation must be removed, the lower limbs of trees should be removed to reduce "fire ladder", trees should be trimmed at least 10 feet away from chimneys, and trees and shrubs should be spaced to reduce the potential for a fire to spread.[226,227]

The City of San Diego understands that "in addition to protecting the public from fire hazards, the City also has a responsibility to protect sensitive biological resources. Brush management activity must be done in a manner that both reduces fire hazards and minimizes impacts to undisturbed native or naturalized vegetation." The city requires any property containing a habitable structure and native or naturalized vegetation is required to provide 100 feet of brush management in two distinct zones: Zone 1 and Zone 2.[228]

Brush Management Zone 1 typically extends 35 feet out from the habitable structure towards flammable vegetation, and occurs on the level portion of a property. Zone 1 must be maintained on a regular basis by thinning and pruning trees and plants, controlling weeds, and maintaining irrigation systems; plants should be primarily low-growing (less than 4 feet in height), low-fuel, and fire-resistive; and all portions of trees, other than the trunk, which extend within ten feet of a structure or the outlet of any chimney, must be cut back. Brush Management Zone 2 is the remaining 65 feet that extends beyond Zone 1, typically comprised of undisturbed vegetation on a slope subject to sensitive biological resource protections. Zone 2 must be maintained on a regular

223 Ventura County Fire Protection District. 2020. *Fire Hazard Reduction Program.* https://vcfd.org/fire-prevention/fire-hazard-reduction-program-fhrp. Accessed January 27, 2020.

224 Ventura County Fire Protection District. 2020. *Appendix W: Fire Hazard Reduction.* Ventura County Fire Code. VCFPD ORD NO. 30. https://vcfd.org/images/FHRP/Ord-30-Appendix-W-FHRP.pdf. Accessed January 27, 2020.

225 Ventura County Fire Protection District. 2019. *Prohibited Plant List*. April 19, 2019. https://vcfd.org/images/FHRP/410---Prohibited-Plant-List-4-2019.pdf.

226 San Diego County Fire Authority. 2020. *Prevention FAQ.* https://www.sandiegocounty.gov/content/sdc/sdcfa/prevention/faq.html. Accessed January 27, 2020.

227 San Diego County Fire Authority. 2020. *Defensible Space.* https://www.sandiegocounty.gov/content/sdc/sdcfa/prevention/defensible-space.html. Accessed January 27, 2020.

228 San Diego Fire-Rescue Department. 2014. *Brush Management Requirements*. Revised August 19, 2014. https://www.sandiego.gov/sites/default/files/legacy/fire/pdf/brushpdf.pdf.

basis by controlling weeds and removing invasive species, and permanent irrigation is not allowed within this zone. Selective thinning and pruning of native and non-native plants is required to reduce the fuel-load; however, no grading or grubbing of native plants, soils or habitats is allowed, and non-native plants must be pruned before native plants. Violators are responsible for restoration and mitigation costs. Additionally, brush management activity is not allowed March 1 through August 15 in coastal sage scrub, maritime succulent scrub, or coastal sage-chaparral habitats.

Wildlife Abatement Strategies and Best Practices

In addition to maintaining defensible spaces, many fire departments have recently embraced the use of certain types of fire-resistant native vegetation within the fuel modification zones.[229, 230, 231, 232] They acknowledge that although some native plants are well-adapted to fire and combustible, there are also some native plants are more fire-resistant species and are not as susceptible to ignition as are some fast growing non-native weeds and invasive wild grasses. Some native vegetation burns slower, grows slower, and has lower maintenance requirements than their non-native counterparts, which makes them valuable plants to be used in a fuel modification zone. In recent years, the focus has evolved into finding native plants with low volume and height, and therefore, species that would output less heat when caught on fire, as well as some degree of fire resistance.[233]

Following a fire, heavy rains can contribute to soil erosion, slope instability, and mudslides among other issues, due to a lack of vegetation to stabilize the soils. Some native plant communities, such as chaparral, have the capacity to regenerate from resprouting from rootstocks and dormant seed banks.[234] However, hydroseeding, which is a seeding process that uses a mixture of seed and mulch along with other ingredients (e.g., fertilizer, tackifying agents, and fiber mulch) is often used as a soil stabilization technique to encourage vegetation recovery. The slurry is sprayed over an area of prepared soil from a truck-mounted tank to seed an area and promote growth of new vegetation (e.g., ground cover, wildflowers, shrubs).[235] However, spreading seed to reestablish vegetation after a fire may not be the most effective method for reducing slope erosion, and hydroseeded areas are not always comprised of native plant species.

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229 Ventura County Fire Department. 2019. *Fire Hazard Reduction Program Plant Reference Guide*. Updated April 2019. vcfd.org/images/FHRP/Plant%20Reference%20Guide%20rev%204-2019.pdf.

230 Los Angeles County Fire Department. 2017. *Plant Selection Guidelines by Zone*. www.fire.lacounty.gov/wp-content/uploads/2017/03/Plant-List.pdf.

231 Orange County Fire Authority. 2017. *Technical Design for New Construction Fuel Modification Plans and Maintenance Program*. www.ocfa.org/Uploads/CommunityRiskReduction/OCFA%20Guide-C05-Fuel%20Modification.pdf.

232 Los Angeles Fire Department. 2020. *MRCA Information*. Accessed February 4, 2020. https://www.lafd.org/fire-prevention/brush/mrca-information.

233 Moore, Howard E. 1981. *Protecting Residences from Wildfires: A Guide for Homeowners, Lawmakers, and Planners*. United States Department of Agriculture, Forest Service. Pacific Southwest Forest and Range Experiment Station. May 1981. https://www.fs.fed.us/psw/publications/documents/psw_gtr050/psw_gtr050.pdf.

234 Keeley, Jon. 2007. *Appropriate Postfire Management for the 2007 Griffith Park Fire*. Watershed Wise. The Newsletter of Los Angeles & San Gabriel Rivers Watershed Council. The Fires This Time: Post-Fire Recovery Best Pr2007. actices. Fall 2007. https://www.firescience.gov/projects/04-1-2-01/project/K2007_GriffithParkRecovery.pdf.

235 Canyon Hydroseeding. 2020. *Revegetation After the Wildfires*. Accessed February 4, 2020. http://hydroseedingsocal.com/revegetation-after-the-wildfires/.

The introduction of non-native or even invasive plant species through hydroseeding may create competition for native plants and alter the local ecosystem, and may even contribute to a flammable fuel load, such as invasive, non-native grasses do. Mulch or hay bales have proven to be more effective and more predictable for reducing slope erosion than seeding, but should be "weed-free" hay so as not to introduce exotic species.[236]

The responsibility of wildfire prevention doesn't rest solely on fire departments. City planners and utility administrators should also consider fire hazards in designing and planning development, transportation, and infrastructure, including utility lines. Clustered development, particularly adjacent to areas that are already developed, would limit sprawling communities, which may limit the need for expanded utilities and infrastructure into rural areas and also limit the amount of defensible space needed around structures.[237] If open space areas and parks are designed to abut wildlands, this would provide an additional buffer against wildfires. Utility administrators could also design new electrical lines to be undergrounded instead of installing overhead lines, thus lowering the risk of wildfire ignition being sparked from a downed power line; however, this can be much costlier to install and maintain.[238]

Recommendations:

- *The use of native plants in landscaping should be encouraged to provide habitat and conserve water. Native plants selected for landscaping should be appropriate for the area (i.e., so that desert species are not selected for coastal area, or wetland species are not planted on a dry upland slope), and preferably with species endemic to an area (i.e., a plant native to northern California would not necessarily flourish in a southern California environment).*
- *If areas within PAWs or WMPs are planted, these areas should be restored to natural conditions before these areas were disturbed by development and planted with native plants.*

236 Keeley, Jon. 2007. *Appropriate Post-fire Management for the 2007 Griffith Park Fire.* Watershed Wise. The Newsletter of Los Angeles & San Gabriel Rivers Watershed Council. The Fires This Time: Post-Fire Recovery Best Pr2007. actices. Fall 2007. https://www.firescience.gov/projects/04-1-2-01/project/K2007_GriffithParkRecovery.pdf.

237 Moore, Howard E. 1981. *Protecting Residences from Wildfires: A Guide for Homeowners, Lawmakers, and Planners.* United States Department of Agriculture, Forest Service. Pacific Southwest Forest and Range Experiment Station. May 1981. https://www.fs.fed.us/psw/publications/documents/psw_gtr050/psw_gtr050.pdf.

238 Alonso, Frank and Carolyn A. E. Greenwell. *Underground vs. Overhead: Power Line Installation-Cost Comparison and Mitigation.* Outage Management, T&D, Transmission. Issue 2 and Volume 18. https://www.power-grid.com/2013/02/01/underground-vs-overhead-power-line-installation-cost-comparison/#gref.

- *For areas within or adjacent to PAWs or WMPs (i.e., within a 100-foot buffer[239,240,241,242]), landscape plans should avoid the use of invasive species. Invasive species are defined as having a California Invasive Plant Council (Cal-IPC) rating of moderate or higher, or are considered invasive by the California Invasive Species Advisory Committee.*
- *Where brush management zones for existing development encroach or overlap PAWs and WMPs and require the thinning of native vegetation, in addition to mitigating the native habitat offsite, oak trees or other fire-safe native vegetation should be planted and maintained within these brush management zones.*
- *When establishing proportional development limitations, brush management zones should not be considered natural open space areas unless they are maintained as native habitats.*
- *Along major perennial and intermittent stream systems, maintain a 500-foot buffer of native vegetation along each side of the low-flow channel to provide wildlife cover and protect wildlife during periods of flooding.*
- *Within fuel modification zones, plant fire-resistant native vegetation, preferably native plants with low volume and height.*
- *The County's Plant Selection Guidelines by Zone should continue to be updated with new information about fire-resistant native plant species and/or invasive species to avoid and remove.*
  - *Invasive species include plants that are rated as "moderate" or "high" on the California Invasive Plant Council's (Cal-IPC) Inventory, a list that categorizes invasive plants that threaten California's natural areas.[243]*
- *Fuel modification Zones B and C should be maintained on a regular basis by controlling weeds and removing invasive species, and permanent irrigation should not be allowed within these zones.*
  - *Selective thinning and pruning of native and non-native plants is allowed to reduce the fuel-load, but non-native plants should be pruned before native plants.*
  - *No grading or grubbing of native plants, soils, or habitats should be allowed. Violators should be responsible for restoration and mitigation costs if necessary.*
- *If it is suspected that sensitive plants could occur on your site, hire a qualified botanist to conduct surveys during the appropriate blooming season.*

239 This buffer is based on the recommended minimum buffer for setbacks from streams and/or wetland habitats in the Mulholland Scenic Parkway Specific Plan, City of San Diego Land Development Code – Biology Guidelines, and County of Ventura General Plan to minimize detrimental edge effects from development.

240 City of Los Angeles. 1992. Mulholland Scenic Parkway Specific Plan. Ordinance No. 167,943. Adopted May 13, 1992. Specific Plan Procedures Amended pursuant to L.A.M.C. Section 11.5.7. Design Review Board Procedures Amended pursuant to L.A.M.C. Section 16.50. A Part of the General Plan - City of Los Angeles. www.lacity.org/pln/index.htm.

241 City of San Diego. 1999. San Diego Municipal Code. Land Development Code. Biology Guidelines. Adopted September 28, 1999, Amended April 23, 2012 by Resolution No. R-307376.

242 County of Ventura. 2016. Ventura County General Plan. Goals, Policies, and Programs. Last Amended by the Ventura County Board of Supervisors on December 13, 2016.

243 California Invasive Plant Council. 2020. *The Cal-IPC Inventory*. Accessed February 5, 2020. https://www.cal-ipc.org/plants/inventory/.

- *Brush management activity should not be allowed February 1 through August 31 in all habitats, native and ornamental, unless a nesting bird survey is conducted prior to activities to avoid impacting active nests and young birds.*
- *Avoid ground disturbance that can damage or destroy ground burrows, which provide shelter for small animals (e.g., snakes, lizards, toads, rodents, squirrels). Brush management activities should mow or trim vegetation a few inches above the ground so that the roots and soil are undisturbed, which would also reduce the risk of erosion.*[244]
- *Slope stabilization techniques, such as mulch or hay bales, should be "weed-free" hay so as not to introduce exotic species.*
- *If hydroseeding is conducted, hydroseed slurry should be free of invasive plant seeds. Native seed is preferable to non-native seed.*
- *When accessing a burned area, workers and fire crews should clean the underside of vehicles, equipment, and their gear to prevent the spread of invasive weed seeds and mud (that may contain seeds), which can act as mediums for dispersal.*[245]
- *Cluster development to limit urban sprawl and the need for expanded utilities, infrastructure, and the amount of defensible space needed around structures.*
- *Consider maintaining swaths of native habitat as connections between important habitat areas.*[246]
- *Reduce risk of wildfire ignition by installing underground power lines instead of overhead lines.*

5.3.4 Lighting

Light pollution that spills into PAWs and WMPs can alter wildlife behavior, disorient wildlife, cause temporary night blindness, and reduce the function of PAWs and WMPs. In a study of juvenile mountain lion dispersal in fragmented habitats within California, darkness was a key component of the habitat corridors used by the dispersing juveniles.[247] Beier noted instances in which mountain lions would wait until dawn to cross lit highways, likely because of their inability to see the areas that lie beyond the artificially lit areas. Even moonlight is known to alter wildlife behavior, with a variety of nocturnal mammals avoiding open areas in moonlit conditions (e.g., reducing use of open areas, duration of activities, and restricting foraging activities and movement until the darkest periods of night), which is likely due to increased predation

244 County of San Diego. 2008. *A Workshop for Community Wildfire Protection Plan Projects - Featuring How to Comply With Environmental Regulations*. November 12, 2008. https://www.fws.gov/cno/docs/fire/SanDiegoHandout.pdf.

245 Knapp, John. 2007. *Lessons from Catalina Island: Managing Invasive Plants Before and After a Fire. Catalina Island Conservancy*. Watershed Wise. The Newsletter of Los Angeles & San Gabriel Rivers Watershed Council. The Fires This Time: Post-Fire Recovery Best Pr2007. actices. Fall 2007. https://www.firescience.gov/projects/04-1-2-01/project/K2007_GriffithParkRecovery.pdf.

246 County of San Diego. 2008. *A Workshop for Community Wildfire Protection Plan Projects - Featuring How to Comply With Environmental Regulations*. November 12, 2008. https://www.fws.gov/cno/docs/fire/SanDiegoHandout.pdf.

247 Beier, P. 1995. *Dispersal of Juvenile Cougars in Fragmented Habitat*. The Journal of Wildlife Management, 59(2), 228-237. doi:10.2307/3808935.

risk.[248,249] Light pollution can be reduced by placing restrictions on the intensity, type, and directional focus of lighting as well as by blocking light sources with visual barriers such as vegetation, walls, and berms.

Recommendations:

- *For all outdoor lighting within 500 feet[250] of PAWs and WMPs:*
  - *Lighting should be directed away from natural open space areas, PAWs, and WMPs. Lighting should be directed down toward the ground whenever possible and light sources should be shielded to have limited or no light trespass at 500 feet. Street lights should be shielded so that the pattern of illumination is below the horizontal plane of the light fixture, and any accent lighting (such as floodlights on the ground pointing upward to illuminate buildings) should be designed to point down instead, or should turned off during migration seasons when weather conditions could contribute to attraction and mortality.[251]*
  - *Where development would result in a noticeable increase in ambient light levels within PAWs or WMPs, visual barriers (such as vegetation, berms, or walls) should be included in the project design to reduce light pollution.*
  - *Lighting should be fully shielded and should not exceed 1,260 lumens, with the exception of one partly-shielded or unshielded luminaire at the main entry that should not exceed 420 lumens, and any other partly shielded or unshielded luminaires that should not exceed 315 lumens.*
  - *Lighting should be designed such that it produces a maximum initial luminance value no greater than 0.10 horizontal and vertical footcandles (1.0 horizontal and vertical lux) at the property boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal lux) 10 feet (3 meters) beyond the property boundary. A project's environmental analysis should document that no more than 2% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down). [252]*

5.3.5 Windows

Human-built structures have been recognized as a hazard to birds for more than a century.[253,254] However, the accelerated rate of urban development in recent years has seen the proliferation of radio and television towers, office buildings, power lines, cooling towers, emission stacks, and

248 Beier, Paul. 2006. "Effects of Artificial Night Lighting on Terrestrial Mammals." *Ecological Consequences of Artificial Night Lighting*. Edited by Catherine Rich and Travis Longcore. Island Press, 2006, pp. 19-42.

249 Florida Atlantic University. No Date. *Light Pollution Affects Mammals in the Environment*. http://cescos.fau.edu/observatory/lightpol-Mammals.html#Beier_LAN_Mammals

250 Recommended buffer based on professional judgement.

251 Gauthreaux Jr., S. and C. Belser. 2006. "Effects of Artificial Night Lighting on Migrating Birds." *Ecological Consequences of Artificial Night Lighting*. Edited by Catherine Rich and Travis Longcore. Island Press, 2006, pp. 67-93.

252 U.S. Green Building Council. n.d. Light Pollution Reduction. https://www.usgbc.org/credits/ss8

253 Cooke, W.W. 1888. Report on Bird Migration in the Mississippi Valley in the Years 1884 and 1885. U.S. Department of Agriculture, Div. Econ. Ornithol. Bulletin No. 2. 313 pp.

254 Kumlien, L. 1888. Observation on Bird Migration in Milwaukee. Auk 5(3): 325-328.

residential housing, all of which represent an increasing threat to flying birds.[255] Specifically, a high incidence of mortality was recorded in long-distance migrants.[256] Major factors contributing to the hazardous nature of human-built structures are: (1) the presence of artificial lights at night (as discussed above); and (2) the presence of reflective glass windows, which are potentially hazardous both day and night.[257]

In regards to collisions with glass, growing evidence supports the interpretation that, except for habitat destruction, collisions with clear and reflective sheet glass cause the deaths of more birds than any other human-related avian mortality factor.[258,259,260,261,262,263] As such, it is estimated that over 34 million birds are killed by window collisions each year in the U.S.[264] Birds generally act as if sheet glass and plastic in the form of windows and noise barriers are invisible to them. Lethal casualties result from head trauma after birds leave a perch from as little as one meter away in an attempt to reach habitat that is seen through, or reflected in, clear and tinted panes.[265,266,267,268,269,270] Higher strike rates were documented for glass surfaces that reflected densely vegetated areas than those glass surfaces opposite less-vegetated areas.[271] Birds that are not killed on impact may be stunned and predated by scavengers (e.g., crows). In addition, birds

255 Ogden, L. and J. Evans. 1996. Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds. Published by World Wildlife Fund Canada and the Fatal Light Awareness Program. September. 46 pages.

256 O'Connell, T.J. 2001. Avian Window Strike Mortality at a Suburban Office Park. The Raven 72(2): 142-149.

257 Ogden, L. and J. Evans. 1996. Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds. Published by World Wildlife Fund Canada and the Fatal Light Awareness Program. September. 46 pages.

258 Klem Jr., D. 1989. Bird-Window Collisions. Wilson Bulletin 101:606–620.

259 Klem Jr., D. 1990. Collisions between Birds and Windows: Mortality and Prevention. Journal of Field Ornithology 61:120–128.

260 Klem Jr., D. 2006. Glass: A Deadly Conservation Issue for Birds. Bird Observer 34:73–81.

261 Erickson, W.P., G.D. Johnson, M.D. Stickland, D.P. Young Jr., K.J. Sernka, and R.E. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collisions Mortality in the United States. National Wind Coordinating Committee, Washington, D.C., USA.

262 Manville II, A.M. 2005. Bird Strike and Electrocutions at Power Lines, Communication Towers, and Wind Turbines: State of the Art and State of the Science - Next Steps Toward Mitigation. Pages 1051– 1064 in Bird Conservation Implementation in the Americas: Proceedings 3rd International Partners in Flight Conference 2002 (C. J. Ralph and T. D. Rich, Editors). USDA, Forest Service, General Technical Report PSW-GTR-191. Pacific Southwest Research Station, Albany, California, USA.

263 Manville II, A.M. 2008. Towers, Turbines, Power Lines, and Buildings-Steps Being Taken by the U.S. Fish and Wildlife Service to Avoid or Minimize Take of Migratory Birds at these Structures. Proceedings 4th International Partners in Flight Conference 2008, McAllen, Texas, USA. USDA, Forest Service Technical Report. In Press.

264 Klem Jr., D, C.J. Farmer, N. Delacretaz, Y. Gelb, and P. Saenger. 2009. Architectural and Landscape Risk Factors Associated with Bird–Glass Collisions in an Urban Environment. The Wilson Journal of Ornithology 121(1):126–134.

265 Klem Jr., D. 1990. Bird Injuries, Cause of Death, and Recuperation from Collisions with Windows. Journal of Field Ornithology 61:115–119.

266 Klem Jr., D. 2006. Glass: A Deadly Conservation Issue for Birds. Bird Observer 34:73–81.

267 Klem Jr., D. 2009. Preventing Bird–Window Collisions. The Wilson Journal of Ornithology 121(2):314–321.

268 Klem Jr., D. 2009. Avian Mortality at Windows: The Second Largest Human Source of Bird Mortality on Earth. Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics. 244–251

269 Klem Jr., D, D.C. Keck, K.L. Marty, A.J. Miller Ball, E.E. Niciu, and C.T. Platt. 2004. Effects of Window Angling, Feeder Placement, and Scavengers on Avian Mortality at Plate Glass. Wilson Bulletin 116:69–73.

270 Veltri, C.J. and D. Klem Jr. 2005. Comparison of Fatal Bird Injuries from Collisions with Towers and Windows. Journal of Field Ornithology 76:127– 133.

271 Gelb, Y. and N. Delacretaz. 2006. Avian Window Strike Mortality at an Urban Office Building. The Kingbird 2006 September; 56 (3)

can interpret their reflection as a rival and repeatedly attacks a pane attempting to defend its territory from itself.[272] While there is no established thresholds for window size, building structure, time of day, season of year, or set of weather conditions during which birds elude the fatal hazards of glass in urban, suburban, or rural environments, it is recommended that the city consider minimum requirements for increasing avian survivorship.[273]

Recommendations:

- *For all structures with windows within or adjacent to PAWs and WMPs:*
  - *To minimize the hazards that glass poses to birds, create visual markers. This helps indicate to birds that glass windows are solid objects to be avoided.*[274]
    - *The denser the pattern the more effective it becomes in projecting itself as a solid object to birds. Birds begin to perceive buildings as objects to be avoided when the distances between features or patterns on glass is at approximately 11 inches, with the most effective pattern distance at 4 inches or less, and uniformly cover the entire glass surface.*
    - *This can include patterned or etched glass, a patterned film over the glass, decals, multiple paned glass, or exterior grills or window coverings.*
    - *Applications that combine alternating and contrasting UV-reflecting and UV-absorbing patterns to existing clear and reflective windows can be seen by birds as barriers to avoid and to prevent bird strikes while offering little or no visual distraction for humans.*[275]
    - *One-way films that result in a complete translucent or opaque covering when viewed from outside, but only weakly diminish the view from inside, were also confirmed to be effective strike deterrents.*[276]
  - *An alternate, but less effective, strategy is to mute reflections in glass.*[277]
    - *Glass panes can be angled to project reflected images downward. Angles become effective at a minimum angle of 20 degrees, though 40 degrees is more effective.*[278]
    - *If glass is non-reflective, the installation of internal screens may provide enough visual markers for birds to perceive windows as solid objects. They must be installed as close to the glass as possible to be most effective.*
    - *Awnings, overhangs, and external sunshades are all designed to reduce direct sunlight and provide shade, and can also mute image reflections in glass.*

272 Klem Jr., D. 2006. Glass: A Deadly Conservation Issue for Birds. Bird Observer 34:73–81.

273 Klem Jr., D. 1989. Bird-Window Collisions. Wilson Bulletin 101:606–620.

274 City of Toronto. 2007. Bird-Friendly Development Guidelines. City of Toronto Green Development Standard. March 2007. www.toronto.ca/lightsout. www.toronto.ca/environment/greendevelopment.htm.

275 Klem Jr., D. 2009. Preventing Bird–Window Collisions. The Wilson Journal of Ornithology 121(2):314–321.

276 Klem Jr., D. 2009. Preventing Bird–Window Collisions. The Wilson Journal of Ornithology 121(2):314–321.

277 City of Toronto. 2007. Bird-Friendly Development Guidelines. City of Toronto Green Development Standard. March 2007. www.toronto.ca/lightsout. www.toronto.ca/environment/greendevelopment.htm.

278 Klem Jr., D, D.C. Keck, K.L. Marty, A.J. Miller Ball, E.E. Niciu, and C.T. Platt. 2004. Effects of Window Angling, Feeder Placement, and Scavengers on Avian Mortality at Plate Glass. Wilson Bulletin 116:69–73.

- *Any of these glass treatments should be applied to an entire building if possible, but at minimum, window applications should be applied in the first 40 feet above grade, or to the height of the top of the surrounding tree canopy or the anticipated height of the surrounding vegetation at maturity, whichever is most conservative.*[279]
- *If planting of landscapes nearby a building is desirable, situate trees and shrubs immediately adjacent to the exterior glass walls, at a distance of less than three feet from the glass. The close proximity would obscure habitat reflections as well as minimize fatal collisions by reducing birds' flight momentum from the vegetation towards the glass. This would also provide beneficial shading in the summertime.*[280]

5.3.6 Noise

Similar to light pollution, noise can alter wildlife behavior and reduce the function of PAWs and WMPs. Mitigation of noise impacts can be accomplished through use of setback buffers and/or construction of attenuation structures, such as berms or walls. Berms offer noise buffering with less restriction to wildlife movement while walls may be constructed to either deter or allow for wildlife movement, depending on their location. Traffic noise was a commonly identified barrier to movement in the WMPs, and 300 feet is the typical distance needed to attenuate heavy traffic noise to 60 dBA. A 60 dBA threshold for noise disturbance to wildlife is based on laboratory masking studies showing the effects of continuous noise on sound detection in birds.[281]

Recommendations:

- *In areas within PAWs and WMPs, or immediately adjacent (i.e., within a 300-foot buffer), noise should not exceed residential noise standards (as measured at the edge of the PAW or WMF).*
- *For development projects (e.g., construction) or other land uses that may introduce noise that would exceed residential noise standards and could impact or interfere with the function of PAWs and WMPs, attenuation structures (such as berms or temporary sound walls) should be erected, or setback buffers implemented to minimize noise.*

5.3.7 Poison

Poisons, particularly anticoagulant[282] rodenticides, are well known for their unintended impacts on wildlife species that consume poisoned rodents. Impacts can include direct mortality or reduced immune function allowing the spread of other opportunistic diseases, such as mange.[283] First-generation anticoagulants generally require several successive days of feeding to kill rodents while second-generation anticoagulants are more likely to kill after a single night's feeding and remain in tissues longer. Second-generation products are considered to pose greater risks to

279 City of Toronto. 2007. Bird-Friendly Development Guidelines. City of Toronto Green Development Standard. March 2007. www.toronto.ca/lightsout. www.toronto.ca/environment/greendevelopment.htm.

280 New York City Audubon. 2007. Bird-Safe Building Guidelines. Published by: New York City Audubon Society, Inc., May 2007.

281 California Department of Transportation (Caltrans). 2016. Technical Guidance for Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Birds. June.

282 Anticoagulants interfere with blood clotting and cause death from excessive bleeding.

283 Serieys, L.E., A.J. Lea, M. Epeldegui, T.C. Armenta, J. Moriarty, S. VandeWoude, et al. 2018. *Urbanization and Anticoagulant Poisons Promote Immune Dysfunction in Bobcats*. Proc. R. Soc. B 2018 285 20172533; DOI: 10.1098/rspb.2017.2533. Published 17 January 2018.

wildlife that might feed on poisoned rodents and these products are no longer are registered for use in products geared toward consumers and are registered only for the commercial pest control and structural pest control markets. In addition, State Legislation Assembly Bill 1788, which passed in 2020, prohibits the use of any second generation coagulant rodenticide in the State, with a few exceptions. However, first-generation anticoagulants have been implicated in the poisonings of local bobcats and the P-22 mountain lion that occupies Griffith Park.[284]

To determine a recommended buffer for rodenticide use, the average home range diameters of native and non-native rodent species that are likely to occur along the urban-wildland interface were considered, including Norway rat (100 feet), dusky-footed woodrat (200 feet), and California ground squirrel (130-160 feet).[285, 286] Based on these distances, restricting rodenticide use on properties immediately adjacent to or within a 200-foot buffer of PAWs and WMPs that contain natural habitat could significantly reduce poisoning of mammalian predators. In addition to mammalian predators, raptor species that commonly hunt rodents, such as great-horned owls, barn owls, and red-tailed hawks, are at high risk of secondary poisoning and are capable of traveling greater distances to forage. Poisoned raptors that die within PAWs may be scavenged by other wildlife species, thereby introducing poisons into the food chain from a broader area. Although highly variable, red-tailed hawks and great-horned owls are generally known to forage distances of roughly one mile from nest sites. Broader restrictions on anticoagulant rodenticides are recommended to include these areas.

Recommendations:

- *The use of all general rodenticides, pesticides, and poisons with the potential to harm non-target wildlife should be prohibited. If these products must be used, they should be prohibited within 200 feet of PAWs and WMPs.*
- *The use of anticoagulant rodenticides should be prohibited within one mile of PAWs and WMPs and within all open space areas and natural habitat areas. Recommended alternative rodent control options include bird-safe traps for general rodent control and smoke/carbon monoxide treatment for ground squirrels.*
- *These measures should be implemented by residents, pest control providers operating within the City, City maintenance staff, and Homeowners Associations (HOAs). This measure should be included as part of Conditions, Covenants, and Restrictions prior to recordation of final tract maps as a condition of project approval.*
- *Adoption of a future City Resolution as follows is encouraged: The City Council urges businesses in Los Angeles to no longer use or sell anticoagulant rodenticides, urges all property owners to cease purchasing or using anticoagulant rodenticides on their properties, and commits the City of Los Angeles to not use anticoagulant rodenticides as part of its maintenance program for City-owned parks and facilities. Alternative strategies for*

284 NPS. 2014. *Griffith Park Mountain Lion Exposed to Poison, Suffering from Mange.* News Release. April 17.

285 Cranford 1977 and Lynch et al. 1994 as cited in Innes, R.J., D.H. Van Vuren, D.A. Kelt, M.L. Johnson, J.A. Wilson, and P.A. Stine. 2007. *Habitat Associations of Dusky-Footed Woodrats (Neotoma fuscipes) in Mixed-Conifer Forest of the Northern Sierra Nevada.* Journal of Mammalogy, Volume 88, Issue 6, 1 December 2007, Pages 1523–1531, https://doi.org/10.1644/07-MAMM-A-002R.1.

286 Timossi, I.C., and R.H. Barrett. 1995. *Habitat Suitability Models for Use with ARC/INFO: California ground squirrel.* California Department of Fish and Game, CWHR Program, Sacramento, CA. CWHR Tech. Report No. 3. 16 pp.

addressing nuisance rodents should use non-toxic, natural method, such as installing raptor nesting platforms and owl boxes, planting mint or bulbs of plants that squirrels avoid (daffodils, hyacinths, snowdrops, allium), and spraying them with motion-activated sprinklers, and removing food sources (fallen fruits, nuts, and seeds).

5.3.8 Traffic

Road crossings within WMPs are a particular threat to wildlife. Dangerous road crossings can function as "population sinks" resulting in lower wildlife densities near roadways. While traffic impacts that occur within transportation easements are largely outside of City jurisdiction, City policy can still mitigate some of these impacts. Potential measures within the scope of policy development include implementing local speed limits within WMPs, limiting development density within areas primarily accessed by roads crossing through WMPs, and requiring installation of wildlife culverts or overpass crossings where a single large development or subdivision of lots could contribute to traffic impacts on wildlife.

Recommendations:

- *New developments or zoning changes that could result in a significant increase in traffic along roadways that intersect WMPs and lack wildlife crossings (i.e. bridges or adequate culvert tunnels) should mitigate for these impacts by funding the installation of wildlife crossing structures or other methods.*
- *All major riparian crossings within WMPs should use bridges instead of culverts where feasible, and use wildlife-deterrent fencing to direct wildlife movement toward the wildlife underpass.[287,288] The design should be determined based on the site of the riparian crossing and its importance as a wildlife corridor.*
- *Where driveways, walkways, or other structures associated with development bisect WMPs, the need for underpasses or culverts, or multiple crossing structures to promote passage for all species likely to use a given area should be considered, and should be designed to accommodate species that use the WMP. [289] WMPs crossings used by mule deer should include bridges or culverts that are at least 30 feet wide by 15 feet high with a maximum 2:1 length-to-width ratio, preferably with a natural earthen bottom, and if feasible the ceiling constructed using skylights to provide adequate visibility for wildlife.[290,291] For WMPs used by coyotes, bobcats, badgers, skunks, foxes and long-tailed weasels, box or pipe culverts may be acceptable. Minimum culvert diameter should consider the size of the species using the structure and their tolerance for confinement.*

287 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January

288 Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection*. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

289 Sonoma Land Trust. 2014. *Sonoma Valley Wildlife Corridor Project: Management and Monitoring Strategy*. Santa Rosa, CA.

290 City of San Diego. 1997. *Multiple Species Conservation Program. City of San Diego MSCP Subarea Plan*. March 1997.

291 County of San Diego. 2010. *Biological Mitigation Ordinance*. Amended April 2.

5.3.9 Education

Another important part of conserving PAWs and WMPs is educating the communities and the public about the natural areas and wildlife that inhabit their communities.

Recommendations:

- *Landowners living within PAWs or WMPs or within 500-feet should be encouraged to be proud stewards of their environment and learn about living with wildlife and the importance of maintaining connectivity.*
- *Residents should keep their pets indoors or in enclosure (especially at night), understand the risk of wildlife preying on pets, and respect wildlife that may live within their area. Wild mammals should not be fed or provided water, so as not to attract them into urban areas or allow them to lose their fear of people, and trash and recycling receptacles should be wildlife-proof and securely stored.*[292]
- *Habitat conservation should also be encouraged with recreation by reminding local hikers to stay on trails, travel in groups in areas frequented by bears or mountain lions, keep dogs on leashes, and discourage collecting or harassing wildlife.*[293]

6. Conclusion and Recommendations

Future development will continue to threaten the City's biodiversity by further reducing and fragmenting the remaining natural resource areas and increasing pressure on wildlife to survive on dwindling habitat and resources. To maintain the biodiversity and ecological health within the City, prioritization should be given to conserving and enhancing the habitat areas necessary to sustain wildlife through the designation of PAWs, and to conserve and enhance connectivity for wildlife movement within the City through the designation of WMPs. The City should use the recommendations outlined in Section 5.3 above as ecological considerations to inform policies and regulations that can be used as the basis for development standards to avoid and minimize impacts to PAWs and WMPs.

Initially, regulations may be implemented in a Pilot Study Area. Once regulations are implemented in the Pilot Study Area, these regulations can be expanded for PAWs and WMPs throughout the City.

Planning should continue to coordination between other City departments (e.g. Department of Recreation and Parks,[294] LASAN, Department of Animal Services, Bureau of Engineering, Los Angeles Fire Department, Bureau of Street Services – Urban Forestry Division, Department of Public Works, Department of Building and Safety) to communicate wildlife conservation and connectivity objectives and determine how departments can better collaborate to promote conservation as well as determine where conflicting objectives may occur and cooperate to find solutions. Planning should also with collaborate outside entities (e.g. County of Los Angeles, CalTrans, NPS, UC Davis Road Ecology Center, NHMLAC) to coordinate on how to incorporate

292 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January.
293 Beier, P., D. Majka, S. Newell, and E. Garding. 2008. *Best Management Practices for Wildlife Corridors*. January.
294 Several areas within proposed PAWs are managed by Department of Recreation and Parks.

wildlife and connectivity considerations into future projects and to continue to improve data collection, such as new observations of important biological resources, new evidence of connectivity not previously known, or restoration of an area that may better inform the importance of a PAW or WMP, or even provide data to evaluate if a PAW or WMP should be revised or a new PAW or WMP not proposed in this report should be considered.

Appendix A

Representative Vegetation Associations

ESA

APPENDIX A
Representative Vegetation Communities

Coastal Sage Scrub

Subtypes

***Acmispon glaber* Alliance [Deerweed Scrub; CDFW Code 52.240.00; NPS SMM Code 3270] Sensitivity Rank G5S5**

This shrubland association occurs on gentle to steep slopes of variable aspect at low elevations. This community is characterized by the dominance of common deerweed (*Acmispon glaber*) in the shrub layer and a variety of mostly non-native herbs in the herbaceous layer. The emergent tree layer is generally absent.

***Artemisia californica* Alliance [California Sagebrush Scrub; CDFW Code 32.010.00; NPS SMM Code 3210] Sensitivity Rank G4S4**

This vegetation community has California sagebrush (*Artemisia californica*) as the dominant species. This is often a relatively closed scrub community without a well-developed understory. Herbaceous components include rancher's fireweed (*Amsinckia menziesii*), scarlet pimpernel (*Lysimachia arvensis*), coastal morning glory (*Calystegia macrostegia* ssp. *cyclostegia*), California sun cup (*Eulobus californicus*), white pincushion (*Chaenactis artemisiifolia*), blue dicks (*Dichelostemma capitatum*), whispering bells (*Emmenanthe penduliflora*), spotted hideseed (*Eucrypta chrysanthemifolia*), and manroot (*Marah macrocarpus*).

Associations found within the City:

Artemisia californica-Eriogonum fasciculatum Association [California Sagebrush-California Buckwheat Scrub; CDFW Code 32.110.00; NPS SMM Code 3371] Sensitivity Rank G4S4
Artemisia californica-Salvia mellifera Association [California Sagebrush-Black Sage Scrub; CDFW Code 32.120.00; NPS SMM Code 3421] Sensitivity Rank G4S4

***Atriplex lentiformes* Alliance [Quailbush Scrub; CDFW Code 36.370.00; NPS SMM Code 2330] Sensitivity Rank G4S4**

Quailbush scrub habitat is defined by the presence of halophytic shrubs, primarily quailbush (*Atriplex lentiformis*), with non-native herbs and forbs in the herbaceous layer. This habitat occurs on gentle to steep southeast- and southwest-facing slopes at lower elevations within coastal areas. Native monocultures can form within these areas.

Baccharis pilularis Alliance [Coyote Brush Scrub; CDFW Code 32.060.00; NPS SMM Code 2310] Sensitivity Rank G5S5

Coyote brush scrub consists of one primary species, coyote brush (*Baccharis pilularis*) often with shrubs of coastal sage, such as California sagebrush and purple sage (*Salvia leucophylla*), as subordinates. Sometimes coyote brush is codominant, usually in disturbed areas such as old fields, road banks, and stream and ravine borders. This community is often found on moist slopes, disturbed areas, and terraces with intermittent water availability.

Associations found within the City:

Baccharis pilularis/Annual Grass-Herb Association [Coyote Brush Scrub/Annual Grass-Herb; CDFW Code 32.060.20; NPS SMM Code 2311] Sensitivity Rank G5S5

Diplacus auranticus Alliance [Bush Monkeyflower Scrub; CDFW Code 32.082.00; NPS SMM Code 2170] Sensitivity Rank G3S3

This community has a shrub canopy that is dominated by the low facultatively drought deciduous bush monkey flower (*Diplacus auranticus*).

Encelia californica Alliance [California Bush Sunflower Scrub; CDFW Code 32.050.02; NPS SMM Code 3222] Sensitivity Rank G4S4

This vegetation community has California bush sunflower (*Encelia californica*) as the dominant species, with scattered California buckwheat (*Eriogonum fasciculatum*), sawtooth goldenbush (*Hazardia squarrosa* var. *grindelioides*), slender sunflower (*Helianthus gracilentus*), California wishbone bush (*Mirabilis laevis* var. *crassifolia*), branching phacelia *(Phacelia ramosissima*), black sage (*Salvia mellifera*), and blue chaparral nightshade (*Solanum xanti*). A dense understory of native species is also present in these areas, including the following annual and geophytic species: sticky false-gilia (*Allophyllum glutinosum*), rancher's fireweed, coastal morning glory, California sun cup, miniature sun cup (*Camissoniopsis micrantha*), white pincushion, western thistle (*Cirsium occidentale*), common cryptantha (*Cryptantha intermedia*), chaparral dodder (*Cuscuta californica*, parasitic mostly on California buckwheat), blue dicks, whispering bells, golden yarrow (*Eriophyllum confertiflorum*), Spanish clover (*Acmispon americanus*), common deerweed, stinging lupine (*Lupinus hirsutissimus*), truncate-leaf lupine (*Lupinus truncatus*), coast range melic (*Melica imperfecta*), purple needlegrass (*Stipa pulchra*), caterpillar phacelia (*Phacelia cicutaria*), silver puffs (*Uropappus lindleyi*), and small fescue (*Festuca microstachys*).

Associations found within the City:

Encelia californica-Artemisia californica Association [California Bush Sunflower-California Sage Scrub; CDFW Code 32.050.01; NPS SMM Code 3227] Sensitivity Rank G4S4

Encelia californica-Salvia mellifera Association [California Bush Sunflower-Black Sage Scrub]

Eriogonum fasciculatum Alliance [California buckwheat Scrub; CDFW Code 32.040.00; NPS SMM Code 3240] Sensitivity Rank G5S5

California buckwheat is dominant in the California buckwheat series. This is an open scrub community with a diverse understory, including sticky false-gilia, annual bursage (*Ambrosia acanthicarpa*), rancher's fireweed, California sun cup, miniature sun cup, California aster (*Corethrogyne filaginifolia*), common cryptantha, chaparral dodder, slender tarweed (*Deinandra fasciculata*), blue dicks, sapphire woollystar (*Eriastrum sapphirinum*), golden yarrow, telegraph weed (*Heterotheca grandiflora*), California cottonrose (*Logfia filaginoides*), Spanish clover, common deerweed, caterpillar phacelia, chia (*Salvia columbariae*), silver puffs, small fescue, and mouse-tail fescue (*Festuca myuros*).

Associations found within the City:

Eriogonum fasciculatum- Salvia mellifera-Malosma laurina Association [California Buckwheat-Black Sage-Laurel Sumac Scrub; CDFW Code 32.040.07; NPS SMM Code 3248] Sensitivity Rank G4S4

Salvia leucophylla Alliance [Purple Sage Scrub; CDFW Code 32.090.00; NPS SMM Code 3310] Sensitivity Rank G4S4

This shrub community is dominated by purple sage but may be accompanied by lower cover of several other species including ashy buckwheat *(Eriogonum cinereum)*, California sagebrush, chaparral bushmallow (*Malacothamnus fasciculatus*), or understory species of native and non-native grasses and herbs.

Associations found within the City:

Salvia leucophylla-Malsoma laurina Association [Purple Sage-Laurel Sumac Scrub; CDFW Code 32.090.02] Sensitivity Rank G4S4

Salvia mellifera Alliance [Black Sage Scrub; CDFW 32.020.00; NPS SMM Code 3324] Sensitivity Rank G4S4

This shrubland association occurs on moderate to very steep southeast- and southwest-facing slopes at low elevations, and is characterized by a strong dominance of black sage in the shrub layer. The herbaceous layer and emergent tree layer are generally insignificant.

Associations found within the City:

Salvia mellifera-Malosma laurina Association [Black Sage-Laurel Sumac Scrub; NPS SMM Code 8324] Sensitivity Rank G4S4

Chaparral

Subtypes

Adenostoma fasciculatum Alliance [Chamise Chaparral; CDFW Code 37.101.00; NPS SMM Code 2010] Sensitivity Rank G5S5

Chamise chaparral vegetation community is often the most common vegetation community in the mountains surrounding the San Fernando Valley, where native plants have survived past fires. This community is dominated by chamise (*Adenostoma fasciculatum*) and laurel sumac (*Malosma laurina*). The herbaceous layer contains a suite of species similar to that given above for the California bush sunflower series. In burned areas, this vegetation supports a high density of short-pod mustard (*Hirschfeldia incana*) which becomes very thick in late spring, giving the impression of a near lack of native annual species. In unburned areas, this community is more diverse, supporting dense formations of chaparral bushmallow in places and scattered individuals of California bush sunflower, thick-leaf yerba santa (*Eriodictyon crassifolium*), California buckwheat, laurel sumac, bush monkey flower, and holly-leaf redberry (*Rhamnus ilicifolia*). Annual and herbaceous perennial species include slender wild oat (*Avena barbata*), California bricklebush (*Brickellia californica*), coastal morning glory, California sun cup, amole (*Chlorogalum pomeridianum*), hedgehog cryptantha (*Cryptantha echinella*), chaparral dodder, slender tarweed (Deinandra fasciculata), blue dicks, whispering bells, red- stem filaree (*Erodium cicutarium*), slender sunflower, telegraph weed (*Heterotheca grandiflora*), California cottonrose, Spanish clover, common deerweed, California wishbone bush, and Danny's skullcap (*Scutellaria tuberosa*).

Associations found within the City:

Adenostoma fasciculatum-Ceanothus megacarpus Association [Chamise-Bigpod Ceanothus Chaparral; CDFW Code 37.101.20; NPS SMM Code 2019] Sensitivity Rank G3S3

Adenostoma fasciculatum-Eriogonum fasciculatum Association [Chamise-California Buckwheat Chaparral; CDFW Code 37.101.14; NPS SMM Code 2017] Sensitivity Rank G4S4
Adenostoma fasciculatum-Salvia mellifera Association [Chamise-Black Sage Chaparral; CDFW Code 37.102.00; NPS SMM Code 2036] Sensitivity Rank G4S4

Ceanothus megacarpus Alliance [Bigpod Ceanothus Chaparral; CDFW Code 37.201.00; NPS SMM Code 2081] Sensitivity Rank G4S4

This shrubland association occurs on moderate to steep slopes of variable aspect at low elevations. It is characterized by a strong dominance of bigpod ceanothus (*Ceanothus megacarpus*) in the shrub layer and an uncharacteristic and insignificant herbaceous layer. The emergent tree layer may include coast live oak (*Quercus agrifolia*), California bay (*Umbellularia californica*), and Southern California black walnut (*Juglans californica*).

Associations found within the City:

Ceanothus megacarpus-Adenostoma fasciculatum Association [Bigpod Ceanothus-Chamise Chaparral; CDFW Code 37.201.02; NPS SMM Code 2083] Sensitivity Rank G4S4

Ceanothus megacarpus-Malosma laurina Association [Bigpod Ceanothus-Laurel Sumac Chaparral; CDFW Code 37.201.06; NPS SMM Code 2087] Sensitivity Rank G4S4

Ceanothus megacarpus-Salvia mellifera Association [Bigpod Ceanothus-Black Sage Chaparral; CDFW Code 37.201.08; NPS SMM Code 7085] Sensitivity Rank G3S3

***Ceanothus spinosus* Alliance [Greenbark Ceanothus Chaparral; CDFW Code 37.214.01; NPS SMM Code 2092] Sensitivity Rank G4S4**

This shrubland occurs on moderately steep to very steep northeast- and northwest-facing slopes at low elevations. It is characterized by a strong dominance of greenbark ceanothus (*Ceanothus spinosus*) in the shrub layer and may include a wide variety of mesophytic species in the herbaceous layer, none apparently in high constancy. The emergent tree layer may include coast live oak and Southern California black walnut.

Associations found within the City:

Ceanothus spinosus-Ceanothus megacarpus Association [Greenbark Ceanothus-Bigpod Ceanothus Chaparral; CDFW Code 37.214.02; NPS SMM Code 2091] Sensitivity Rank G4S4

***Cercocarpus betuloides* Alliance [Birchleaf Mountain Mahogany Chaparral; CDFW Code 76.100.00; NPS SMM Code 2114] Sensitivity Rank G4S4**

This shrubland association occurs on moderately steep to steep northeast- and northwest-facing slopes at low elevations. It is characterized by a dominance of birchleaf mountain mahogany (*Cercocarpus betuloides*) in the shrub layer. The herbaceous layer has no characteristic species. The emergent tree layer may include infrequent coast live oak, Southern California black walnut, California sycamore (*Platanus racemosa*), and California bay.

Associations found within the City:

Cercocarpus betuloides-Adenostoma fasciculatum Association [Birchleaf Mountain Mahogany-Chamise Chaparral; CDFW Code 76.100.06; NPS SMM Code 2115] Sensitivity Rank G4S4

***Heteromeles arbutifolia* Alliance [Toyon Chaparral; CDFW Code 37.911.01; NPS SMM Code 2130]**

In this community, toyon occurs as a codominant to dominant shrub in an open to continuous shrub overstory.

Associations found within the City:

Heteromeles arbutifolia-Malosma laurina Association [Toyon-Laurel Sumac Chaparral; CDFW Code 37.911.03; NPS SMM Code 2138] Sensitivity Rank G5S4

Malacothamnus fasciculatus Alliance [Chaparral Bushmallow Scrub; CDFW Code 45.450.00; NPS SMM Code 3280] Sensitivity Rank G4S4

Chaparral bushmallow is the dominant or codominant shrub species in the canopy, and may be associated with a variety of chaparral or coastal scrub species, which may be subdominant to codominant. Stands of this community typically arise following fire events and do not persist for more than a decade or so.

Associations found within the City:

Malacothamnus fasciculatus-Salvia leucophylla Association [Chaparral Bushmallow-Purple Sage Scrub; CDFW Code 45.450.05; NPS SMM Code 3281] Sensitivity Rank G3S3

Malosma laurina Alliance [Laurel Sumac Scrub; CDFW Code 45.455.00; NPS SMM Code 7142] Sensitivity Rank G4S4

This shrubland association occurs on gentle to very steep southeast- to northwest-facing slopes at low elevations. This community is characterized by a dominance of laurel sumac in the shrub layer in an open to intermittent shrub overstory often with nonsclerophyllous shrubs such as California buckwheat, black sage, or California sagebrush, and a relatively nondescript herbaceous layer. The emergent tree layer includes coast live oak in about 20 percent of the stands.

Associations found within the City:

Malosma laurina-Artemisia californica Association [Laurel Sumac-California Sagebrush Scrub; NPS SMM Code 7148] Sensitivity Rank G3S3

Malosma laurina-Rhus ovata-Ceanothus megacarpus Association [Laurel Sumac-Sugarbush-Bigpod Ceanothus Chaparral; NPS SMM Code 21415] Sensitivity Rank G3S3

Malosma laurina-Eriogonum fasciculatum Association [Laurel Sumac-California Buckwheat Scrub; NPS SMM Code 21423] Sensitivity Rank G4S4

Malosma laurina-Salvia mellifera Association [Laurel Sumac-Black Sage Scrub; NPS SMM Code 2148] Sensitivity Rank G4S4?

Quercus berberidifolia Alliance [Scrub Oak Chaparral; CDFW Code 37.407.02; NPS SMM Code 2161] Sensitivity Rank G4S4

This shrubland association occurs on gentle to very steep northwest- and northeast-facing slopes at low to middle elevations. This community is characterized by strong dominance of scrub oak (*Quercus berberidifolia*) in the shrub layer. The herbaceous layer is sparse and has no characteristic species, and the emergent tree layer includes coast live oak in some stands.

Associations found within the City:

Quercus berberidifolia-Artemisia californica Association [Scrub Oak-California Sagebrush Chaparral]

Quercus berberidifolia-Cercocarpus betuloides Association [Scrub Oak-Birchleaf Mountain Mahogany Chaparral; CDFW Code 37.407.06; NPS SMM Code 2591] Sensitivity Rank G3S3

Woodland Habitats

Subtypes

Quercus agrifolia Alliance [Coast Live Oak Woodland; CDFW Code 71.060.00: NPS SMM Code 1110] Sensitivity Rank G5S4

Areas where coast live oak is the dominant tree in the canopy comprise the coast live oak woodland alliance. California sycamore and/or California bay may be subdominant to codominant within this community. Other associated species within understory may include toyon, blue elderberry (*Sambucus nigra* ssp. *caerulea*), laurel sumac, chamise, California sagebrush, black sage, hairy ceanothus (*Ceanothus oliganthus*), hairy brackenfern (*Pteridium aquilinum* var. *pubescens*), California blackberry (*Rubus ursinus*), creeping snowberry (*Symphoricarpos mollis*), heart- leaf bush penstemmon (*Keckiella cordifolia*), poison-oak (*Toxicodendron diversilobum*), holly-leaf redberry, branching phacelia, goose-grass (*Galium aparine*), spotted hideseed, coastal morning glory, manroot, and non-native horehound (*Marrubium vulgare*), tocalote (*Centaurea melitensis*), and prickly sow-thistle (*Sonchus asper*).

Associations found within the City:

Quercus agrifolia/Ceanothus spinosus Association [Coast Live Oak/Greenbark Ceanothus Woodland; CDFW Code 71.060.56; NPS SMM Code 1118] Sensitivity Rank G3S3

Juglans californica Alliance/Groves [California Walnut Woodland; CDFW Code 72.100.00: NPS SMM Code 1310] Sensitivity Rank G3S3

California walnut woodland is generally found on relatively moist, fine-textured soils of mountain slopes and canyon bottoms. California walnut woodland is generally characterized by open to intermittent tree canopies of Southern California black walnut habitat and may co-occur with coast live oak. Shrubs of either chaparral or coastal sage scrub as well as annual or perennial grasses may occur in the understory.

Associations found within the City:

Juglans californica/Artemisia californica/Elymus condensatus Association [California Walnut/California Sagebrush/Giant Wildrye Woodland; CDFW Code 72.100.04; NPS SMM Code 1317] Sensitivity Rank G3S3

Riparian Habitats

Subtypes

***Alnus rhombifolia* Alliance/Groves [White Alder Woodland/Forest; CDFW Code 61.420.00; NPS SMM Code 1440] Sensitivity Rank G4S4**

This community is comprised of white alder (*Alnus rhombifolia*) as the dominant tree within the canopy, and it commonly shares dominance with other trees. It is usually restricted to permanently flowing streams close to the coast.

Associations found within the City:

Alnus rhombifolia-Platanus racemosa Association [White Alder-California Sycamore Woodland/Forest; CDFW Code 61.420.11; NPS SMM Code 1441] Sensitivity Rank G3S3

***Baccharis salicifolia* Alliance/Thickets [Mulefat Scrub/Thickets; CDFW Code 63.510.00; NPS SMM Code 2210] Sensitivity Rank G4S4**

Mulefat scrub has mulefat (*Baccharis salicifolia*) as the most common component of riparian scrub assemblages in the region. This woody, evergreen plant is associated with seasonally wet soils and high energy or disturbed stream systems. This plant assemblage is characterized by having a continuous canopy comprised of shrubs less than 4 meters in height associated with sparse ground cover.

Associations found within the City:

Baccharis salicifolia Association [Mulefat Thickets; CDFW Code 63.510.01; NPS SMM Code 2212] Sensitivity Rank G5S5

***Lepidospartum squamatum* Alliance [Scale Broom Scrub; CDFW Code 32.070.00; NPS SMM Code 2220] Sensitivity Rank G3S3**

This community is primarily found in riparian or wetland habitats where scale broom (*Lepidospartum squamatum*) is usually dominant but may be codominant or subdominant with other shrubs. These are generally found in rocky, occasionally flooded washes or floodplains.

***Platanus racemosa* Alliance [California Sycamore Woodland/Forest; CDFW Code 61.310.00; NPS SMM Code 1450] Sensitivity Rank G3S3**

A common riparian woodland in the City is California sycamore woodland. The California sycamore woodland natural community is the dominant community in many drainages and tributaries. Remnants of California sycamore woodlands are located in side canyons off La Tuna Canyon in the Verdugo Mountains and are composed of a dominant overstory of California sycamore, coast live oak, and California bay. Other associated trees that may occur within this community are Southern California black walnut, red willow (*Salix laevigata*), white alder, foothill ash (*Fraxinus dipetala*), and Fremont cottonwood (*Populus fremontii*). Shrubs commonly occurring in these communities are toyon, California buckwheat, mulefat, blue elderberry, poison

oak, creeping snowberry, California blackberry, golden currant (*Ribes aureum* var. *gracillimum*), arroyo willow (*Salix lasiolepis*) and sandbar willow (*Salix exigua*). Common perennial herbs include mugwort (*Artemisia douglasiana*), *A. dracunculus* (tarragon), *Aspidotis californica* (California lacefern), *Dryopteris arguta* (coastal woodfern), *Dudleya lanceolata* (lanceleaf liveforever), *Elymus condensatus* (giant wildrye). *Juncus* spp. (rushes), *Pellaea andromedifolia* (coffee fern), *Pentagramma triangularis* (goldback fern), *Polypodium californicum* (California polypody), and *Solanum douglasii* (greenspot nightshade). Additionally, *Lilium humboldtii* subsp. *ocellatum* (ocellated lily) is common in north-facing canyons.

Associations found within the City:

Platanus racemosa South Coast Intermittent Stream Association [California Sycamore South Coast Intermittent Stream Woodland/Forest; NPS SMM Code 6451] Sensitivity Rank G4S3

Platanus racemosa/Annual Grass-Herb Association [California Sycamore Annual Grass-Herb Woodland/Forest; NPS SMM Code 1456] Sensitivity Rank G3S3

Platanus racemosa-Quercus agrifolia South Coast Association [California Sycamore-Coast Live Oak South Coast Woodland/Forest; CDFW Code 61.310.01; NPS SMM Code 1452] Sensitivity Rank G3S3

Platanus racemosa-Quercus agrifolia/Baccharis salicifolia/Artemisia douglasiana South Coast Association [California Sycamore-Coast Live Oak/Mulefat South Coast Woodland/Forest; CDFW Code 61.310.04; NPS SMM Code 1458] Sensitivity Rank G3S3

Platanus racemosa-Quercus agrifolia-Salix lasiolepis Association [California Sycamore-Coast Live Oak-Arroyo Willow Woodland/Forest; CDFW Code 61.310.03; NPS SMM Code 6452] Sensitivity Rank G3S3

Quercus agrifolia Alliance [Coast Live Oak Woodland; CDFW Code 71.060.00; NPS SMM Code 1110] Sensitivity Rank G5S4

Coast live oak occurs as the dominant tree in the canopy, while California sycamore and/or California bay may be subdominant to codominant. This community would include similar species as described above for *Quercus agrifolia* Alliance Woodland, but may have more riparian-associated species that are typically associated with streams or other waterbodies.

Associations found within the City:

Quercus agrifolia-Salix lasiolepis Association [Coast Live Oak-Arroyo Willow Woodland/Forest; CDFW Code 71.060.47; NPS SMM Code 6114] Sensitivity Rank G3S3

Salix exigua Shrubland Alliance [Sandbar Willow Shrubland/Thickets; CDFW Code 61.209.00; NPS SMM Code 3110] Sensitivity Rank G5S4

Sandbar willow dominates in the shrub layer, and is generally uncommon in small shrubby stands. This shrubland alliance usually occurs on flat or gentle sloping surfaces with little or no exposure at very low elevations. Other willow species, such as arroyo willow, may be present at

low cover. The herbaceous layer is diverse and includes cattails (*Typha* spp.), giant reed (*Arundo donax*), white sweet-clover (*Melilotus albus*), and watercress (*Rorippa nasturtium-aquaticum*) at low cover.

Salix laevigata Alliance [Red Willow Woodland/Forest; CDFW Code 61.205.01; NPS SMM Code 1420] Sensitivity Rank G4S3

Red willow is the sole dominant within this riparian woodland community. An emergent and sparse shrub layer may also be present.

Associations found within the City:

Salix laevigata-Salix lasiolepis Association [Red Willow-Arroyo Willow Woodland/Forest; CDFW Code 61.205.02; NPS SMM Code 1410] Sensitivity Rank G4S3?
Salix laevigata-Salix lasiolepis/Artemisia douglasiana-Rubus ursinus/Annual Grass-Herb Association [Red Willow-Arroyo Willow/Douglas Mugwort-California Blackberry/Annual Grass-Herb; NPS SMM Code 1413] Sensitivity Rank G4S4?

Salix laevigata-Salix lasiolepis/Baccharis salicifolia Association [Red Willow-Arroyo Willow/Mulefat Woodland/Forest; NPS SMM Code 1412] Sensitivity Rank G3S3

Salix lasiolepis Alliance [Arroyo Willow Woodland/Forest/Thickets; CDFW Code 61.201.00; NPS SMM Code 1430] Sensitivity Rank G4S4

Southern willow scrub has the dominant species of red willow, arroyo willow, and sandbar willow. Other species recorded within this community include mulefat and Fremont cottonwood. Arroyo willow thickets are becoming increasingly uncommon on a regional basis and are in decline due to historic agricultural conversions, urban development pressures, and arrested successional stages of vegetative development in managed riverine systems.

Associations found within the City:

Salix lasiolepis/Baccharis salicifolia Association [Arroyo Willow/Mulefat Woodland/Forest; CDFW Code 61.201.06; NPS SMM Code 1432] Sensitivity Rank G4S4

Salix lasiolepis/Malosma laurina Association [Arroyo Willow/Laurel Sumac Woodland/Forest; CDFW Code 61.201.07; NPS SMM Code 1433] Sensitivity Rank G3S3?

Schoenoplectus acutus-Schoenoplectus californicus Alliance [California Bulrush Herbaceous; CDFW Code 52.114.01; NPS SMM Code 4410] Sensitivity Rank G5S5

Common bulrush (*Schoenoplectus acutus*) and/or California bulrush (*Schoenoplectus californicus*) are characteristically dominant in the herbaceous layer. Stands of this herbaceous alliance occur on flat to gentle slopes at low elevations. Arroyo willow is often found in the shrub layer at low cover.

***Typha* spp. Alliance [California Bay Woodland/Forest; CDFW Code 74.100.00; NPS SMM Code 4420] Sensitivity Rank G4S3**

Cattails are dominant within this community, usually in standing fresh or brackish water. Bulrush (*Schoenoplectus* spp.) are an associated plant species found within this vegetation community, and arroyo willow can also be found in the shrub layer at low cover.

***Umbellularia californica* Alliance [California Bay Woodland/Forest; CDFW Code 74.100.00; NPS SMM Code 1010] Sensitivity Rank G4S3**

California bay occurs as trees or tall shrubs that are usually dominant or codominant with coast live oak, California walnut, California sycamore, white alder, or taller mesic chaparral shrubs, such as greenbark ceanothus or hairy leaf ceanothus.

Associations found within the City:
Umbellularia californica-Alnus rhombifolia Association [California Bay-White Alder Woodland/Forest; CDFW Code 74.100.16; NPS SMM Code 1013] Sensitivity Rank G3S3
Umbellularia californica-Platanus racemosa Association [California Bay-California Sycamore Woodland/Forest; CDFW Code 74.100.13; NPS SMM Code 1014] Sensitivity Rank G3S3

Herbaceous and Grassland Habitats

Subtypes

***Sarcocornia pacifica* Alliance [Pickleweed Mats; CDFW Code 52.215.00; NPS SMM Code 1010] Sensitivity Rank G4S3**

Coastal salt marsh habitat, which includes low salt marsh areas that receive tidal flows, are dominated by vegetation that can tolerate relatively greater frequency and duration of inundation, such as Pacific pickleweed (*Salicornia pacifica*) and other co-dominants such as fleshy jaumea (*Jaumea carnosa*), dodder (*Cuscuta* spp.), and shore grass (*Distichlis littoralis*). Associated species may include Parish's glasswort (*Arthrocnemum subterminale*), alkali heath (*Frankenia salina*), and alkali plant (*Cressa truxillensis*).

Sarcocornia pacifica-Jumea carnosa-Distichlis spicata Association [Pacific Pickleweed-Fleshy Jaumea-Saltgrass Mat; CDFW Code 52.215.11; NPS SMM Code 4527] Sensitivity Rank G3S3

***Stipa* spp. – *Melica* spp. Alliance [Needlegrass-Melic Grass Grassland; CDFW Code 41.151.00; NPS SMM Code 4020] Sensitivity Rank G4S4**

Native grass component is usually mainly purple needlegrass (*Stipa pulchra*), foothill needlegrass (*Stipa lepida*), and/or nodding needlegrass (*Stipa cernua*), and the annual component is a mixture of grasses and forbs. This community also occurs intermixed in both chaparral and upland scrub communities, but not in substantial densities or specific geographic locations.

Associated species may include redskin onion (*Allium haematochiton*), common goldenstar (*Bloomeria crocea*), slender mariposa lily (*Calochortus clavatus* var. *gracilis*), butterfly mariposa

lily (*Calochortus venustus*), wavyleaf soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), cobwebby thistle (*Cirsium occidentale* var. *californicum*), Parry's larkspur (*Delphinium parryi*), lanceleaf liveforever (*Dudleya lanceolata*), California fuschia (*Epilohium canum* ssp. *canum*), chocolate lily (*Fritillaria biflora*), blue-eyed-grass (*Sisyrinchium bellum*), mock parsley (*Apiastrum angustifolium*), clustered tarweed (*Deinandra fasciculata*), and California chicory (*Rafinesquia californica*).

Elymus condensatus Alliance [Giant Wild Rye Grassland; CDFW Code 41.265.00; NPS SMM Code 4040] Sensitivity Rank G3S3

Stands dominated by coarse, moderately tall giant wild rye (*Elymus condensatus*) are usually on slopes associated with scrub or woodland. Giant wild rye is associated with seeps, which are highly localized surface areas where subsurface water saturates the ground seasonally and sometimes exudes minor surface flows or springs, usually very short in geographic extent and duration.

California Annual Grassland Alliance [California Annual Grassland/Herbaceous; CDFW Code 42.027.00; NPS SMM Code 4340/5000]

Grasslands or forb lands are strongly dominated by non-native annual grasses and forbs. Common weedy species include bromes (*Bromus* spp.), wild oat (*Avena* spp.), mustard (*Brassica* spp.), and filaree (*Erodium* spp.). There may be native species, but these may be relatively low cover. Non-native species found associated with this community commonly include ripgut brome (*Bromus diandrus*), rescuegrass (*Bromus catharticus*), slender oat (*Avena barbata*), wild oat (*Avena fatua*), black mustard (*Brassica nigra*), short-pod mustard (*Hirschfeldia incana*), red-stem filaree (*Erodium cicutarium*), white-stemmed filaree (*Erodium moschatum*), Crane's-bill geranium (*Geranium molle*), horehound, bull mallow (*Malva nicaeensis*), scarlet pimpernel (*Anagallis arvensis*), caltrop (*Tribulus terrestris*), Italian ryegrass (*Festuca perennis*), barley (*Hordeum murinum*), Mediterranean schismus (*Schismus barbatus*), Italian thistle (*Carduus pycnocephalus*), Russian-thistle (*Salsola tragus*), tocalote, asthmaweed (*Conyza bonariensis*), bristly ox-tongue (*Helminthotheca echioides*), prickly lettuce (*Lactuca serriola*), burclover (*Medicago polymorpha*), white sweet-clover, veldt grass (*Ehrharta erecta*), hare barley (*Hordeum murinum* ssp. *leporinum*), and smilo grass (*Piptatherum miliaceum*). Native herbaceous species are commonly associated with non-native grassland may include fiddleneck (*Amsinckia* spp.), blue-eyed grass (*Sisyrinchium bellum*), cryptantha (*Cryptantha microstachys*), telegraph weed (*Heterotheca grandiflora*), ragweed (*Ambrosia* spp.), horseweed (*Erigeron canadensis*), California chicory (*Rafinesquia californica*), and jimsonweed (*Datura wrightii*).

Appendix B
Floral Compendium

ESA

APPENDIX B: FLORAL COMPENDIUM

LYCOPHYTES

Scientific Name	Common Name
Selaginellaceae	**Spike-Moss Family**
Selaginella bigelovii	Bigelow's spike moss

FERNS

Scientific Name	Common Name
Azollaceae	**Mosquito Fern Family**
Azolla filiculoides	Pacific mosquitofern
Azolla microphylla	Mexican mosquito fern
Blechnaceae	**Deer Fern Family**
Woodwardia fimbriata	giant chain fern
Dennstaedtiaceae	**Bracken Fern Family**
Pteridium aquilinum	western brackenfern
Pteridium aquilinum var. *pubescens*	hairy brackenfern
Dryopteridaceae	**Wood Fern Family**
Athyrium filix-femina var. *cyclosorum*	subarctic ladyfern
Cystopteris fragilis	brittle bladderfern
Dryopteris arguta	coastal woodfern
Polystichum imbricans	narrowleaf swordfern
Polystichum scopulinum	mountain hollyfern
Marsileaceae	**Water-clover Family**
Marsilea vestita	hairy waterclover
Polypodiaceae	**Polypody Family**
Polypodium californicum	California polypody
Pteridaceae	**Maidenhair Fern Family**
Adiantum capillus-veneris	common maidenhair
Adiantum jordanii	California maidenhair
Aspidotis californica	California lacefern
Myriopteris covillei	Coville's lipfern
Notholaena californica	California cloak fern
Pellaea andromedifolia	coffee cliffbrake
Pellaea mucronata	birdfoot cliffbrake
Pentagramma triangularis	goldback fern

GYMNOSPERMS

Scientific Name	Common Name
Cupressaceae	**Cypress Family**
Hesperocyparis forbesii	tecate cypress
Juniperus californica	California juniper
Pinaceae	**Pine Family**
* *Pinus canariensis*	Canary Island pine
* *Pinus halepensis*	aleppo pine
* *Pinus pinea*	Italian stone pine
Podocarpaceae	**Southern Hemisphere Conifer Family**
* *Afrocarpus gracilior*	fern pine tree

MAGNOLIIDS

Scientific Name	Common Name
Lauraceae	**Laurel Family**
* *Persea americana*	avocado
Umbellularia californica	California bay
Magnoliaceae	**Magnolia Family**
* *Magnolia grandiflora*	southern magnolia
Saururaceae	**Lizard's-Tail Family**
Anemopsis californica	yerba mansa

CERATOPHYLLALES

Scientific Name	Common Name
Ceratophyllaceae	**Hornwort Family**
Ceratophyllum demersum	hornwort

EUDICOTS

	Scientific Name	Common Name
	Adoxaceae	**Muskroot Family**
	Sambucus nigra ssp. *caerulea*	blue elderberry
	Aizoaceae	**Fig-Marigold Family**
*	*Aptenia cordifolia*	heartleaf iceplant
*	*Carpobrotus chilensis*	sea-fig
*	*Carpobrotus edulis*	hottentot fig
*	*Drosanthemum floribundum*	showy dewflower
*	*Drosanthemum hispidum*	hairy dewflower
*	*Lampranthus multiradiatus*	creeping redflush
*	*Malephora crocea*	coppery mesemb
*	*Mesembryanthemum crystallinum*	common iceplant
*	*Mesembryanthemum nodiflorum*	slender-leaved iceplant
	Sesuvium verrucosum	Western sea purslane
*	*Tetragonia tetragonioides*	New Zealand spinach
	Amaranthaceae	**Amaranth Family**
*	*Amaranthus albus*	tumbling pigweed
	Amaranthus blitoides	mat amaranth
	Amaranthus californicus	California amaranth
*	*Amaranthus deflexus*	largefruit amaranth
*	*Amaranthus retroflexus*	redroot amaranth
	Anacardiaceae	**Sumac Family**
	Malosma laurina	laurel sumac
	Rhus integrifolia	lemonade sumac
	Rhus ovata	sugar bush
	Rhus aromatica	skunkbush (squawbush)
*	*Schinus molle*	Peruvian peppertree
*	*Schinus terebinthifolius*	Brazilian peppertree
*	*Searsia lancea*	African sumac
	Toxicodendron diversilobum	poison oak
	Apiaceae	**Carrot Family**
*	*Anthriscus caucalis*	bur chervil
	Apiastrum angustifolium	mock celery
*	*Apium graveolens*	wild celery
	Berula erecta	cutleaf waterparsnip
	Bowlesia incana	hoary bowlesia
	Cicuta douglasii	western water hemlock
	Cicuta maculata	spotted water hemlock
*	*Conium maculatum*	poison hemlock
*	*Cyclospermum leptophyllum*	marsh parsley
	Daucus pusillus	American wild carrot
	Eryngium aristulatum	California eryngo

EUDICOTS

	Scientific Name	Common Name
	Eryngium aristulatum var. parishii	San Diego button-celery
*	*Foeniculum vulgare*	sweet fennel
	Heracleum maximum	common cowparsnip
	Lomatium dasycarpum	woolly-fruited lomatium
	Lomatium lucidum	shiny biscuitroot
	Lomatium utriculatum	common lomatium
	Lomatium vaginatum	broadsheath desertparsley
	Oenanthe sarmentosa	water parsley
	Osmorhiza brachypoda	California sweetcicely
	Perideridia gairdneri	Gardner's yampah
	Petroselinum crispum	parsley
	Sanicula arguta	sharp-toothed sanicle
	Sanicula bipinnata	poison sanicle
	Sanicula bipinnatifida	purple sanicle
	Sanicula crassicaulis	Pacific sanicle
	Sanicula tuberosa	turkey pea
	Scandix pectin-veneris	shepherdsneedle
	Tauschia arguta	southern umbrellawort
	Tauschia hartwegii	Hartweg's umbrellawort
	Torilis arvensis	spreading hedgeparsley
	Yabea microcarpa	false carrot
	Apocynaceae	**Dogbane Family**
	Apocynum cannabinum	Indian hemp
*	*Araujia sericifera*	white bladderflower
	Asclepias californica	California milkweed
*	*Asclepias curassavica*	bloodflower
	Asclepias eriocarpa	Indian milkweed
	Asclepias fascicularis	narrowleaf milkweed
	Funastrum cynanchoides	fringed twinevine
	Funastrum cynanchoides ssp. *hartwegii*	climbing milkweed
*	*Nerium oleander*	oleander
*	*Vinca major*	bigleaf periwinkle
	Araliaceae	**Ginseng Family**
*	*Hedera helix*	English ivy
*	*Hydrocotyle moschata*	musk hydrocotyle
	Hydrocotyle verticillata	whorled marsh pennywort
	Asteraceae	**Aster Family**
*	*Achillea filipendulina*	fernleaf yarrow
	Achillea millefolium	common yarrow
	Achyrachaena mollis	blow wives
	Acourtia microcephala	sacapellote
*	*Acroptilon repens*	Russian knapweed

EUDICOTS

	Scientific Name	Common Name
*	*Ageratina adenophora*	crofton weed
	Agoseris grandiflora	bigflower agoseris
	Agoseris heterophylla	annual agoseris
	Amblyopappus pusillus	dwarf coastweed
	Ambrosia acanthicarpa	flatspine bur ragweed
*	*Ambrosia artemisiifolia*	annual ragweed
	Ambrosia chamissonis	silver bur ragweed
	Ambrosia confertiflora	weakleaf bur ragweed
	Ambrosia dumosa	burrobush
	Ambrosia eriocentra	woolly fruit bur ragweed
	Ambrosia ilicifolia	hollyleaf bur ragweed
	Ambrosia psilostachya	western ragweed
*	*Ambrosia trifida*	great ragweed
	Anaphalis margaritacea	western pearly everlasting
*	*Anthemis cotula*	mayweed chamomile
*	*Arctotheca calendula*	Capeweed
*	*Arctotheca prostrata*	prostrate capeweed
	Argyranthemum foeniculum	dill daisy
*	*Artemisia biennis*	biennial wormwood
	Artemisia californica	California sagebrush
	Artemisia douglasiana	Douglas' sagewort
	Artemisia dracunculus	tarragon
	Artemisia tridentata	big sagebrush
*	*Artemisia vulgaris*	common wormwood
	Baccharis pilularis	coyotebrush
	Baccharis salicifolia	mule fat
	Baccharis salicina	Emory's baccharis
	Baccharis sarothroides	desertbroom
	Baccharis sergiloides	desert baccharis
	Balsamorhiza deltoidea	deltoid balsamroot
*	*Bellis perennis*	English daisy
	Bidens frondosa	devil's beggartick
	Bidens laevis	smooth beggartick
*	*Bidens pilosa*	hairy beggarticks
	Blennosperma nanum	yellow carpet
	Brickellia californica	California brickellbush
	Brickellia nevinii	Nevin's brickellbush
*	*Calendula arvensis*	field marigold
*	*Calendula officinalis*	pot marigold
*	*Carduus pycnocephalus*	Italian thistle
*	*Carduus tenuiflorus*	winged plumeless thistle
*	*Centaurea bendicta*	blessed thistle
*	*Centaurea cineraria*	dusty miller

EUDICOTS

	Scientific Name	Common Name
*	*Centaurea cyanus*	garden cornflower
*	*Centaurea diluta*	North African knapweed
*	*Centaurea melitensis*	tocalote/ Maltese star-thistle
*	*Centaurea solstitialis*	yellow star-thistle
	Centromadia parryi ssp. australis	southern tarplant
	Centromadia pungens ssp. *pungens*	common tarplant
	Chaenactis artemisiifolia	white pincushion
	Chaenactis glabriuscula	yellow pincushion
*	*Chondrilla juncea*	rush skeletonweed
*	*Cichorium intybus*	chicory
*	*Cirsium arvense*	Canada thistle
	Cirsium occidentale	cobwebby thistle
*	*Cirsium vulgare*	bull thistle
	Corethrogyne filaginifolia	common sandaster
*	*Cotula australis*	Australian waterbuttons
*	*Cotula coronopifolia*	common brassbuttons
*	*Crepis capillaris*	smooth hawksbeard
*	*Cynara cardunculus*	artichoke thistle, cardoon
*	*Cynara cardunculus ssp. cardunculus*	globe artichoke
	Deinandra fasciculata	fascicled tarplant
	Deinandra minthornii	Santa Susana tarweed
	Deinandra pallida	Kern tarweed
	Deinandra paniculata	paniculate/San Diego tarweed
*	*Delairea odorata*	Cape-ivy
*	*Dimorphotheca ecklonis*	blue and white daisybush
*	*Dimorphotheca fruticosa*	trailing African daisy
*	*Dimorphotheca sinuata*	glandular Cape marigold
*	*Dittrichia graveolens*	stinkwort
	Eclipta prostrata	false daisy
	Encelia californica	California encelia
	Encelia farinosa	brittlebush
	Ericameria ericoides	California goldenbush
	Ericameria linearifolia	narrowleaf goldenbush
	Ericameria nauseosa	rubber rabbitbrush
	Ericameria palmeri	Palmer's goldenbush
	Ericameria parishii	Parish's rabbitbush
	Ericameria pinifolia	pinebush
*	*Erigeron bonariensis*	flaxleaved fleabane
	Erigeron canadensis	Canadian horseweed
	Erigeron divergens	spreading fleabane
	Erigeron foliosus	leafy fleabane
	Erigeron philadelphicus	Philadelphia fleabane
*	*Erigeron sumatrensis*	asthmaweed

EUDICOTS

	Scientific Name	Common Name
	Eriophyllum confertiflorum	golden-yarrow
	Eriophyllum wallacei	woolly easterbonnets
	Euthamia occidentalis	western goldentop
*	*Galinsoga parviflora*	gallant soldier
	Gamochaeta pensylvanica	Pennsylvania everlasting
	Gamochaeta ustulata	featherweed
*	*Gazania linearis*	treasureflower
	Geraea canescens	hairy desertsunflower
	Geraea viscida	sticky desertsunflower
	Gleviionis carinatum	tricolor daisy
*	*Glebionis coronaria*	crowndaisy
	Grindelia camporum	Great Valley gumweed
	Grindelia hirsutula	hairy gumweed
	Gutierrezia californica	San Joaquin snakeweed
	Gutierrezia microcephala	threadleaf snakeweed
	Gutierrezia sarothrae	broom snakeweed
	Hazardia squarrosa	sawtooth goldenbush
	Hedypnois cretica	Cretanweed
	Helenium puberulum	rosella
	Helianthus annuus	common sunflower
	Helianthus gracilentus	slender sunflower
	Helianthus nuttallii	Nuttall's sunflower
*	*Helminthotheca echioides*	bristly ox-tongue
	Hemizonia congesta	hayfield tarweed
	Heterotheca grandiflora	telegraphweed
	Heterotheca sessiliflora	sessileflower false goldenaster
	Heterotheca subaxillaris	camphorweed
	Heterotheca villosa	hairy false goldenaster
	Hypochaeris glabra	smooth cat's ear
	Hypochaeris radicata	hairy cat's ear
	Isocoma acradenia	alkali goldenbush
	Isocoma menziesii	Menzies' goldenbush
*	*Iva axillaris*	povertyweed
	Jaumea carnosa	marsh jaumea
*	*Lactuca sativa*	garden lettuce
*	*Lactuca serriola*	prickly lettuce
*	*Lactuca virosa*	bitter lettuce
	Laennecia coulteri	Coulter's horseweed
	Lasthenia californica	California goldfields
	Lasthenia coronaria	royal goldfields
	Lasthenia glabrata	yellowray goldfields
	Lasthenia glabrata ssp. *coulteri*	goldfields
	Lasthenia gracilis	needle goldfields

EUDICOTS

	Scientific Name	Common Name
	Layia glandulosa	whitedaisy tidytips
	Layia platyglossa	coastal tidytips
	Leontodon saxatilis	hawkbit
	Lepidospartum squamatum	California broomsage
	Leptosyne bigelovii	Bigelow's tickseed
	Leptosyne californica	California tickseed
	Leptosyne gigantea	giant coreopsis
	Lessingia glandulifera	valley lessingia
	Logfia depressa	dwarf cottonrose
	Logfia filaginoides	California cottonrose
*	*Logfia gallica*	narrowleaf cottonrose
	Madia gracilis	grassy tarweed
	Madia sativa	coast tarweed
	Malacothrix californica	California desertdandelion
	Malacothrix clevelandii	Cleveland's desertdandelion
	Malacothrix coulteri	snake's head
	Malacothrix saxatilis	twiggy wreath plant
	Matricaria discoidea	pineapple weed
	Matricaria occidentalis	valley mayweed
*	*Melampodium perfoliatum*	perfoliate blackfoot
	Micropus californicus	Q tips
	Microseris douglasii	Douglas' silverpuffs
	Microseris elegans	elegant silverpuffs
	Monolopia lanceolata	common monolopia
	Osmadenia tenella	false rosinweed
	Pentachaeta fragilis	fragile pygmydaisy
	Pentachaeta lyonii	Lyon's pygmydaisy
	Perityle emoryi	Emory's rockdaisy
	Pluchea odorata	sweetscent
	Pluchea sericea	arrowweed
*	*Porophyllum ruderale*	yerba porosa
	Pseudognaphalium beneolens	cudweed
	Pseudognaphalium biolettii	two-color rabbit-tobacco
	Pseudognaphalium californicum	ladies' tobacco
	Pseudognaphalium canescens	Wright's cudweed
	Pseudognaphalium leucocephalum	white rabbit-tobacco
	Pseudognaphalium luteoalbum	Jersey cudweed
	Pseudognaphalium microcephalum	Wright's cudweed
	Pseudognaphalium stramineum	cottonbatting plant
	Psilocarphus brevissimus	short woollyheads
	Psilocarphus tenellus	slender woollyheads
*	*Pulicaria paludosa*	Spanish false fleabane
	Pyrrocoma apargioides	alpineflames

EUDICOTS

	Scientific Name	Common Name
	Rafinesquia californica	California plumeseed
	Senecio blochmaniae	dune ragwort
	Senecio californicus	California ragwort
	Senecio flaccidus	threadleaf ragwort
	Senecio lyonii	island senecio
*	*Senecio vulgaris*	old-man-in-the-spring
*	*Silybum marianum*	blessed milkthistle
	Solidago canadensis	Canada goldenrod
	Solidago confinis	southern goldenrod
	Solidago velutina	threenerve goldenrod
	Solidago velutina ssp. *californica*	California goldenrod
*	*Soliva sessilis*	field burrweed
*	*Sonchus arvensis*	field sowthistle
*	*Sonchus asper*	spiny sowthistle
*	*Sonchus oleraceus*	common sowthistle
	Stebbinsoeris heterocarpa	grassland stebbinsoseris
	Stephanomeria cichoriacea	chicoryleaf wirelettuce
	Stephanomeria diegensis	San Diego wirelettuce
	Stephanomeria exigua	small wirelettuce
	Stephanomeria parryi	Parry's wirelettuce
	Stephanomeria pauciflora	brownplume wirelettuce
	Stephanomeria tenuifolia	narrow leaved wirelettuce
	Stephanomeria virgata	rod wirelettuce
	Stylocline gnaphalioides	mountain neststraw
	Symphyotrichum defoliatum	San Bernardino aster
	Symphyotrichum greatae	Greata's aster
	Symphyotrichum lanceolatum	white panicle aster
	Symphyotrichum subulatum	Eastern annual saltmarsh aster
*	*Tanacetum parthenium*	feverfew
*	*Taraxacum erythrospermum*	red-seeded dandelion
*	*Taraxacum officinale*	common dandelion
	Tetradymia comosa	hairy horsebrush
	Thymophylla pentachaeta	fiveneedle pricklyleaf
	Tragopogon porrifolius	salsify
	Uropappus lindleyi	silver puffs
	Venegasia carpesioides	canyon sunflower
*	*Verbesina encelioides*	golden crownbeard
	Xanthium spinosum	spiny cocklebur
	Xanthium strumarium	rough cocklebur
	Bataceae	**Saltwort Family**
	Batis maritima	saltwort

EUDICOTS

	Scientific Name	Common Name
	Berberidaeeae	**Barberry Family**
	Berberi nevinii	Nevin's barberry
	Berberis pinnata	wavyleaf barberry
*	*Nandina domestica*	sacred bamboo
	Betulaceae	**Birch Family**
	Alnus rhombifolia	white alder
	Bignoniaceae	**Bignonia Family**
	Chilopsis linearis	desert willow
*	*Jacaranda mimosifolia*	jacaranda
*	*Tecoma capensis*	cape honeysuckle
	Boraginaceae	**Borage Family**
	Amsinckia douglasiana	Douglas' fiddleneck
	Amsinckia eastwoodiae	Eastwood's fiddleneck
	Amsinckia grandiflora	largeflowered fiddleneck
	Amsinckia intermedia	common fiddleneck
	Amsinckia menziesii	Menzies' fiddleneck
	Amsinckia retrorsa	rigid fiddleneck
	Amsinckia spectabilis	woolly breeches
	Amsinckia tessellata	bristly fiddleneck
*	*Borago officinalis*	common borage
	Cryptantha barbigera	bearded cryptantha
	Cryptantha clevelandii	Cleveland's cryptantha
	Cryptantha corollata	coast range cryptantha
	Cryptantha flaccida	beaked cryptantha
	Cryptantha intermedia	common cryptantha
	Cryptantha leiocarpa	coastal cryptantha
	Cryptantha micrantha	redroot cryptantha
	Cryptantha micromeres	pygmyflower cryptantha
	Cryptantha microstachys	Tejon cryptantha
	Cryptantha muricata	pointed cryptantha
*	*Echium candicans*	pride of Madeira
	Emmenanthe penduliflora	whispering bells
	Eriodictyon crassifolium	thick-leaved yerba santa
	Eriodictyon parryi	poodle-dog bush
	Eriodictyon trichocalyx	hairy yerba santa
	Eucrypta chrysanthemifolia	common eucrypta
	Eucrypta micrantha	dainty desert hideseed
	Heliotropium curassavicum	salt heliotrope
	Lappula squarrosa	European stickseed
	Nama stenocarpum	mud fiddleleaf
	Nemophila maculata	fivespot
	Nemophila menziesii	baby blue eyes

EUDICOTS

	Scientific Name	Common Name
	Pectocarya linearis	sagebrush combseed
	Pectocarya penicillata	sleeping combseed
	Pectocarya setosa	moth combseed
	Phacelia affinis	limestone phacelia
	Phacelia brachyloba	short-lobed phacelia
	Phacelia cicutaria	caterpillar phacelia
	Phacelia distans	distant phacelia
	Phacelia douglasii	Douglas's phacelia
	Phacelia floribunda	southern island phacelia
	Phacelia grandiflora	large-flowered phacelia
	Phacelia hubbyi	Hubby's phacelia
	Phacelia imbricata	imbricate phacelia
	Phacelia longipes	longstalk phacelia
	Phacelia minor	wild canterbury-bells
	Phacelia parryi	Parry's phacelia
	Phacelia ramosissima	branching phacelia
	Phacelia stellaris	Brand's phacelia
	Phacelia tanacetifolia	lacy phacelia
	Phacelia viscida	sticky phacelia
	Pholisma arenarium	dune food
	Pholistoma auritum	fiesta flower
	Pholistoma membranaceum	white fiestaflower
	Plagiobothrys canescens	valley popcornflower
	Plagiobothrys collinus	Cooper's popcornflower
	Plagiobothrys nothofulvus	rusty popcornflower
	Plagiobothrys tenellus	Pacific popcornflower
*	*Wigandia urens*	Caracus wigandia
	Brassicaceae	**Mustard Family**
*	*Arabidopsis thaliana*	mouseear cress
	Athysanus pusillus	common sandweed
	Barbarea orthoceras	American yellowrocket
	Boechera californica	California rockcress
	Boechera pulchra	beautiful rockcress
*	*Brassica napus*	rapeseed
*	*Brassica nigra*	black mustard
*	*Brassica oleracea*	cabbage
*	*Brassica rapa*	field mustard
*	*Brassica tournefortii*	Sahara mustard
*	*Cakile maritime*	European searocket
*	*Camelina microcarpa*	littlepod false flax
*	*Capsella bursa-pastoris*	shepherd's purse
	Cardamine californica	milkmaids
*	*Cardamine debilis*	roadside bittercress

EUDICOTS

	Scientific Name	Common Name
	Cardamine hirsuta	hairy bittercress
	Cardamine oligosperma	little western bittercress
	Cardamine pensylvanica	Pennsylvania bittercress
	Caulanthus coulteri	Coulter's wild cabbage
	Caulanthus heterophyllus	San Diego wild cabbage
	Caulanthus lasiophyllus	California mustard
	Descurainia pinnata	western tansy mustard
*	*Descurainia sophia*	herb sophia
*	*Diplotaxis tenuifolia*	perennial wallrocket
	Dithyrea maritima	beach shieldpod
	Draba cuneifolia	wedgeleaf draba
*	*Eruca vesicaria*	rocketsalad
	Erysimum capitatum	sanddune wallflower
	Erysimum suffrutescens	suffrutescent wallflower
*	*Hirschfeldia incana*	shortpod mustard
	Lepidium acutidens	net pepper grass
*	*Lepidium chalepense*	lens-podded hoary cress
*	*Lepidium didymum*	lesser swine cress
*	*Lepidium draba*	whitetop
	Lepidium lasiocarpum	shaggyfruit pepperweed
*	*Lepidium latifolium*	perennial pepperweed
	Lepidium latipes	dwarf pepper grass
	Lepidium nitidum	shining pepper grass
	Lepidium oblongum	veiny pepper grass
*	*Lepidium pinnatifidum*	wayside pepper grass
	Lepidium strictum	upright pepper grass
	Lepidium virginicum ssp. *robinsonii*	Robinson's pepper grass
	Lepidium virginicum ssp. *virginicum*	wild pepper grass
*	*Lobularia maritima*	sweet alyssum
*	*Matthoila incana*	tenweeks stock
	Nasturtium gambelii	Gambel's yellowcress
	Nasturtium officinale	watercress
*	*Planodes virginica*	common rock cress
*	*Raphanus raphanistrum*	jointed charlock
*	*Raphanus sativus*	cultivated radish
*	*Rapistrum rugosum*	annual bastardcabbage
	Rorippa curvisiliqua	curvepod yellowcress
	Rorippa palustris	bog yellowcress
*	*Sinapis alba*	white mustard
*	*Sisymbrium altissimum*	tall tumblemustard
*	*Sisymbrium irio*	London rocket
*	*Sisymbrium officinale*	hedgemustard
*	*Sisymbrium orientale*	Indian hedgemustard

EUDICOTS

	Scientific Name	Common Name
	Stanleya pinnata	desert princesplume
	Streptanthus bernardinus	Laguna Mountain jewelflower
	Thysanocarpus curvipes	sand fringepod
	Thysanocarpus laciniatus	mountain fringepod
	Tropidocarpum gracile	dobie pod
	Turritis glabra	tower rockcress
	Cactaceae	**Cactus Family**
	Cylindropuntia californica	California pricklypear
	Cylindropuntia prolifera	coastal cholla
	Opuntia basilaris	beavertail cactus
	Opuntia engelmannii	cactus apple
*	*Opuntia ficus-indica*	tuna cactus
	Opuntia littoralis	coastal prickly pear
*	*Opuntia microdasys*	angel's wings
	Opuntia oricola	western prickly pear
	Opuntia vaseyi	Vasey's prickly pear
	Campanulaceae	**Bellflower Family**
	Githopsis diffusa	southern bluecup
	Githopsis diffusa ssp. *candida*	blue cup
*	*Lobelia erinus*	edging lobelia
	Nemacladus glanduliferus	glandular threadplant
	Nemacladus longiflorus	longflower threadplant
	Nemacladus orenitalis	Eastern glandular nemacladus
	Nemacladus ramosissimus	smallflower threadplant
	Triodanis biflora	Venus looking glass
	Caprifoliaceae	**Honeysuckle Family**
	Lonicera hispidula	pink honeysuckle
*	*Lonicera japonica*	Japanese honeysuckle
	Lonicera subspicata	southern honeysuckle
	Symphoricarpos albus	common snowberry
	Symphoricarpos mollis	creeping snowberry
	Caryophyllaceae	**Pink Family**
	Arenaria paludicola	marsh sandwort
	Cardionema ramosissimum	sand mat
*	*Cerastium fontanum*	common mouse ear chickweed
*	*Cerastium glomeratum*	mouse-ear chickweed
	Loeflingia squarrosa	spreading loeflingia
	Polycarpon depressum	California manyseed
*	*Polycarpon tetraphyllum*	fourleaf manyseed
*	*Sagina apetala*	annual pearlwort
	Silene antirrhina	sleepy silene
*	*Silene coniflora*	fire-following campion

EUDICOTS

	Scientific Name	Common Name
*	*Silene gallica*	common catchfly
	Silene laciniata	cardinal catchfly
*	*Spergula arvensis*	corn spurry
*	*Spergularia bocconii*	Boccone's sandspurry
	Spergularia macrotheca	sticky sandspurry
	Spergularia marina	salt sandspurry
*	*Spergularia platensis*	La Plata sandspurry
*	*Spergularia rubra*	red sandspurry
*	*Spergularia villosa*	hairy sandspurry
*	*Stellaria media*	common chickweed
	Stellaria nitens	shiny chickweed
*	*Vaccaria hispanica*	cow soapwort
	Chenopodiaceae	**Goosefoot Family**
	Aphanisma blitoides	San Diego coastalcreeper
	Arthrocnemum subterminale	Parish's glasswort
*	*Atriplex amnicola*	swamp saltbush
	Atriplex argentea	silverscale saltbush
	Atriplex canescens	fourwing saltbush
	Atriplex coulteri	Coulter's saltbush
*	*Atriplex glauca*	waxy saltbush
	Atriplex lentiformis	big saltbush
	Atriplex leucophylla	beach saltbush
*	*Atriplex nummularia*	bluegreen saltbush
	Atriplex pacifica	south coast salt scale
	Atriplex parishii	Parish's saltbush
	Atriplex patula	spear saltbush
*	*Atriplex prostrata*	triangle orache
*	*Atriplex rosea*	tumbling saltbush
*	*Atriplex semibaccata*	Australian saltbush
	Atriplex serenana	bractscale
	Atriplex serenana var. *davidsonii*	Davidson's saltscale
*	*Atriplex suberecta*	peregrine saltbush
	Atriplex watsonii	Watson's saltbush
*	*Bassia hyssopifolia*	fivehorn smotherweed
*	*Beta vulgaris*	common beet
*	*Chenopodium album*	lamb's quarters
	Chenopodium berlandieri	pitseed goosefoot
	Chenopodium californicum	California goosefoot
	Chenopodium leptophyllum	narrowleaf goosefoot
	Chenopodium littoreum	coastal goosefoot
	Chenopodium macrospermum	largeseed goosefoot
*	*Dysphania multifidum*	cut-leaved goosefoot
*	*Chenopodium murale*	nettle-leaved goosefoot

EUDICOTS

	Scientific Name	Common Name
	Chenopodium strictum	lateflowering goosefoot
*	*Dysphania ambrosioides*	Mexican tea
*	*Dysphania botrys*	Jerusalem oak goosefoot
*	*Dysphania multifidum*	cut-leaved goosefoot
*	*Dysphania pumilio*	Tasmanian goosefoot
	Extriplex californica	California orach
	Kochia americana	green molly
*	*Kochia scoparia*	burningbush
	Salicornia bigelovii	dwarf saltwort
	Salicornia depressa	Virginia glasswort
	Salicornia pacifica	Pacific pickleweed
*	*Salsola australis*	Russian thistle
*	*Salsola kali*	Russian thistle
*	*Salsola tragus*	prickly Russian thistle
	Suaeda calceoliformis	Pursh seepweed
	Suaeda californica	California seablite
	Suaeda esteroa	estuary seablite
	Suaeda nigra	bush seepweed
	Suaeda taxifolia	woolly seablite
	Cistaceae	**Rock-Rose Family**
*	*Cistus incanus*	hairy rockrose
*	*Cistus ladanifer*	common gum cistus
	Crocanthemum scoparium	Bisbee Peak rush-rose
	Cleomaceae	**Spiderflower Family**
	Peritoma arborea	bladderpod
	Convolvulaceae	**Morning-Glory Family**
	Calystegia felix	lucky morning glory
	Calystegia longipes	Piute morning glory
	Calystegia macrostegia	California morning glory
	Calystegia peirsonii	Peirson's false bindweed
*	*Convolvulus althaeoides*	hollyhock bindweed
*	*Convolvulus arvensis*	field bindweed
	Convolvulus simulans	small-flowered morning glory
	Cressa truxillensis	spreading alkaliweed
	Cuscuta californica	California dodder
	Cuscuta campestris	field dodder
	Cuscuta indecora	bigseed alfalfa dodder
	Cuscuta pentagona	fiveangled dodder
	Cuscuta salina	saltmarsh dodder
	Cuscuta subinclusa	canyon dodder
*	*Dichondra micrantha*	Asian ponysfoot
	Dichondra occidentalis	western ponysfoot

EUDICOTS

	Scientific Name	Common Name
*	*Ipomoea cairica*	mile a minute vine
*	*Ipomoea indica*	oceanblue morning-glory
*	*Ipomoea purpurea*	common morning-glory
	Crassulaceae	**Stonecrop Family**
*	*Aeonium arboreum*	tree aenium
	Crassula aquatica	water pygmyweed
	Crassula connata	sand pygmyweed
*	*Crassula ovata*	jade plant
*	*Crassula tillaea*	moss pygmyweed
	Dudleya blochmaniae	Blochman's liveforever
	Dudleya caespitosa	sealettuce
	Dudleya cymosa	canyon liveforever
	Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya
	Dudleya lanceolata	lanceleaf liveforever
	Dudleya multicaulis	many-stemmed dudleya
	Dudleya pulverulenta	chalk dudleya
	Dudleya virens	bright green liveforever
	Cucurbitaceae	**Gourd Family**
	Cucurbita foetidissima	Missouri gourd
*	*Cucurbita melo*	cantaloupe
	Marah fabacea	California manroot
	Marah macrocarpus	Cucamonga manroot
	Datiscaceae	**Datisca Family**
	Datisca glomerata	durango root
	Elatinaceae	**Waterwort Family**
	Elatine californica	California waterwort
	Ericaceae	**Heath Family**
	Arbutus menziesii	Pacific madrone
*	*Arbutus unedo*	strawberry tree
	Arctostaphylos glandulosa	Eastwood's manzanita
	Arctostaphylos glauca	bigberry Manzanita
	Arctostaphylos pringlei	Pringle manzanita
	Comarostaphylis diversifolia	summer holly
	Xylococcus bicolor	mission manzanita
	Euphorbiaceae	**Spurge Family**
	Croton californicus	California croton
	Croton setiger	dove weed
	Euphorbia albomarginata	rattlesnake weed
	Euphorbia crenulata	Chinese caps
*	*Euphorbia hypericifolia*	graceful sandmat
*	*Euphorbia lathyris*	compass plant

EUDICOTS

	Scientific Name	Common Name
*	*Euphorbia maculata*	spotted spurge
	Euphorbia melanadenia	squaw spurge
*	*Euphorbia peplus*	petty spurge
	Euphorbia polycarpa	smallseed sandmat
*	*Euphorbia prostrata*	prostrate sandmat
*	*Euphorbia serpens*	matted sandmat
	Euphorbia serpyllifolia	thyme-leaved spurge
	Euphorbia spathulata	reticulate-seeded spurge
*	*Euphorbia terracina*	Geraldton carnation weed
*	*Euphorbia virgata*	leafy spurge
*	*Ricinus communis*	castor bean
	Stillingia linearifolia	linear-leaved stillingia
*	*Triadica sebifera*	Chinese tallowtree
	Fabaceae	**Legume Family**
*	*Acacia baileyana*	Bailey acacia
*	*Acacia cultriformis*	knife acacia
*	*Acacia cyclops*	cyclops acacia
*	*Acacia dealbata*	silver wattle
*	*Acacia decurrens*	green wattle
*	*Acacia longifolia*	Sydney golden wattle
*	*Acacia melanoxylon*	blackwood
*	*Acacia redolens*	bank catclaw
*	*Acacia retinodes*	water wattle
*	*Acacia verticillata*	prickly Moses
	Acmispon americanus	Spanish lotus
	Acmispon argophyllus	silver bird's-foot trefoil
	Acmispon brachycarpus	short podded lotus
	Acmispon glaber var. *glaber*	deerweed
	Acmispon grandiflorus	chaparral bird's-foot trefoil
	Acmispon heermannii	Heermann's bird's-foot trefoil
	Acmispon junceus	rush lotus
	Acmispon maritimus	coastal bird's-foot trefoil
	Acmispon micranthus	San Diego bird's-foot trefoil
	Acmispon nevadensis	Nevada's bird's-foot trefoil
	Acmispon strigosus	strigose lotus
	Acmispon wrangelianus	Chilean bird's-foot trefoil
*	*Albizia julibrissin*	silktree
*	*Albizia lophantha*	plume acacia
	Amorpha californica	California false indigo
	Astragalus asymmetricus	San Joaquin milkvetch
	Astragalus brauntonii	Braunton's milkvetch
	Astragalus didymocarpus	two-seeded milk-vetch
	Astragalus douglasii	Jacumba milk-vetch

EUDICOTS

	Scientific Name	Common Name
	Astragalus gambelianus	Gambell's dwarf milkvetch
	Astragalus pomonensis	Pomona milkvetch
	Astragalus pycnostachyus	marsh milkvetch
	Astragalus tener var. *titi*	coastal dunes milkvetch
	Astragalus trichopodus	Santa Barbara milkvetch
*	*Bauhinia variegata*	mountain ebony
*	*Bituminaria bituminosa*	Arabian pea
*	*Caesalpinia gilliesii*	bird of paradise
*	*Caesalpinia spinosa*	tara
*	*Ceratonia siliqua*	St. John's bread
	Cercis occidentalis	western redbud
*	*Coronilla valentina*	Mediterranean crownvetch
*	*Cytisus proliferus*	tree Lucerne
*	*Cytisus scoparius*	scotchbroom
*	*Cytisus striatus*	striated broom
*	*Dalea greggii*	Gregg's prairie clover
*	*Genista monospessulana*	French broom
	Hoffmannseggia glauca	Indian rushpea
	Hoita macrostachya	leather root
	Hosackia oblongifolia	streambank bird's-foot trefoil
*	*Lathyrus latifolius*	everlasting pea
*	*Lathyrus odoratus*	Garden sweet pea
*	*Lathyrus tingitanus*	Tangier pea
	Lathyrus vestitus	Pacific pea
*	*Lotus corniculatus*	broadleaf bird's-foot trefoil
	Lupinus affinis	fleshy lupine
	Lupinus albifrons	silver bush lupine
	Lupinus arboreus	yellow bush lupine
	Lupinus argenteus	silvery lupine
	Lupinus bicolor	miniature lupine
	Lupinus chamissonis	chamisso bush lupine
	Lupinus concinnus	scarlet lupine
	Lupinus excubitus	grape soda lupine
	Lupinus formosus	western lupine
	Lupinus hirsutissimus	stinging annual lupine
	Lupinus hyacinthinus	San Jacinto lupine
	Lupinus latifolius	broad-leaved lupine
	Lupinus longifolius	longleaf bush lupine
	Lupinus nanus	sky lupine
	Lupinus paynei	Payne's bush lupine
	Lupinus sparsiflorus	Coulter's lupine
	Lupinus succulentus	arroyo lupine
	Lupinus truncatus	collared lupine

EUDICOTS

	Scientific Name	Common Name
*	*Medicago lupulina*	black medick
*	*Medicago polymorpha*	bur clover
*	*Medicago sativa*	alfalfa
*	*Melilotus albus*	white sweetclover
*	*Melilotus indicus*	sourclover
*	*Melilotus officinalis*	yellow sweet clover
*	*Parkinsonia aculeata*	Mexican palo verde
	Pickeringia montana	chaparral pea
*	*Pisum sativum*	garden pea
*	*Robinia pseudoacacia*	black locust
	Rupertia physodes	California rupertia
*	*Senna artemisioides*	silver senna
*	*Senna didymobotrya*	African senna
*	*Spartium junceum*	Spanish broom
	Trifolium albopurpureum	Indian clover
	Trifolium bifidum	Pinole clover
*	*Trifolium campestre*	low hop clover
	Trifolium ciliolatum	foothill cloer
	Trifolium depauperatum	dwarf sack clover
*	*Trifolium dubium*	Shamrock clover
*	*Trifolium fragiferum*	strawberry clover
	Trifolium fucatum	bull clover
	Trifolium gracilentum	pinpoint clover
*	*Trifolium hirtum*	rose clover
*	*Trifolium hybridum*	alsike clover
*	*Trifolium pratense*	red clover
*	*Trifolium repens*	white clover
*	*Trifolium tomentosum*	woolly clover
	Trifolium willdenovii	tomcat clover
	Trifolium wormskioldii	cow clover
*	*Ulex europaeus*	common gorse
	Vicia americana	American vetch
*	*Vicia benghalensis*	purple vetch
	Vicia hassei	Hasse's vetch
	Vicia ludoviciana	Louisiana vetch
*	*Vicia sativa*	spring vetch
*	*Vicia villosa*	hairy vetch
	Fagaceae	**Oak Family**
	Chrysolepis chrysophylla	golden chinquapin
	Quercus agrifolia	coast live oak
	Quercus berberidifolia	scrub oak
	Quercus chrysolepis	canyon live oak
	Quercus dumosa	coastal sage scrub oak

EUDICOTS

	Scientific Name	Common Name
	Quercus durata	leather oak
	Quercus durata var. *gabrielensis*	San Gabriel oak
*	*Quercus ilex*	holly oak
	Quercus lobata	valley oak
*	*Quercus suber*	cork oak
	Quercus wislizeni	interior live oak
	Frankeniaceae	**Frankenia Family**
	Frankenia palmeri	Palmer's frankenia
	Frankenia salina	alkali heath
	Garryaceae	**Silk Tassel Family**
	Garrya elliptica	wavyleaf silktassel
	Garrya veatchii	Veatch silktassel
	Gentianaceae	**Gentian Family**
	Zeltnera venusta	charming centaury
	Geraniaceae	**Geranium Family**
	California macrophylla	round leaved filaree
*	*Erodium botrys*	longbeak stork's bill
*	*Erodium brachycarpum*	shortfruit stork's bill
*	*Erodium cicutarium*	redstem filaree
*	*Erodium moschatum*	musky stork's bill
	Geranium bicknellii	Bicknell's cranesbill
	Geranium californicum	California cranesbill
	Geranium carolinianum	Carolina geranium
*	*Geranium dissectum*	cutleaf geranium
*	*Geranium molle*	woodland geranium
*	*Geranium rotundifolium*	roundleaf geranium
*	*Pelargonium X hortorum*	garden geranium
*	*Pelargonium peltatum*	ivyleaf geranium
*	*Pelargonium zonale*	horseshoe geranium
	Grossulariaceae	**Gooseberry Family**
	Ribes amarum	bitter gooseberry
	Ribes aureum	golden currant
	Ribes californicum	hillside gooseberry
	Ribes indecorum	white flowering currant
	Ribes malvaceum	chaparral currant
	Ribes nevadense	mountain pink currant
	Ribes sanguineum	redflower currant
	Ribes speciosum	fuchsia-flowered gooseberry
	Ribes viscosissimum	sticky currant
	Haloragaceae	**Water Milfoil Family**
*	*Myriophyllum aquaticum*	parrot feather watermilfoil

EUDICOTS

	Scientific Name	Common Name
	Hypericaceae	**Saint John's Wort Family**
	Hypericum scouleri	Scouler's St. John's wort
	Juglandaceae	**Walnut Family**
	Juglans californica	Southern California black walnut
	Juglans hindsii	Northern California black walnut
*	*Juglans regia*	English walnut
	Lamiaceae	**Mint Family**
	Clinopodium douglasii	yerba buena
*	*Lamium amplexicaule*	henbit deadnettle
	Lepechinia fragrans	fragrant pitcher sage
	Lycopus americanus	American water horehound
*	*Marrubium vulgare*	horehound
*	*Mentha aquatica*	water mint
*	*Mentha spicata*	spearmint
*	*Mentha suaveolens*	apple mint
	Monardella breweri	Brewer's monardella
	Monardella hypoleuca	white leaf monardella
	Monardella lanceolata	mustang monardella
	Monardella undulata	curlyleaf monardella
*	*Nepeta cataria*	catnip
*	*Rosmarinus officinalis*	rosemary
	Salvia apiana	white sage
	Salvia carduacea	thistle sage
	Salvia clevelandii	Cleveland sage
	Salvia columbariae	chia
	Salvia leucophylla	purple sage
	Salvia mellifera	black sage
	Salvia spathecea	hummingbird sage
	Scutellaria siphocampyloides	grayleaf skullcap
	Scutellaria tuberosa	Danny's skullcap
	Stachys ajugoides	hedge-nettle
	Stachys albens	white hedge-nettle
	Stachys bullata	California hedge-nettle
	Stachys rigida	rough hedge nettle
	Trichostema lanatum	woolly bluecurls
	Trichostema lanceolatum	vinegarweed
	Linaceae	**Flax Family**
	Hesperolinon micranthum	dwarf flax
*	*Linum grandiflorum*	flowering flax
*	*Linum usitatissimum*	common flax

EUDICOTS

	Scientific Name	Common Name
	Loasaceae	**Loasa Family**
	Mentzelia affinis	yellow blazing star
	Mentzelia laevicaulis	smooth stem blazing star
	Mentzelia lindleyi	Lindley's blazing star
	Mentzelia micrantha	chaparral blazing star
	Lythraceae	**Loosestrife Family**
	Ammannia coccinea	red ammannia
	Ammannia robusta	grand ammannia
*	*Lagerstroemia indica*	crape myrtle
	Lythrum californicum	California loosestrife
*	*Lythrum hyssopifolia*	Hyssop loosestrife
*	*Punica granatum*	pomegranate
	Malvaceae	**Mallow Family**
	Abutilon palmeri	Palmer's abutilon
*	*Abutilon theophrasti*	velvet leaf
*	*Anoda cristata*	violettas
	Fremontodendron californicum	California flannelbush
	Lavatera assurgentiflora	island mallow
	Malacothamnus davidsonii	Davidson's bushmallow
	Malacothamnus fasciculatus	chaparrel bushmallow
*	*Malva neglecta*	dwarf mallow
*	*Malva nicaeensis*	bull mallow
*	*Malva parviflora*	cheeseweed
*	*Malva pseudolavatera*	cretan mallow
*	*Malva sylvestris*	high mallow
	Malvella leprosa	Alkali mallow
*	*Modiola caroliniana*	Carolina bristle mallow
	Sidalcea malviflora	checker mallow
	Sidalcea neomexicana	salt spring checkerbloom
	Sidalcea sparsifolia	southern checkerbloom
	Sphaeralcea ambigua	desert globemallow
	Montiaceae	**Purslane Family**
	Calandrinia breweri	Brewer's calandrinia
	Calandrinia menziesii	red maids
	Calyptridium monandrum	common calyptridium
	Cistanthe maritima	seaside calandrinia
	Claytonia parviflora	narrow leaved miner's lettuce
	Claytonia perfoliata	miner's lettuce

EUDICOTS

	Scientific Name	Common Name
	Myricaceae	**Wax Myrtle Family**
	Morella californica	California wax myrtle
	Myrsinaceae	**Myrsine Family**
*	*Lysimachia arvensis*	scarlet pimpernel
	Myrtaceae	**Myrtle Family**
*	*Eucalyptus camaldulensis*	red gum
*	*Eucalyptus cladocalyx*	sugar gum
*	*Eucalyptus globulus*	blue gum
*	*Eucalyptus polyanthemos*	silver dollar gum
*	*Eucalyptus rudis*	Western Australia flooded gum
*	*Eucalyptus sideroxylon*	red iron bark
*	*Eucalyptus viminalis*	Manna gum
*	*Luma apiculata*	temu
	Nyctaginaceae	**Four O'Clock Family**
	Abronia maritima	red sand verbena
	Abronia umbellata	pink sand verbena
	Abronia villosa	sand verbena
	Boerhavia coccinea	scarlet spiderling
*	*Bougainvillea spectabilis*	bougainvillea
*	*Mirabilis jalapa*	wishbone bush
	Mirabilis laevis	desertwishbone bush
	Oleaceae	**Olive Family**
	Forestiera pubescens	desert olive
	Fraxinus dipetala	California ash
	Fraxinus latifolia	Oregon ash
*	*Fraxinus uhdei*	shamel ash
	Fraxinus velutina	velvet ash
*	*Ligustrum japonicum*	Japanese privet
*	*Ligustrum jlucidum*	glossy privet
*	*Ligustrum ovalifolium*	California privet
*	*Olea europaea*	olive
	Onagraceae	**Evening Primrose Family**
	Camissonia strigulosa	sandysoil suncup
	Camissoniopsis bistorta	California sun cup
	Camissoniopsis cheiranthifolia	beach evening-primrose
	Camissoniopsis hirtella	hairy sun cup
	Camissoniopsis ignota	Jurupa Hills sun cup
	Camissoniopsis intermedia	intermediate sun cup
	Camissoniopsis lewisii	Lewis' evening-primrose
	Camissoniopsis micrantha	Spencer primrose

EUDICOTS

	Scientific Name	Common Name
	Camissoniopsis robusta	robust sun cup
	Clarkia amoena	farewell to spring
	Clarkia bottae	punchbowl godetia
	Clarkia cylindrica	speckled clarkia
	Clarkia dudleyana	Dudley's clarkia
	Clarkia epilobioides	canyon clarkia
	Clarkia purpurea	winecup clarkia
	Clarkia rhomboidea	diamond clarkia
	Clarkia unguiculata	elegant clarkia
	Epilobium brachycarpum	tall annual willowherb
	Epilobium campestre	smooth boisduvalia
	Epilobium canum	California fuchsia
	Epilobium ciliatum	fringed willowherb
	Eremothera boothii	Booth's suncup
	Eulobus californicus	California suncup
*	*Fuchsia magellanica*	hardy fuchisa
*	*Ludwigia hexapetala*	six petal water primrose
*	*Ludwigia peploides*	yellow waterweed
	Oenothera californica	California evening primrose
	Oenothera elata	evening primrose
*	*Oenothera laciniata*	southern evening primrose
*	*Oenothera rosea*	pink evening primrose
*	*Oenothera sinuosa*	wavy-leaved gaura
*	*Oenothera speciosa*	Mexican evening primrose
	Oenothera villosa	hairy evening primrose
*	*Oenothera xenogaura*	Drummond's gaura
	Tetrapteron graciliflorum	Hill sun cup
	Orobanchaceae	**Broom-rape Family**
	Aphyllon californicum	California broomrape
	Aphyllon fasciculatum	custered broomrape
	Aphyllon tuberosum	chaparral broomrape
	Aphyllon vallicolum	Valley broomrape
	Castilleja affinis	coast paintbrush
	Castilleja applegatei	applegate's paintbrush
	Castilleja densiflora	dense-flowered owl's-clover
	Castilleja exserta	purple owl's-clover
	Castilleja foliolosa	woolly Indian paintbrush
	Castilleja linarifolia	desert paintbrush
	Castilleja minor	little paintrbush
	Castilleja subinclusa	Franciscan paintbrush
	Chloropyron maritimum	salt marsh bird's beak
	Chloropyron molle	soft bird's beak

EUDICOTS

	Scientific Name	Common Name
	Cordylanthus eremicus	desert bird-beak
	Cordylanthus rigidus	rigid bird's-beak
	Orobanche californica	California orobanche
	Pedicularis densiflora	Indian warrior
	Oxalidaceae	**Oxalis Family**
*	*Oxalis artuclata*	windowbox wood-sorrel
	Oxalis californica	California wood sorrel
*	*Oxalis corniculata*	creeping wood-sorrel
*	*Oxalis pes-caprae*	Bermuda buttercup
	Oxalis pilosa	hairy wood sorrel
	Paeoniaceae	**Peony Family**
	Paeonia californica	California peony
	Papaveraceae	**Poppy Family**
	Argemone corymbosa	Mohave prickly poppy
	Argemone munita	prickly poppy
	Canbya candida	pygmy poppy
	Dendromecon rigida	bush poppy
	Ehrendorferia chrysantha	golden eardrops
	Ehrendorferia ochroleuca	yellow bleeding heart
	Eschscholzia caespitosa	foothill poppy
	Eschscholzia californica	California poppy
	Eschscholzia hypecoides	leafy stemmed poppy
	Eschscholzia minutiflora	Coville's poppy
*	*Fumaria officinalis*	drug fumitory
	Meconella denticulata	small flowered meconella
	Papaver californicum	fire poppy
	Papaver heterophyllum	wind poppy
	Platystemon californicus	cream cups
	Romneya coulteri	Coulter's matilija poppy
	Romneya trichocalyx	bristly Matilija poppy
	Phrymaceae	**Lopseed Family**
	Diplacus aurantiacus	orange bush monkeyflower
	Diplacus puniceus	sticky monkeyflower
	Diplacus brevipes	wide throated monkeyflower
	Diplacus fremontii	Fremont's monkeyflower
	Diplacus longiflorus	southern bush monkeyflower
	Diplacus rutilis	red bush monkeyflower
	Erythranthe cardinalis	scarlet monkeyflower
	Erythranthe floribunda	many flowered monkeyflower
	Erythranthe guttatus	common monkeyflower
	Mimetanthe pilosa	snouted monkeyflower

EUDICOTS

	Scientific Name	Common Name
	Pittosporaceae	**Cheesewood Family**
*	*Billardiera heterophylla*	Australian bluebell
*	*Pittosporum crassifolium*	thick leaf box
*	*Pittosporum tobira*	mock orange
*	*Pittosporum undulatum*	Victorian box
	Plantaginaceae	**Plantain Family**
	Antirrhinum coulterianum	white snapdragon
	Antirrhinum kelloggii	twining snapdragon
*	*Antirrhinum majus*	garden snapdragon
	Antirrhinum multiflorum	chaparral snapdragon
	Antirrhinum nuttallianum	Nuttall's snapdragon
*	*Antirrhinum orontium*	Syrian snapdragon
	Callitriche marginata	winged water starwort
	Collinsia heterophylla	Chinese houses
	Collinsia parryi	Parry's collinsia
*	*Digitalis purpurea*	foxglove
	Gameblia speciosa	island snapdragon
	Keckiella antirrhinoides	chaparral beard-tongue
	Keckiella cordifolia	heart-leaved keckiella
*	*Kickxia elatine*	sharp point fluellin
*	*Kickxia spurria*	fluellin
	Nuttallanthus texanus	blue toadflax
	Penstemon centranthifolius	scarlet bugler
	Penstemon heterophyllus	foothill penstemon
	Penstemon spectabilis	royal penstemon
*	*Plantago arenaria*	Indian plantain
	Plantago erecta	western plantain
*	*Plantago lanceolata*	English plantain
*	*Plantago major*	common plantain
	Plantago ovata	desert plantain
	Plantago patagonica	Patagonia plantain
	Plantago subnuda	coastal plantain
*	*Plantago virginica*	dwarf plantain
*	*Veronica anagallis-aquatica*	water speedwell
*	*Veronica arvensis*	speedwell
	Veronica peregrina ssp. xalapensis	hairy purslane speedwell
*	*Veronica persica*	bird's eye speedwell
	Platanaceae	**Sycamore Family**
	Platanus racemosa	western sycamore

EUDICOTS

	Scientific Name	Common Name
Plumbaginaceae		**Leadwort Family**
*	*Limonium arborescens*	bush sea-lavander
	Limonium californicum	western marsh-rosemary
*	*Limonium duriusculum*	Eurpoean sea-lavander
*	*Limonium otolepis*	Asian sea-lavander
*	*Limonium perezii*	Canarian sea-lavander
*	*Limonium ramosissiumum*	Algerian sea-lavander
*	*Limonium sinuatum*	statice
*	*Plumbago auriculata*	Cape leadwort
Polemoniaceae		**Phlox Family**
	Allophyllum divaricatum	purple false gilia
	Allophyllum gilioides	dense false gilia
	Allophyllum glutinosum	sticky false gilia
	Eriastrum densifolium	giant woollystar
	Eriastrum filifolium	lavender eriastrum
	Eriastrum sapphirinum	sapphire eriastrum
	Eriastrum virgatum	virgate eriastrum
	Gilia achilleifolia	California gilia
	Gilia angelensis	angel gilia
	Gilia capitata	blue field gilia
	Gilia latiflora	broad flowered gilia
	Gilia tricolor	bird's eyes
	Leptosiphon androsaceus	common linanthus
	Leptosiphon aureus	golden linanthus
	Leptosiphon grandiflorus	large-flowered leptosiphon
	Leptosiphon liniflorus	flax-flowered linanthus
	Leptosiphon parviflorus	coast baby-star
	Linanthus californicus	prickly phlox
	Linanthus concinnus	San Gabriel linanthus
	Linanthus dianthiflorus	ground-pink
	Linanthus dichotomus	evening snow
	Linanthus parryae	Parry's linanthus
	Microsteris gracilis	slender phlox
	Navarretia atractyloides	holly-leaved navarretia
	Navarretia fossalis	spreading navarretia
	Navarretia hamata	hooked navarretia
	Navarretia cjaiensis	Ojai navarretia
	Navarretia prostrata	prostrate navarretia
	Saltugilia splendens	splendid gilia
Polygonaceae		**Buckwheat Family**
	Acanthoscyphus parishii	Cushenbury oxytheca
	Chorizanthe angustifolia	narrow leaf spineflower

EUDICOTS

	Scientific Name	Common Name
	Chorizanthe diffusa	diffuse spineflower
	Chorizanthe parryi var. fernandina	San Fernando Valley spineflower
	Chorizanthe procumbens	prostrate spineflower
	Chorizanthe pungens	Monterey spineflower
	Chorizanthe staticoides	turkish rugging
	Dodecahema leptoceras	slender-horned spineflower
	Eriogonum brachypodium	Parry's buckwheat
	Eriogonum cinereum	ashy-leaved buckwheat
	Eriogonum cithariforme	cithara buckwheat
	Eriogonum davidsonii	Davidson buckwheat
	Eriogonum elongatum	long-stemmed buckwheat
	Eriogonum fasciculatum	California buckwheat
	Eriogonum giganteum	St. Catherine's lace
	Eriogonum gracile	slender woolly buckwheat
	Eriogonum parvifolium	bluff buckwheat
	Eriogonum roseum	wand buckwheat
	Eriogonum thurberi	Thurber buckwheat
	Eriogonum wrightii	Wright's buckwheat
	Lastarriaea coriacea	lastarriaea
	Mucronea californica	California spineflower
	Nemacaulis denudata var. denudata	coast woolly heads
	Nemacaulis denudata var. gracilis	slender woolly heads
	Persicaria amphibia	water smartweed
*	*Persicaria capitata*	Himalayan smartweed
*	*Persicaria hydropiper*	common smartweed
	Persicaria hydropiperoides	water pepper
	Persicaria lapathifolium	willow-weed
*	*Persicaria maculosa*	spotted ladysthumb
	Persicaria punctata	perennial smartweed
*	*Polygonum argyrocoleon*	silver sheath knotweed
*	*Polygonum aviculare*	prostrate knotweed
	Polygonum ramosissimum	yellow knotweed
	Pterostegia drymarioides	California thread-stem
	Rumex acetosella	sheep sorrel
	Rumex conglomeratus	whorled dock
	Rumex crassus	willow-leaved dock
*	*Rumex crispus*	curly dock
	Rumex fueginus	golden dock
	Rumex hymenosepalus	desert rhubarb
	Rumex salicifolius	willow dock
	Rumex violascens	Mexican dock

EUDICOTS

	Scientific Name	Common Name
	Portulacaceae	**Purslane Family**
*	*Portulaca oleracea*	common purslane
	Primulaceae	**Primrose Family**
	Primula clevelandii	Padre's shooting star
	Ranunculaceae	**Buttercup Family**
	Actaea rubra	baneberry
	Clematis lasiantha	pipestems
	Clematis ligusticifolia	virgin's bower
	Clematis pauciflora	ropevine
	Delphinium cardinale	scarlet larkspur
	Delphinium parishii	Parish's larkspur
	Delphinium parryi	Parry's larkspur
	Delphinium patens	spreading larkspur
	Ranunculus californicus	California buttercup
	Ranunculus cymbalaria	desert buttercup
	Ranunculus hebecarpus	pubescent fruited buttercup
	Thalictrum fendleri	meadow-rue
	Resedaceae	**Mignonette Family**
	Oligomeris linifolia	narrow-leaved oligomeris
	Rhamnaceae	**Buckthorn Family**
	Adolphia californica	California adolphia
	Ceanothus crassifolius	hoary leaf ceanothus
	Ceanothus cuneatus	buck brush
	Ceanothus cyaneus	lakeside ceanothus
	Ceanothus impressus	Santa Barbara ceanothus
	Ceanothus leucodermis	chaparral whitethorn
	Ceanothus megacarpus	big-podded ceanothus
	Ceanothus oliganthus	hairy ceanothus
	Ceanothus spinosus	green bark ceanothus
	Ceanothus thyrsiflorus	blueblossom
	Frangula californica	California coffeeberry
	Rhamnus crocea	spiny redberry
	Rhamnus ilicifolia	holly-leaf redberry
	Rosaceae	**Rose Family**
	Adenostoma fasciculatum	chamise
	Adenostoma sparsifolium	red shanks
	Cercocarpus betuloides	birch-leaf mountain-mahogany
*	*Cotoneaster franchetii*	cotoneaster
*	*Cotoneaster lacteus*	milkflower cotoneaster
*	*Cotoneaster pannosus*	woolly cotoneaster

EUDICOTS

	Scientific Name	Common Name
	Drymocallis glandulosa	sticky cinquefoil
*	*Duchesnea indica*	mock strawberry
*	*Eriobotrys japonica*	loquat
	Fragaria vesca	wild strawberry
	Heteromeles arbutifolia	toyon
	Holodiscus discolor	oceanspray
	Horkelia cuneata	wedge leaved horkelia
	Ivesia santolinoides	mouse tail ivesia
	Potentilla multijuga	Ballona cinquefoil
*	*Prunus caroliniana*	Carolina laurelcherry
	Prunus ilicifolia	holly-leaved cherry
*	*Prunus persica*	peach
*	*Pyracantha coccinea*	scarlet firethorn
*	*Pyracantha fortuneana*	Chinese firethorn
*	*Pyracantha koidzumii*	Taiwan firethorn
	Rosa californica	California wild rose
	Rosa spithamea	Sonoma rose
*	*Rubus armeniacus*	Himalayan blackberry
	Rubus parviflorus	thimbleberry
*	*Rubus pensilvanicus*	Pennsylvania blackberry
*	*Rubus ulmifolius*	elmleaf blackberry
	Rubus ursinus	California blackberry
*	*Sanguisorba minor*	small burnet
	Rubiaceae	**Madder Family**
	Galium andrewsii	phlox-leaved bedstraw
	Galium angustifolium	narrow leaved bedstraw
	Galium aparine	goose grass
	Galium nuttallii	San Diego bedstraw
*	*Galium parisiense*	wall bedstraw
	Galium porrigens	climbing bedstraw
	Galium trifidum	three petaled bedstraw
*	*Sherardia arvensis*	field madder
	Rutaceae	**Rue Family**
*	*Ruta chalepensis*	fringed rue
	Salicaceae	**Willow Family**
*	*Populus alba*	white polar
	Populus fremontii	Fremont cottonwood
*	*Populus nigra*	Lombardy poplar
	Populus trichocarpa	black cottonwood
*	*Salix babylonica*	weeping willow
	Salix exigua	sandbar willow
	Salix gooddingii	black willow

EUDICOTS

	Scientific Name	Common Name
	Salix laevigata	red willow
	Salix lasiandra	Pacific willow
	Salix lasiolepis	arroyo willow
	Salix sessilifolia	northern sandbar willow
	Sapindaceae	**Soapberry Family**
	Acer macrophyllum	bigleaf maple
	Acer negundo	boxelder
	Aesculus californica	buckeye
*	*Cupaniopsis anacardioides*	carrotwood
*	*Koelreuteria bipinnata*	goldenrain tree
	Saxifragaceae	**Saxifrage Family**
	Boykinia occidentalis	western boykinia
	Boykinia rotundifolia	round-leaved boykinia
	Lithophragma affine	common woodland star
	Lithophragma bolanderi	hill star
	Micranthes californica	Greene's saxifrage
	Scrophulariaceae	**Figwort Family**
*	*Buddleja davidii*	butterfly bush
*	*Myoporum acuminatum*	strichnine bush
*	*Myoporum laetum*	Ngaio tree
	Scrophularia californica	California figwort
*	*Verbascum blattaria*	moth mullein
*	*Verbascum thapsus*	woolly mullein
*	*Verbascum virgatum*	wand mullein
	Solanaceae	**Nightshade Family**
*	*Cestrum nocturnum*	night jessamine
*	*Datura stramonium*	annual jimson weed
	Datura wrightii	jimson weed
	Lycium andersonii	box thorn
	Lycium brevipes var. *hassei*	Santa Catalina Island desert-thorn
	Lycium californicum	California box-thorn
*	*Lycium ferocissimum*	African boxthorn
*	*Lycopersicon esculentum*	tomato
*	*Nicandra physalodes*	nicandra
*	*Nicotiana alata*	flowering tobacco
	Nicotiana clevelandii	Cleveland's tobacco
*	*Nicotiana glauca*	tree tobacco
	Nicotiana quadrivalvis	Indian tobacco
	Petunia parviflora	wild petunia
*	*Physalis philadelphica*	tomatillo
*	*Salpichroa origanifolia*	lily of the valley vine

EUDICOTS

	Scientific Name	Common Name
	Solanum americanum	small-flowered nightshade
*	*Solanum aviculare*	New Zealand nightshade
	Solanum douglasii	Douglas' nightshade
*	*Solanum elaeagnifolium*	white horse-nettle
*	*Solanum lanceolatum*	lance leaf nightshade
*	*Solanum mauritianum*	earleaf nightshade
*	*Solanum nigrum*	black nightshade
*	*Solanum physalifolium*	hoe nightshade
*	*Solanum rostratum*	buffalo berry
	Solanum umbelliferum	blue witch
	Solanum xanti	chaparral nightshade
	Sterculiaceae	**Cacao Family**
*	*Brachychiton populneum*	white-flower kurrajong
	Tamaricaceae	**Tamarix Family**
*	*Tamarix aphylla*	athel
*	*Tamarix chinensis*	tamarisk
*	*Tamarix parviflora*	small-flowered tamarisk
*	*Tamarix ramosissima*	Mediterranean tamarisk
	Urticaceae	**Nettle Family**
	Hesperocnide tenella	western nettle
	Parietaria hespera	western pellitory
	Parietaria judaica	spreading pellitory
*	*Soleirolia soleirolii*	baby's tears
	Urtica dioica	stinging nettle
*	*Urtica urens*	dwarf nettle
	Valerianaceae	**Valerian Family**
*	*Centranthus ruber*	Jupiter's beard
	Verbenaceae	**Verbain Family**
*	*Lantana camara*	lantana
*	*Lantana montevidensis*	trailing lantana
	Phyla lanceolata	lance leaf lippia
	Phyla nodiflora	common lippia
	Verbena bracteata	bracted verbena
	Verbena lasiostachys	western verbena
*	*Verbena pulchella*	South American mock vervain
	Violaceae	**Violet Family**
*	*Viola odorata*	English violet
	Viola pedunculata	johnny-jump-up

EUDICOTS

	Scientific Name	Common Name
	Viscaceae	**Mistletoe Family**
	Phoradendron leucarpum ssp. *macrophyllum*	big leaf mistletoe
	Phoradendron leucarpum ssp. *tomentosum*	mistletoe
	Vitaceae	**Grape Family**
*	*Parthenocissus inserta*	woodbine
	Vitis californica	California wild grape
	Vitis girdiana	Southern California wild grape
*	*Viola odorata*	cultivated grape
	Zygophyllaceae	**Caltrop Family**
*	*Tribulus terrestris*	puncture vine

MONOCOTYLEDONS

	Scientific Name	Common Name
	Agavaceae	**Agave Family**
*	*Agave americana*	century plant
	Chlorogalum pomeridianum	soap plant
	Hesperoyucca whipplei	chaparral yucca
	Alliaceae	**Onion Family**
	Allium haematochiton	red-skinned onion
	Allium peninsulare	peninsular onion
*	*Nothoscordum gracile*	slender false garlic
	Arecaceae	**Palm Family**
*	*Washingtonia robusta*	Mexican fan palm
	Asparagaceae	**Asparagas Family**
*	*Asparagus aethiopicus*	African asparagus fern
*	*Asparagus asparagoides*	smilax
*	*Asparagus setaceus*	common asparagus fern
	Cyperaceae	**Sedge Family**
	Bolboschoenus maritimus	salt marsh bulrush
	Bolboschoenus robustus	sturdy bulrush
	Carex alma	sedge
	Carex barbarae	Valley sedge
	Carex pellita	woolly sedge
	Carex praegracilis	clustered field sedge
	Carex schottii	Schott's sedge
	Carex scopulorum	mountain sedge
	Carex senta	rough sedge
	Carex spissa	San Diego sedge
	Carex triquetra	triangular-fruited sedge
	Carex utriculata	beaked sedge
*	*Cyperus difformis*	variable nutsedge
	Cyperus eragrostis	tall cyperus
	Cyperus erythrorhizos	red-rooted cyperus
	Cyperus esculentus	yellow nut-grass
*	*Cyperus gracilis*	slimjim flatsedge
*	*Cyperus involucratus*	umbrella-plant
	Cyperus laevigatus	smooth cyperus
	Cyperus niger	brown cyperus
	Cyperus odoratus	coarse cyperus
*	*Cyperus rotundus*	purple nutsedge
	Eleocharis acicularis	needle-stemmed spikerush
	Eleocharis macrostachya	pale spike-rush
	Eleocharis montevidensis	slender creeping spike-rush
	Eleocharis palustris	pale spikerush

MONOCOTYLEDONS

	Scientific Name	Common Name
	Eleocharis radicans	creeping spikerush
	Isolepis cernua	low bulrush
*	*Kyllinga brevifolia*	short leaf spikesedge
	Schoenoplectus acutus	hard-stemmed bulrush
	Schoenoplectus americanus	American bulrush
	Schoenoplectus californicus	California bulrush
	Schoenoplectus pungens	common threesquare
	Scirpus microcarpus	small-fruited bulrush
	Iridaceae	**Iris Family**
*	*Iris pseudoacorus*	iris
	Sisyrinchium bellum	blue-eyed-grass
	Juncaceae	**Rush Family**
	Juncus acutus	southwestern spiny rush
	Juncus ambiguus	saline toad rush
	Juncus balticus	wire rush
	Juncus bufonius	toad rush
	Juncus effusus	bog rush
	Juncus macrophyllus	long-leaved rush
	Juncus mexicanus	Mexican rush
	Juncus patens	rush
	Juncus phaeocephalus	brown-headed rush
	Juncus rugulosus	wrinkled rush
	Juncus textilis	Indian rush
	Juncus xiphioides	iris-leaved rush
	Lemnaceae	**Duckweed Family**
	Lemna gibba	inflated duckweed
	Lemna minuscula	least duckweed
	Liliaceae	**Lily Family**
*	*Agapanthus africanus*	lily of the nile
	Calochortus albus	white fairy lantern
	Calochortus catalinae	Catalina mariposa lily
	Calochortus clavatus	yellow mariposa
	Calochortus plummerae	Plummer's mariposa lily
	Calochortus splendens	lilac mariposa lily
	Calochortus venustus	butterfly mariposa lily
	Fritillaria biflora	chocolate lily
	Lilium humboldtii ssp. *ocellatum*	ocellated lily
	Melianthaceae	**False-hellebore Family**
	Toxicoscordion fremontii	Fremont's death camas

MONOCOTYLEDONS

	Scientific Name	Common Name
	Orchidaceae	**Orchid Family**
	Epipactis gigantea	stream orchid
	Piperia cooperi	Cooper's rein orchid
	Piperia unalascensis	Alaska piperia
	Poaceae	**Grass Family**
*	*Aegilops geniculata*	ovate goatgrass
*	*Aegilops triuncialis*	goatgrass
	Agrostis exarata	bentgrass
	Agrostis pallens	Diego bentgrass
*	*Agrostis stolonifera*	redtop
	Alopecurus carolinanus	Carolina foxtail
	Alopecurus geniculatus	marsh foxtail
*	*Ammophila arenaria*	European beachgrass
	Andropogon glomeratus	bushy bluestem
	Aristida adscensionis	six-week's three-awn
	Aristida purpurea	Parish three-awn
*	*Arundo donax*	giant reed
*	*Avena barbata*	slender wild oat
*	*Avena fatua*	wild oat
*	*Avena sativa*	wild oat
	Bothriochloa barbinodis	beard grass
	Bothriochloa laguroides	silver beard grass
*	*Brachypodium distachyon*	false-brome
*	*Briza minor*	little rattlesnake grass
	Bromus arizonicus	Arizona brome
*	*Bromus berteroanus*	Chliean chess
	Bromus carinatus	California brome
*	*Bromus catharticus*	rescue grass
*	*Bromus diandrus*	ripgut grass
*	*Bromus hordeaceus*	soft chess
*	*Bromus madritensis* ssp. *rubens*	foxtail chess
*	*Bromus sterilis*	sterile brome
*	*Bromus tectorum*	cheat grass
*	*Cenchrus echinatus*	southern sandbur
*	*Cenchrus longispinus*	mat sandbur
*	*Chloris gayana*	Rhodes grass
*	*Chloris virgata*	feather finger grass
*	*Cortaderia jubata*	Andean pampas grass
*	*Cortaderia selloana*	pampas grass
*	*Crypsis schoenoides*	swamp timothy
*	*Crypsis vaginiflora*	prickle grass
*	*Cynodon dactylon*	Bermuda grass

MONOCOTYLEDONS

	Scientific Name	Common Name
*	*Cynosurus cristatus*	crested dogtail grass
*	*Dactylis glomerata*	orchardgrass
	Deschampsia danthonioides	annual hairgrass
*	*Digitaria ciliaris*	southern crabgrass
*	*Digitaria ischaemum*	smooth crabgrass
*	*Digitaria sanguinalis*	hairy crabgrass
	Distichlis spicata	saltgrass
*	*Echinochloa colona*	jungle rice grass
*	*Echinochloa crus-galli*	barnyard grass
*	*Ehrharta calycina*	perennial veldtgrass
*	*Ehrharta erecta*	panic veldtgrass
*	*Ehrharta longiflora*	long flowered veldtgrass
*	*Eleusine indica*	goose grass
	Elymus condensatus	giant wild rye
	Elymus glaucus	blue wildrye
	Elymus multisetus	big squirreltail
*	*Elymus repens*	quack grass
	Elymus stebbinsii	wheatgrass
	Elymus triticoides	beardless wild rye
*	*Eragrostis barrelieri*	Mediterranean lovegrass
*	*Eragrostis cilianensis*	weeping lovegrass
*	*Eragrostis curvula*	stinkgrass
	Eragrostis mexicana	Mexican lovegrass
	Eragrostis pectinacea	tufted lovegrass
*	*Eragrostis pilosa*	Indian lovegrass
*	*Festuca arundinacea*	reed fescue
*	*Festuca bromoides*	false brome fescue
	Festuca californica	California fescue
	Festuca microstachys	Pacific fescue
*	*Festuca myuros*	rattail fescue
	Festuca octoflora	hairy six-weeks fescue
*	*Festuca perennis*	Italian ryegrass
	Festuca pratensis	meadow fesue
*	*Festuca temulenta*	darnel
*	*Gastridium phleoides*	nit grass
	Hainardia cylindrica	thin tail
	Hordeum brachyantherum	meadow barley
	Hordeum depressum	alkali barley
	Hordeum intercedens	vernal barley
*	*Hordeum marinum*	seaside barley
*	*Hordeum murinum*	glaucous foxtail barley
*	*Hordeum murinum ssp. leporinum*	foxtail barley
*	*Hordeum vulgare*	common barley

MONOCOTYLEDONS

	Scientific Name	Common Name
*	*Hyparrhenia hirta*	thatching grass
	Koeleria macrantha	June grass
*	*Lamarckia aurea*	goldentop
	Leptochloa fusca ssp. *uninervia*	Mexican sprangletop
	Leptochloa panicea	mucronate sprangletop
	Melica californica	California melic
	Melica imperfecta	coast range melic
*	*Melinis repens*	Natal grass
	Muhlenbergia microsperma	littleseed muhly
	Muhlenbergia rigens	deergrass
	Orcuttia californica	California orcutt grass
	Pancium capillare	old witch grass
*	*Pancium dichotomiflorum*	fall panic grass
*	*Pancium miliaceum*	broom corn millet
*	*Parapholis incurva*	sickle grass
*	*Paspalum dilatatum*	dallis grass
	Paspalum distichum	knotgrass
*	*Paspalum vaginatum*	seashore paspalum
*	*Pennisetum clandestinum*	kikuyu grass
*	*Pennisetum purpureum*	elephant grass
*	*Pennisetum setaceum*	African fountain grass
*	*Phalaris aquatica*	Harding grass
	Phalaris californica	Canary grass
*	*Phalaris canariensis*	Canary grass
*	*Phalaris caroliniana*	Carolina canary grass
	Phalaris lemmonii	Lemmon's canary grass
*	*Phalaris minor*	Mediterranean canary grass
*	*Phalaris paradoxa*	hood canary grass
	Phragmites australis	common reed
*	*Poa annua*	annual bluegrass
	Poa bulbosa	bulbous blue grass
	Poa fendleriana	Fendler's bluegrass
*	*Poa pratensis*	Kentucky bluegrass
	Poa secunda	pine bluegrass
*	*Polypogon interruptus*	ditch beard grass
*	*Polypogon monspeliensis*	annual beard grass
*	*Polypogon viridis*	water beard grass
	Puccinellia nuttalliana	Nuttall's alkali grass
*	*Rytidosperma penicillatum*	purple-awned wallaby grass
*	*Schismus arabicus*	Arabian grass
*	*Schismus barbatus*	Mediterranean schismus
*	*Secale cereale*	rye
*	*Setaria parviflora*	marsh bristle grass

MONOCOTYLEDONS

	Scientific Name	Common Name
*	*Setaria pumila*	yellow bristle grass
*	*Setaria verticillata*	hooked bristle grass
*	*Sorghum halepense*	Johnsongrass
	Spartina foliosa	Pacific cord grass
	Sporobolus airoides	alkali sacaton
*	*Sporobolus indicus*	smutgrass
*	*Stenotaphrum secundatum*	Saint Augustine grass
	Stipa cernua	nodding needlegrass
	Stipa coronatum	giant needlegrass
	Stipa lepida	small-flowered needlegrass
*	*Stipa miliacea*	Smilo grass
	Stipa pulchra	purple needlegrass
	Stipa speciosa	desert needlegrass
*	*Stipa tenuissima*	Mexican feathergrass
*	*Triticum aestivum*	wheat
	Potamogetonaceae	**Pondweed Family**
	Potamogeton foliosus	leafy pondweed
	Stuckenia pectinata	fennel-leaf pondweed
	Ruscaceae	**Butcher's Broom Family**
	Nolina cismontana	California beargrass
	Themidaceae	**Brodiaea Family**
	Bloomeria crocea	common goldenstar
	Brodiaea jolonensis	dwarf brodiaea
	Brodiaea terrestris	dwarf brodiaea
	Dichelostemma capitatum	blue dicks
	Muilla maritima	common muilla
	Triteleia ixioides	foothill triteleia
	Triteleia laxa	Ithuriel's spear
	Typhaceae	**Cattail Family**
	Sparganium eurycarpum	broad-fruited bur-reed
	Typha domingensis	slender cattail
	Typha latifolia	broad-leaved cattail
	Zannichelliaceae	**Horned-Pondweed Family**
	Zannichellia palustris	horned pondweed

Appendix C
Faunal Compendium

ESA

APPENDIX C: FAUNAL COMPENDIUM

INVERTEBRATES

Scientific Name	Common Name
Class: Gastropoda	**Snails and Slugs**
Ambigolimax nyctelius	Balkan threeband slug
Arion hortensis	garden arion
Cornu aspersum	garden snail
Deroceras laeve	meadow slug
Deroceras reticulatum	milky slug
Glyptostoma gabrielense	San Gabriel chestnut
Helminthoglypta petricola	Transverse Range shoulderband snail
Helminthoglypta traskii	trask shoulderband snail
Helminthoglypta tudiculata	Southern California shoulderband snail
Hespararion hemphilli	Hemphill's westernslug
Milax gagates	greenhouse slug
Otala lactea	milk snail
Oxychilus draparnaudi	Draparnaud's glass snail
Paralaoma servilis	pinhead spot snail
Polygyra cereolus	southern flatcoil
Zonitoides arboreus	quick gloss snail
Arachnida	**Spiders and Relatives**
Latrodectus geometricus	brown widow
Latrodectus hesperus	western black widow
Pauroctonus silvestrii	California common scorpion
Insecta (Order Orthoptera)	**Grasshoppers, Katydids, and Crickets**
Schistocerca nitens	gray bird grasshopper
Stenopelmatus sp.	Jerusalem cricket
Trimerotropis pallidipennis	pallid-winged grasshopper
Insecta (Order Odonata)	**Dragonflies and Damselflies**
Ischnura cervula	Pacific forktail
Libellula saturata	flame skimmer
Pachydiplax longipennis	blue dasher
Perithemis intensa	Mexican amberwing
Rhionaeschna multicolor	blue-eyed darner
Sympetrum corruptum	variegated meadowhawk
Insecta (Order Coleoptera)	**Beetles**
Cycloneda sanguinea	spotless lady beetle
* *Harmonia axyridis*	Asian lady beetle
Hippodamia convergens	convergent lady beetle

INVERTEBRATES

Scientific Name	Common Name
Insecta (Order Lepidoptera)	**Butterflies and Moths**
Agraulis vanillae	Gulf fritillary
Anthocharis sara	Sara orangetip
Apodemia vrigulti	Mormon metalmark
Burnsius albescens	white checkered-skipper
Callophrys augustinus	brown elfin
Callophrys perplexa	bramble hairstreak
Celastrina echo	echo azure
Danaus plexippus	Monarch butterfly
Erynnis funeralis	funeral duskywing
Euphilotes battoides allyni	El Segundo blue butterfly
Euphilotes bernardino	Bernardino blue
Euphilotes chalcedona	variable checkerspot
Glaucopsyche lygdamus palosverdesensis	Palos Verdes blue butterfly
Hylephila phyleus	fiery skipper
Junonia coenia	common buckeye
Leptotes marina	Marine blue
Limenitis lorquini	Lorquin's admiral
Nymphalis antiopa	mourning cloak
Nymphalis californica	California tortoiseshell
Papilio eurymedon	pale swallowtail
Papilio rutulus	western tiger swallowtail
Papilio zelicaon	anise swallowtail
Pieris rapae	cabbage white
Plebejus acmon	Acmon blue butterfly
Poanes melane	umber skipper
Pontia protodice	checkered white
Strymon melinus	gray hairstreak
Vanessa annabella	West Coast lady
Vanessa atalanta	red admiral
Vanessa cardui	painted lady
Vanessa virginiensis	American lady
Insecta (Order Hymenoptera)	**Ants, Bees, and Wasps**
Apis mellifera	western honey bee
Bombus sonorus	Sonoran bumblebee
Dasymutilla aureola	velvet ant
Dasymutilla sackenii	Sackeni's velvet ant
Linepithema humile	Argentine ant

FISH

	Scientific Name	Common Name
	Castostomidae	**Suckers**
	Catostomus santaanae	Santa Ana sucker
	Centrarchidae Family	**Sunfishes**
*	*Lepomis macrochirus*	bluegill
*	*Micropterus salmoides*	largemouth bass
	Cichlidae	**Cichlids**
*	*Oreochromis mossambicus*	Mozambique tilapia
	Cyprinidae	**Carps and Minnows**
*	*Cyprinus carpio*	common carp
*	*Cyprinus rubrofuscus*	Amur carp
	Gila orcutti	arroyo chub
	Rhinichthys osculus	speckled dace
	Ictaluridae	**Catfish**
*	*Ictalurus melas*	black bullhead
*	*Ictalurus nebulosus*	brown bullhead
*	*Ictalurus punctatus*	channel catfish
	Percichthyidae	**Temperate Bass**
*	*Morone saxatilis*	striped bass
	Poeciliidae	**Mosquitofish**
*	*Gambusia affinis*	western mosquitofish

AMPHIBIANS

Scientific Name	Common Name
Bufonidae	**True Toads**
Anaxyrus boreas	western toad
Hylidae	**Treefrogs**
Pseudacris cadaverina	California treefrog
Pseudacris hypochondriaca	Baja California treefrog
Pipidae	**Tongueless Frogs**
* *Xenopus laevis*	African clawed frog
Plethodontidae	**Lungless Salamanders**
Batrachoseps major	garden slender salamander
Batrachoseps nigriventris	black-bellied slender salamander
Ranidae	**True Frogs**
* *Lithobates catesbeianus*	American bullfrog
Rana draytonii	California red-legged frog
Rana muscosa	mountain yellow-legged frog
Salamandridae	**Pacific Newts**
Taricha torosa	California newt
Scaphiopodidae	**North American Spadefoots**
Spea hammondii	western spadefoot

REPTILES

	Scientific Name	Common Name
	TESTUDINES	**TURTLE AND TORTOISES**
	Emydidae	**Box and Water Turtles**
	Emys marmorata	western pond turtle
*	*Graptemys pseudogeographica*	false map turtle
*	*Pseudemys nelsoni*	Florida red-bellied cooter
*	*Trachemys scripta*	common slider
*	*Trachemys scripta elegans*	red-eared slider
	Trionychidae	**Softshell Turtles**
*	*Apalone ferox*	Floria softshell turtle
*	*Apalone spinifera*	spiny softshell
	LACERTILIA	**LIZARDS**
	Anguidae	**Alligator Lizards**
	Elgaria multicarinatus webbi	San Diego alligator lizard
	Anniellidae	**North American Legless Lizards**
	Anniella pulchra	California legless lizard
	Phrynosomatidae	**Zebratail, Earless, Horned, Spiny, Fringe-Toed Lizards**
	Phrynosoma blainvillii	Blainville's horned lizard
	Sceloporus occidentalis	western fence lizard
	Uta stansburiana	side-blotched lizard
	Scincidae	**Skinks**
	Plestiodon skiltonianus	western skink
	Teiidae	**Whiptail Lizards**
	Aspidoscelis tigris	western whiptail
	SERPENTES	**SNAKES**
	Colubridae	**Colubrid Snakes**
	Diadophis punctatus	ring-necked snake
	Lampropeltis californiae	California kingsnake
	Lampropeltis multifasciata	coast mountain kingsnake
	Masticophis flagellum	coachwhip
	Masticophis lateralis	striped racer
	Nerodia fasciata	banded watersnake
	Pituophis catenifer	gopher snake
	Pituophis catenifer annectens	San Diego gopher snake
	Salvadora hexalepis	western patch-nosed snake
	Viperidae	**Vipers**
	Crotalus oreganus	western rattlesnake
	Crotalus oreganus helleri	southern Pacific rattlesnake

BIRDS

Scientific Name	Common Name
ANSERIFORMES	
Anatidae	**Waterfowl**
Aix galericulata	Mandarin duck
Aix sponsa	wood duck
Alopochen aegyptiaca	Egyptian goose
Anas acuta	northern pintail
Anas americana	American wigeon
Anas clypeata	northern shoveler
Anas crecca	green-winged teal
Anas cyanoptera	cinnamon teal
Anas discors	blue-winged teal
Anas penelope	Eurasian wigeon
Anas platyrhynchos	mallard
Anas strepera	gadwall
Anser albifrons	greater white-fronted goose
Anser anser	greylag goose
Anser cygnoides	swan goose
Aythya affinis	lesser scaup
Aythya americana	redhead
Aythya collaris	ring-necked duck
Aythya valisineria	canvasback
Branta bernicla	brant
Branta canadensis	Canada goose
Branta hutchinsii	cackling goose
Bucephala albeola	bufflehead
Buscephala clangula	common goldeneye
Cairina moschata	Muscovy duck
Chen caerulescens	snow goose
Chen rossii	Ross's goose
Clangula hyemalis	long-tailed duck
Cygnus buccinators	trumpeter swan
Cygnus columbianus	tundra swan
Cygnus olor	mute swan
Dendrocygna bicolor	fulvous whistling-duck
Lophodytes cucullatus	hooded merganser
Melanitta americana	black scoter
Melanitta perspicillata	surf scoter
Mergus merganser	common merganser
Mergus serrator	red-breasted merganser
Oxyura jamaicensis	ruddy duck

BIRDS

Scientific Name	Common Name
GALLIFORMES	
Odontophoridae	**Quails**
Callipepla californica	California quail
Phasianidae	**Pheasants**
Pavo cristatus	Indian peafowl
GAVIIFORMES	
Gaviidae	**Loons**
Gavia immer	common loon
Gavia pacifica	Pacific loon
Gavia stellata	red-throated loon
PODICIPEDIFORMES	
Podicipedidae	**Grebes**
Aechmophorus clarkii	Clark's grebe
Aechmophorus occidentalis	western grebe
Podiceps auritus	horned grebe
Podiceps grisegena	red-necked grebe
Podiceps nigricollis	eared grebe
Podilymbus podiceps	pied-billed grebe
SULIFORMES	
Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus	double-crested cormorant
Phalacrocorax penicillatus	Brandt's cormorant
PELECANIFORMES	
Pelecanidae	**Pelicans**
Pelecanus erythrorhynchos	American white pelican
Pelecanus occidentalis	brown pelican
Ardeidae	**Herons**
Ardea alba	great egret
Ardea herodias	great blue heron
Botaurus lentiginosus	American bittern
Bubulcus ibis	cattle egret
Butorides virescens	green heron
Egretta caerulea	little blue heron
Egretta thula	snowy egret
Ixobrychus exilis	least bittern
Nycticorax nycticorax	black-crowned night-heron
Nycticorax violacea	yellow-crowned night-heron

BIRDS

Scientific Name	Common Name
Threskiornithidae	**Ibises**
Plegadis chihi	white-faced ibis
Plegadis falcinellus	glossy ibis
ACCIPITRIFORMES	
Cathartidae	**New World Vultures**
Cathartes aura	turkey vulture
Pandionidae	**Osprey**
Pandion haliaetus	osprey
Accipitridae	**Hawks**
Accipiter cooperii	Cooper's hawk
Accipiter striatus	sharp-shinned hawk
Aquila chrysaetos	golden eagle
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Buteo regalis	ferruginous hawk
Buteo swainsoni	Swainson's hawk
Circus hudsonius	northern harrier
Elanus leucurus	white-tailed kite
Haliaeetus leucocephalus	bald eagle
FALCONIFORMES	
Falconidae	**Falcons**
Caracara cheriway	crested caracara
Falco columbarius	merlin
Falco mexicanus	prairie falcon
Falco peregrinus	peregrine falcon
Falco sparverius	American kestrel
GRUIFORMES	**Cranes and Rails**
Rallidae	**Rails and Gallinules**
Fulica americana	American coot
Gallinula galeata	common gallinule
Porzana carolina	sora
Rallus limicola	Virginia rail
Rallus obsoletus	Ridgway's rail
Gruidae	**Cranes**
Grus canadensis	sandhill crane

BIRDS

Scientific Name	Common Name
CHARADRIIFORMES	
Charadriidae	**Plovers**
Charadrius nivosus	western snowy plover
Charadrius semipalmatus	semipalmated plover
Charadrius vociferus	killdeer
Pluvialis fulva	Pacific golden-plover
Pluvialis squatarola	black-bellied plover
Haematopodidae	**Oystercatchers**
Haematopus bachmani	black oystercatcher
Recurvirostridae	**Stilts and Avocets**
Himantopus mexicanus	black-necked stilt
Recurvirostra americana	American avocet
Scolopacidae	**Sandpipers**
Actitis macularia	spotted sandpiper
Arenaria melanocephala	black turnstone
Calidris alba	sanderling
Calidris alpina	dunlin
Calidris bairdii	Baird's sandpiper
Calidris canutus	red knot
Calidris mauri	western sandpiper
Calidris melanotos	pectoral sandpiper
Calidris minutilla	least sandpiper
Calidris virgata	surfbird
Gallinago delicata	Wilson's snipe
Limnodromus griseus	short-billed dowitcher
Limnodromus scolopaceus	long-billed dowitcher
Limosa fedoa	marbled godwit
Numenius americanus	long-billed curlew
Numenius phaeopus	whimbrel
Phalaropus lobatus	red-necked phalarope
Phalaropus tricolor	Wilson's phalarope
Tringa flavipes	lesser yellowlegs
Tringa incana	wandering tattler
Tringa melanoleuca	greater yellowlegs
Tringa semipalmata	willet
Tringa solitaria	solitary sandpiper
Laridae	**Gulls and Terns**
Chroicocephalus philadelphia	Bonaparte's gull
Hydroprogne caspia	Caspian tern
Larus argentatus	herring gull
Larus californicus	California gull

BIRDS

	Scientific Name	Common Name
	Larus canus	mew gull
	Larus delawarensis	ring-billed gull
	Larus glaucescens	glaucous-winged gull
	Larus occidentalis	western gull
	Rynchops niger	black skimmer
	Sternula antillarum	least tern
	Sterna forsteri	Forster's tern
	Sterna hirundo	common tern
	Alcidae	**Auks, Murres, and Puffins**
	Synthliboramphus antiquus	ancient murrelet
	COLUMBIFORMES	
	Columbidae	**Pigeons and Doves**
*	*Columba livia*	rock pigeon
	Columbina passerina	common ground-dove
	Patagioenas fasciata	band-tailed pigeon
	Streptopelia chinensis	spotted dove
*	*Streptopelia decaocto*	Eurasian collared-dove
	Zenaida asiatica	white-winged dove
	Zenaida macroura	mourning dove
	CUCULIFORMES	
	Cuculidae	**Cuckoos and Roadrunners**
	Geococcyx californianus	greater roadrunner
	STRIGIFORMES	
	Tytonidae	**Barn Owls**
	Tyto alba	barn owl
	Strigidae	**True Owls**
	Asio flammeus	short-eared owl
	Athene cunicularia	burrowing owl
	Bubo virginianus	great horned owl
	CAPRIMULGIFORMES	
	Caprimulgidae	**Goatsuckers**
	Chordeiles acutipennis	lesser nighthawk
	Phalaenoptilus nuttallii	common poorwill
	APODIFORMES	
	Apodidae	**Swifts**
	Aeronautes saxatalis	white-throated swift
	Chaetura vauxi	Vaux's swift

BIRDS

Scientific Name	Common Name
Trochilidae	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus rufus	rufous hummingbird
Selasphorus sasin	Allen's hummingbird
Stellula calliope	Calliope hummingbird
CORACIIFORMES	
Alcedinidae	**Kingfishers**
Megaceryle alcyon	belted kingfisher
PICIFORMES	
Picidae	**Woodpeckers**
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides pubescens	downy woodpecker
Sphyrapicus nuchalis	red-naped sapsucker
Sphyrapicus thyroideus	Williamson's sapsucker
Sphyrapicus varius	yellow-bellied sapsucker
PSITTACIFORMES	
Psittacidae	**Parakeets and Parrots**
* *Agapornis roseicollis*	rosy-faced lovebird
* *Amazona finschi*	lilac-crowned parrot
* *Amazona viridigenalis*	red-crowned parrot
* *Aratinga nenday*	Nanday parakeet
* *Bortogeris chiriri*	yellow-chevroned parakeet
* *Melopsittacus undulatus*	budgerigar
* *Nymphicus hollandicus*	cockatiel
* *Psittacula krameri*	rose-ringed parakeet
* *Psittacara mitratus*	mitred parakeet
PASSERIFORMES	
Tyrannidae	**Tyrant Flycatchers**
Contopus cooperi	olive-sided flycatcher
Contopus sordidulus	western wood-pewee
Empidonax difficilis	Pacific-slope flycatcher
Empidonax hammondii	Hammond's flycatcher
Empidonax oberholseri	dusky flycatcher
Empidonax traillii	willow flycatcher
Empidonax traillii extimus	southwestern willow flycatcher
Empidonax wrightii	gray flycatcher

BIRDS

Scientific Name	Common Name
Myiarchusf cinerascens	ash-throated flycatcher
Pyrocephalus rubinus	vermillion flycatcher
Sayornis nigricans	black phoebe
Sayornis phoebe	eastern phoebe
Sayornis saya	Say's phoebe
Tyrannus forficatus	scissor-tailed flycatcher
Tyrannus melancholicus	tropical kingbird
Tyrannus tyrannus	eastern kingbird
Tyrannus verticalis	western kingbird
Tyrannus vociferans	Cassin's kingbird
Laniidae	**Shrikes**
Lanius ludovicianus	loggerhead shrike
Vireonidae	**Vireos**
Vireo bellii pusillus	least Bell's vireo
Vireo cassinii	Cassin's vireo
Vireo flavifrons	yellow-throated vireo
Vireo gilvus	warbling vireo
Vireo huttoni	Hutton's vireo
Vireo olivaceus	red-eyed vireo
Vireo plumbeus	plumbeous vireo
Vireo solitarius	blue-headed vireo
Corvidae	**Jays and Crows**
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Nucifraga columbiana	Clark's nutcracker
Alaudidae	**Larks**
Eremophila alpestris	horned lark
Hirundinidae	**Swallows**
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Progne subis	purple martin
Riparia riparia	bank swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Tachycineta bicolor	tree swallow
Tachycineta thalassina	violet-green swallow
Paridae	**Titmice**
Baeolophus inornatus	oak titmouse
Poecile gambeli	mountain chickadee

BIRDS

Scientific Name	Common Name
Aegithalidae	**Bushtits**
Psaltriparus minimus	bushtit
Sittidae	**Nuthatches**
Sitta canadensis	red-breasted nuthatch
Sitta carolinensis	white-breasted nuthatch
Certhiidae	**Creepers**
Certhia americana	brown creeper
Troglodytidae	**Wrens**
Campylorhynchus brunneicapillus	cactus wren
Catherpes mexicanus	canyon wren
Cistothorus palustris	marsh wren
Salpinctes obsoletus	rock wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
Polioptilidae	**Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
Polioptila californica californica	coastal California gnatcatcher
Regulidae	**Kinglets**
Regulus calendula	ruby-crowned kinglet
Sylviidae	**Wrentits**
Chamaea fasciata	wrentit
Turdidae	**Thrushes**
Catharus guttatus	hermit thrush
Ixoreus naevius	varied thrush
Sialia currucoides	mountain bluebird
Sialia mexicana	western bluebird
Turdus migratorius	American robin
Mimidae	**Thrashers**
Mimus polyglottos	northern mockingbird
Oreoscoptes montanus	sage thrasher
Toxostoma redivivum	California thrasher
Sturnidae	**Starlings**
* *Sturnus vulgaris*	European starling
Motacillidae	**Pipits**
Anthus cervinus	red-throated pipit
Anthus rubescens	American pipit
Bombycillidae	**Waxwings**
Bombycilla cedrorum	cedar waxing

BIRDS

Scientific Name	Common Name
Ptilogonatidae	**Silky-flycatchers**
Phainopepla nitens	phainopepla
Parulidae	**Wood Warblers**
Cardellina pusilla	Wilson's warbler
Geothlypis tolmiei	MacGillivray's warbler
Geothlypis trichas	common yellowthroat
Icteria virens	yellow-breasted chat
Mniotilta varia	black-and-whie warbler
Oreothlypis celata	orange-crowned warbler
Oreothlypis luciae	Lucy's warbler
Oreothlypis peregrina	Tennessee warbler
Oreothlypis ruficapilla	Nashville warbler
Oreothlypis virginae	Virginia warbler
Parkesia noveboracensis	northern waterthrush
Protonotaria citrea	prothonotary warbler
Seiurus aurocapilla	ovenbird
Setophaga americana	northern parula
Setophaga citrina	hooded warbler
Setophaga coronata	yellow-rumped warbler
Setophaga fusca	Blackburnian warbler
Setophaga magnolia	Magnolia warbler
Setophaga nigrescens	black-throated gray warbler
Setophaga occidentalis	hermit warbler
Setophaga palmarumtanager	palm warbler
Setophaga pensylvanica	chestnut-sided warbler
Setophaga petechia	yellow warbler
Setophaga ruticilla	blackpoll warbler
Setophaga striata	American redstart
Setophaga townsendi	Townsend's warbler
Setophaga virens	black-throated green warbler
Emberizidae	**Emberizine Sparrows and Allies**
Aimophila ruficeps	rufous-crowned sparrow
Aimophila ruficeps canescens	southern California rufous-crowned sparrow
Ammodramus savannarum	grasshopper sparrow
Chondestes grammacus	lark sparrow
Junco hyemalis	dark-eyed junco
Melospiza georgiana	swamp sparrow
Melospiza lincolnii	Lincoln's sparrow
Melospiza melodia	song sparrow
Melozone albicollis	white-throated sparrow
Melozone crissalis	California towhee
Passerella iliaca	fox sparrow

BIRDS

	Scientific Name	Common Name
	Passerculus sandwichensis	savannah sparrow
	Passerculus sandwichensis beldingi	Belding's savannah sparrow
	Pipilo chlorurus	green-tailed towhee
	Pipilo maculatus	spotted towhee
	Pooecetes gramineus	vesper sparrow
	Spizella arborea	American tree sparrow
	Spizella breweri	Brewer's sparrow
	Spizella pallida	clay-colored sparrow
	Spizella passerina	chipping sparrow
	Zonotrichia atricoplilla	golden-crowned sparrow
	Zonotrichia leucophrys	white-crowned sparrow
	Zonotrichia querula	Harris' sparrow
	Calcariidae	**Longspurs and Snow Buntings**
	Calcarius lapponicus	lapland longspur
	Calcarius ornatus	chestnut-collared longspur
	Rhynchophanes mccownii	McCown's longspur
	Cardinalidae	**Buntings, Grosbeaks, and Tanagers**
	Passerina amoena	Lazuli bunting
	Passerina caerulea	blue grosbeak
	Passerina cyanea	indigo bunting
	Pheucticus ludovicianus	rose-breasted grosbeak
	Pheucticus melanocephalus	black-headed grosbeak
	Piranga ludoviciana	western tanager
	Piranga olivacea	scarlet tanager
	Piranga rubra	summer tanager
	Icteridae	**Blackbirds**
	Agelaius phoeniceus	red-winged blackbird
	Agelaius tricolor	tricolored blackbird
	Dolichonyx oryzivorus	bobolink
	Euphagus carolinus	rusty blackbird
	Euphagus cyanocephalus	Brewer's blackbird
	Icterus bullockii	Bullock's oriole
	Icterus cucullatus	hooded oriole
	Icterus galbula	Baltimore oriole
*	*Molothrus ater*	brown-headed cowbird
	Quiscalus mexicanus	great-tailed grackle
	Sturnella neglecta	western meadowlark
	Xanthocephalus xanthocephalus	yellow-headed blackbird

BIRDS

Scientific Name	Common Name
Fringillidae	**Finches**
Carduelis carduelis	European goldfinch
Haemorhous cassinii	Cassin's finch
Haemorhous mexicanus	house finch
Haemorhous purpureus	purple finch
Spinus lawrencei	Lawrence's goldfinch
Spinus pinus	pine siskin
Spinus psaltria	lesser goldfinch
Spinus tristis	American goldfinch
Passeridae	**Old World Sparrows**
* *Passer domesticus*	house sparrow
Ploceidae	**Bishops**
* *Euplectes after*	yellow-crowned bishop
* *Euplectes franciscanus*	northern red bishop
* *Ploceus melanocephalus*	black-headed weaver
Estrildidae	**Mannikins**
* *Amandava amandava*	red avadavat
* *Lonchura punctulata*	scaly-breasted munia/nutmeg mannikin
Viduidae	**Whydahs**
* *Vidua macroura*	pin-tailed whydah

MAMMALS

	Scientific Name	Common Name
	Cervidae	**Deer**
	Odocoileus hemionus	mule deer
	Canidae	**Canines**
	Canis latrans	coyote
	Urocyon cinereoargenteus	gray fox
	Vulpes vulpes	red fox
	Didelphidae	**Opossums**
	Didelphis virginiana	Virginia opossum
	Felidae	**Cats**
	Lynx rufus	bobcat
	Puma concolor	cougar
	Geomyidae	**Pocket Gophers**
	Thomomys bottae	Botta's pocket gopher
	Leporidae	**Hares and Rabbits**
	Oryctolagus cuniculus	European rabbit
	Sylvilagus audubonii	desert cottontail
	Sylvilagus bachmani	brush rabbit
	Mephitidae	**Skunks**
	Mephitis mephitis	striped sunk
	Molossidae	**Free-Tailed Bats**
	Eumops perotis	western mastiff bat
	Tadarida brasiliensis	Mexican free-tailed bat
	Muridae	**Mice, Rats, and Voles**
	Microtus californicus	California vole
*	*Mus musculus*	house mouse
	Neotoma fuscipes	dusky-footed woodrat
	Peromyscus boylii	brush mouse
	Peromyscus fraterculus	Northern Baja deer mouse
	Peromyscus maniculatus	deer mouse
*	*Rattus norvegicus*	brown rat
*	*Rattus rattus*	black rat
	Reithrodontomys megalotis	western harvest mouse
	Otariidae	**Fur Seals and Sea Lions**
	Zalophus californianus	California sea lion
	Phocidae	**Earless Seals**
	Phoca vitulina	harbor seal
	Procyonidae	**Ringtails and Raccoons**
	Procyon lotor	raccoon

MAMMALS

Scientific Name	Common Name
Sciuridae	**Squirrels and Chipmunks**
Sciurus griseus	western gray squirrel
Sciurus niger	fox squirrel
Otospermophilus beecheyi	California ground squirrel
Talpidae	**Moles**
Scapanus latimanus occultus	broad-footed mole
Ursidae	**Bears**
Ursus americanus	black bear
Vespertilionidae	**Evening Bats**
Eptesicus fuscus	big brown bat
Lasiurus blossevillii	western red bat
Lasiurus cinereus	hoary bat
Lasiurus xanthinus	western yellow bat
Myotis californicus	California myotis
Myotis yumanensis	Yuma myotis
Parastrellus hesperus	canyon bat

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Appendix D
Special-Status Species

ESA

Appendix D: Special-Status Species Occurring or Potentially Occurring within the City of Los Angeles

VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Angiosperms (Dicotyledons)					
Asteraceae	**Sunflower Family**				
Baccharis plummerae ssp. *plummerae*	Plummer's baccharis		4.3	Chaparral, broad-leaved upland forest, cismontane woodland, sage scrub; rocky areas.	Santa Monica Mountains
Centromadia parryi ssp. *australis*	southern tarweed		1B.1	Coastal salt marsh (estuaries), valley and foothill grassland vernally mesic), vernal pools.	Ballona Wetlands; San Pedro; Port of Los Angeles; UCLA Campus

Legend

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Special-Status Species
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VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion		1B.1	Coastal bluff scrub, coastal dunes, sandy sites.	Ballona Lagoon (2010); Ballona Wetlands (2011); Playa del Rey (1958); Manhattan Beach (1929); El Segundo (1935)

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VASCULAR PLANTS

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Deinandra minthornii	Santa Susana tarplant	SR	1B.2	Sage scrub, chaparral.	Chatsworth, Stoney Point
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower		1A	Marshes and swamps (coastal salt and freshwater).	East Los Angeles (1901); Cienega (1900); Presumed extinct

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VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Lasthenia glabrata ssp. *coulteri*	Coulter goldfields		1B.1	Saline places: coastal salt marsh, playas, vernal pools in foothill/valley grassland.	Ballona Wetlands (1906); Playa del Rey (1934); San Pedro (1889); Wilmington (1962); Culver City (1934)
Microseris douglasii var. *platycarpha*	small-flowered microseris		4.2	Cismontane woodland, coastal scrub, valley and foothill grassland/clay.	San Pedro (1889)
Berberidaeeae	**Barberry Family**				
Berberis nevinii	Nevin's barberry	FE, SE	1B.1	Sage scrub, chaparral, cismontane woodland, riparian scrub; sandy or gravelly substrate.	Griffith Park; Pacoima Wash; Sunland
Boraginaceae	**Borage Family**				
Nama stenocarpum	mud nama		2B.2	Marshes and swamps.	Historic record in Bevery Hills quad; Westwood (Soldier's Home) (1889)
Phacelia stellaris	Brand's phacelia		1B.1	Sage scrub, coastal dunes.	Playa del Rey (1943); El Segundo (1932)
Brassicaceae	**Mustard Family**				

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Special-Status Species
Occurring Or Potentially Occurring
Within the City of Los Angeles

VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Dithyrea maritima	beach spectaclepod	ST	1B.1	Coastal dunes.	El Segundo Dunes; Playa del Rey (1903); Hermosa Beach (1902); Redondo Beach (1899)
Lepidium virginicum var. *robinsonii*	Robinson's pepper grass		4.3	Chaparral, coastal scrub.	Downtown LA (1950)
Caryophyllaceae	**Pink Family**				
Arenaria paludicola	marsh sandwort		1B.1	Freshwater marshes and swamps, growing through dense mats of *Typha*, *Juncus*, *Scirpus*, etc.	Cienega (1900); presumed extinct in Los Angeles
Chenopodiaceae	**Goosefoot Family**				
Aphanisma blitoides	aphanisma		1B.2	Coastal shrubland, bluffs, sand, <100m.	White Point
Atriplex coulteri	Coulter's saltbush		1B.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland.	Occurrences reported Coastal bluffs near San Pedro
Atriplex pacifica	south coast salt scale		1B.2	Coastal scrub, coastal bluff scrub, playas, chenopod scrub; alkali soils.	Redondo Beach (1903), San Pedro (1903)
Atriplex parishii	Parish's brittlescale		1B.1	Alkali meadows, vernal pools, chenopod scrub.	Beverly Hills and Redondo Beach quads, exact date and location unknown,
Atriplex serenana var. *davidsonii*	south coast salt scale		1B.2	Alkali meadows, vernal pools, chenopod scrub, playas; drying alkali flats with fine soils.	Cienega (1902), San Pedro (1893)

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VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Suaeda esteroa	estuary seablite		1B.2	Coastal bluff scrub, marshes and swamps (coastal salt).	Venice quad; San Pedro (1904)
Suaeda taxifolia	wooly sea-blite		4.2	Coastal bluffs, margins of salt marshes.	Ballon Creek (1930); San Pedro (1923); Redondo Beach (1948); Pacific Palisades (1933)
Convolvulaceae	**Morning-Glory**				
Convolvulus simulans	small-flowered morning glory		4.2	Coastal scrub, valley and foothill grassland/clay, serpentinile seeps.	Griffith Park; San Pedro
Dichondra occidentalis	western dichondra		4.2	Chaparral, Cismontane woodland, Coastal scrub, valley and foothill grasslands.	Ballona wetlands
Crassulaceae	**Stonecrop Family**				
Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya	FT	1B.1	In rock crevices (usually volcanic) in chaparral and coastal scrub.	Topanga Cyn. Blvd., S of Trippet Ranch (1994); Topanga State Park (2003)
Dudleya multicaulis	many-stemmed dudleya		1B.2	California plant communities including sage scrub, valley and foothill grassland; heavy clay soils or rock outcrops; below 2,000 ft..	Chatsworth Reservoir (2007); recorded in eastern Santa Monica Mtns.; historic record in Hollywood
Dudleya virens spp. *virens*	Catalina Island dudleya		1B.2	Chaparral, coastal bluff scrub, coastal sage scrub.	Historic record in San Pedro

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VASCULAR PLANTS

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Dudleya virens spp. *insularis*	island green dudleya		1B.2	Chaparral, coastal bluff scrub, coastal sage scrub.	San Pedro(2012); Palos Verdes Peninsula (2010)
Crossosomataceae	**Crossosoma Family**				
Crossosoma californicum	Catalina crossosoma		1B.2	Dry, rocky slopes, coastal sage scrub, cyns. <500m.	White Point
Fabaceae	**Legume Family**				
Astragalus brauntonii	Braunton's milk-vetch	FE	1B.1	Sage scrub, chaparral, valley and foothill grassland, closed cone coniferous forest; limestone endemic, carbonate soils, recent burns and disturbed areas.	Topanga Canyon State Park, Dayton Canyon, Temescal Ridge, Cienega (1904)
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE, SE	1B.1	Coastal salt marsh; rarely near seeps on sandy bluffs.	Ballona Creek (1901), Playa del Rey (1951)
Astragalus tener var. *titi*	Coastal dunes milk-vetch	FE, SE	1B.1	Coastal bluff scrub, coastal dunes; often in moist, sandy depressions of bluffs and dunes along the coast.	Los Angeles, near Hyde Park (1903), Playa del Rey (1951); presumed extinct in Los Angeles
Juglandaceae	**Walnut Family**				
Juglans californica	Southern California black walnut		4.2	Sage scrub, chaparral, cismontane woodland; often in association with oaks/oak woodland; frequently found on steep hillsides with northern exposures; deep alluvial soils.	Base of San Gabriel foothills, Los Pinetos Springs (1999)
Lamiaceae	**Mint Family**				

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Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Lepechinia fragrans	fragrant pitcher sage		4.2	Chaparral below 3,000 ft. perennial herb.	Potential where habitat occurs; Topanga Canyon (1981); Big Tujunga Canyon (1975)
Malvaceae	**Mallow Family**				
Lavatera assurgentiflora ssp. *glabra*	southern island mallow		1B.1	Coastal bluff scrub.	Historic records from Playa del Rey (1910) and San Pedro (1906)
Malacothamnus davidsonii	Davidson's bush mallow		1B.2	Sage scrub, chaparral, riparian woodland.	Pacoima Wash (1917); Little Tujunga Wash (1931); Sylmar (1977); O'Melveny Park (1990); Sunland (1997)
Sidalcea neomexicana	Salt spring checkerbloom		2B.2	Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, desert scrub.	Historic record, Los Angeles, Beverly Hills quads; west of Culver City (1922); Los Angeles (1922)
Montiaceae	**Miner's Lettuce**				

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Calandrinia breweri	Brewer's calandrinia		4.2	Chaparral, coastal scrub/disturbed sites, burns.	Del Rey Hills (1928); Griffith Park (1928); Mandeville Canyon (1929); Temescal Canyon (1972); Verdugo Mountains (2000)
Nyctaginaceae	**Four O'Clock Family**				
Abronia maritima	red sand-verbena		4.2	Coastal dunes <100m.	Ballona Wetlands; Venice Beach; Play del Rey; Dockweiler State Beach
Orobanchaceae	**Broom-Rape Family**				
Cordylanthus maritimus ssp. *maritimus*	salt marsh bird's beak	FE, SE	1B.2	Coastal dunes, salt marsh.	Ballona Harbor (1901); Terminal Island (1901); Venice, Topanga and Beverly Hills quads
Polemoniaceae	**Phlox Family**				
Navarretia fossalis	spreading navarretia	FT	1B.1	Chenopod scrub, shallow freshwater marshes, vernal pools.	Inglewood (1906)
Navarretia prostrata	prostrate navarretia		1B.1	Alkaine soils, vernal pools and mesic habitats within coastal scrub and foothill woodlands.	Inglewood (1906); Los Angeles (1907); Western Avenue, Los Angeles (1944); Manhattan Beach (1944)

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Polygalaceae	**Milkwort Family**				
Polygala cornuta var. *fishiae*	Fish's milkwort		4.3	Shaded rocky places in cyns with cismontane and riparian woodlands, and chaparral between 650 and 3,000 feet.	Topanga State Park
Polygonaceae	**Buckwheat Family**				
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FPE, SE	1B.1	Coastal scrub, sandy soils.	Ballona Harbor (1901); Chatsworth Park (1901); San Fernando (1922); San Fernando Wash (1913); Little Tujunga Wash (1920)
Dodecahema leptoceras	slender-horned spineflower	FE, SE	1B.1	Alluvial sage scrub vegetation on sandy flood-deposited rivers and washes.	Big Tujunga Canyon; San Fernando (1914); Sun Valley (1906)
Mucronea californica	California spineflower		4.2	Chaparral, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland.	Potential where habitat occurs; Ballona Harbor (1899); Playa del Rey (1928); Tujunga Wash (1940); Little Tujunga Wash (1931)
Nemacaulis denudata var. *denudata*	coast woolly-heads		1B.2	Coastal dunes.	Potential where habitat occurs; San Pedro (1898)

Legend

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Special-Status Species
Occurring Or Potentially Occurring
Within the City of Los Angeles

VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Primulaceae	**Primrose Family**				
Rosaceae	**Rose Family**				
Horkelia cuneata var. *puberula*	mesa horkelia		1B.1	Chaparral, cimontane woodlands, coastal scrub.	Beverly Hills, Hollywood and Venice quads; El Segundo (1932)
Rubiaceae	**Madder Family**				
Galium cl,ftonsmithii	Santa Barbara bedstraw		4.3	Cismontane woodlands.	Potential where suitable habitat occurs; Las Flores Canyon (1929)
Solanaceae	**Nightshade Family**				
Solanum wallacei	Wallace's nightshade		1B.1	Chaparral, cismontane woodland/rocky.	Potential where habitat occurs; Upper Topanga (2018); UCLA (2019)
Angiosperms (Monocotyledons)					
Juncaceae	**Rush Family**				
Juncus acutus var. *leopoldii*	southwestern spiny rush		4.2	Coastal dunes (mesic), meadows (alkali seeps), marshes and swamps (coastal salt).	Potential where habitat occurs; Pacific Palisades (1959); Redondo Beach (1901)

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VASCULAR PLANTS

Scientific Name	Common Name	Agency Listing Status	CNPS Listing Status	Preferred Habitat	Record[1]
Liliaceae	**Lily Family**				
Calochortus catalinae	Catalina mariposa lily		4.2	Openings in chaparral, valley and foothill grassland, cismontane woodland; heavy soils.	Potential where habitat occurs; Cahuenga Pass (1926); Temescal Canyon (1973); Mandeville Canyon (1928)
Calochortus clavatus var. *clavatus*	club-haired mariposa lily		4.3	Coastal sage scrub, clayish flats and slopes.	Mandeville Canyon (1929); Mulholland Drive (1933)
Calochortus clavatus var. *gracilis*	slender mariposa lily		1B.2	Chaparral, especially in foothill cyns.; generally found in shade.	Potential where habitat occurs; Sunshine Canyon (1995); Woolsey Canyon (1998)
Calochortus plummerae	Plummer's mariposa lily		4.2	Sage scrub, valley and foothill grassland, yellow pine forest; dry, rocky or sandy sites, granitic or alluvial soil; to 4,800 feet.	Potential where habitat occurs; Chatsworth (1916); Sepulveda (1956); Griffith Park (2008); Mandeville Canyon (1929)
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily		4.2	Openings in chaparral, cismontane woodland, lower montane coniferous forest, below 5,500 feet.	Potential where habitat occurs; Temescal Canyon (1972); Topanga State Park (1972); La Tuna Canyon (2006)

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VASCULAR PLANTS

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Poaceae	**Grass Family**				
Hordeum intercedens	vernal barley		3.2	Vernal pools, valley and foothill grasslands (saline flats and depressions).	Potential where habitat occurs; Ballona Harbor (1901); Los Angeles quad.
Orcuttia californica	California orcutt grass	FE, SE	1B.1	Vernal pools.	Rosecrans Avenue, Los Angeles (1944); Los Angeles (1946).

NOTE:

[1] *Based on occurrence records documented in CNDDB, CNPS Online Inventory, CalFlora, and iNaturalist.*

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INVERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
INSECTA –katydids, butterflies, moths				
Order Lepidoptera	**Butterflies and Moths**			
Callophyrs mossii hidakupa	San Gabriel Mountains elfin butterfly	FSC	Rocky outcrops, cliffs where stonecrop grows.	Potential where habitat occurs
Panoquina errans	wandering (salt-marsh) skipper	FSC	Salt marshes, requires moist saltgrass for larval development.	Ballona Wetlands; Santa Monica Mountains
Plebejus saepiolus aureolus	San Gabriel Mountains blue butterfly	FSC	Forest openings, at streamsides, in meadows and alpine fell-fields, from cool coastal areas to upper elevations of the California mountain ranges.	Potential where habitat occurs
Order Orthoptera	**Grasshoppers**			
Neduba longipennis	Santa Monica shieldback katydid	FSC	Near coast in coastal sage scrub, chaparral, and woodlands.	Lower portions of several cyns. in Malibu

VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Fish				
Catostomidae	**Sucker Family**			
Catostomus santaanae	Santa Ana sucker	FT	Sand, rubble, boulder bottoms; cool, clear water; feed on algae.	Tujunga Canyon
Cyprinidae	**Minnow Family**			
Gila orcutti	arroyo chub	SSC	Slow water sections of streams with mud or sand substrates.	Tujunga Wash
Gobiidae	**Goby Family**			
Eucyclogobius newberryi	tidewater goby	FE, SSC	Shallow lagoon, lower stream, reaches where water is brackish to fresh and slow-moving or fairly still but not stagnant.	Ballona Creek

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VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Salmonidae	**Salmon and Trout Family**			
Oncorhynchus mykiss	steelhead-Southern California ESU	FE	Cool, clear, well-oxygenated streams with coastal mouths	Topanga Creek (1990); Malibu Creek and Lagoon (1992)
Amphibians				
Pelobatidae	**Spadefoot Toad Family**			
Spea hammondii	western spadefoot	SSC	Open areas with seasonal pools in lowland grasslands, chaparral, and pine-oak woodlands, areas of sandy or gravelly soil in alluvial fans, washes, and floodplains.	Lomita
Ranidae	**True Frog Family**			
Rana draytonii	California red-legged frog	FT, SSC	Humid forests, woodlands, grasslands and streamsides, especially where cattails and other plants provide good cover.	Dalton Canyon, Simi Hills
Rana boylii	foothill yellow-legged frog	SSC	Stream, river of woodland, chaparral and forest.	Potential wherever permanent water pool habitat occurs
Salamandridae	**Newt Family**			
Taricha torosa torosa	coast range newt	SSC	Moist woodlands.	Potential in oak woodland habitat along streams with seasonal pools

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VERTEBRATES

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Reptiles				
Colubridae	**Colubrid Snake Family**			
Diadophis punctatus modestus	San Bernardino ringneck snake	SSC	Riparian woodlands, mixed chaparral, and annual grass habitats.	Santa Monica Mountains
Lampropeltis multifasciata	coast mountain kingsnake	SSC	Moist woods, coniferous forests, woodland and chaparral.	Potential where habitat occurs in Santa Monica Mountains
Thamnophis hammondii	two-striped garter snake	FSC, SSC	Riparian and freshwater marshes with perennial water.	Sepulveda Basin
Emydidae	**Turtle Family**			
Actinemys pallida	southwestern pond turtle	SSC	Ponds, slow moving streams.	Santa Monica Mountains, Santa Susana Mountains
Phrynosomatidae	**Spiny Lizard Family**			
Phrynosoma blainvilli	coast horned lizard	SSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats below 6,000 feet, open country, especially sandy areas, washes, floodplains, and windblown deposits.	Santa Monica Mountains; Griffith Park; Verdugo Mountains; Simi Hills
Teiidae	**Whiptail Lizard Family**			
Anniella stebbinsi	Southern California legless lizard	SSC	Several habitats but especially in coastal dune, valley-foothill, chaparral, and coastal scrub habitats.	Potential in coastal habitat (e.g., Ballona Lagoon) and within leaf litter of oak woodlands.
Aspidoscelis tigris stejnegeri	coastal whiptail	SSC	Arid and semi-arid desert to open woodlands, where vegetation is sparse.	Santa Monica Mountains; Tujunga Canyon

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VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Birds				
Charadriidae	**Plover Family**			
Charadrius nivosus nivosus	western snowy plover	FT, SSC	Beaches and sandy flats.	Dockweiler Beach
Laridae	**Gulls and Tern Family**			
Larus cal.fornicus	California gull	SSC	Seacoasts, lakes, farms, and urban centers.	Play del Rey Lagoon, Los Angeles River
Sternula antillarum browni	California least tern	FE, SE, SFP	Sea beaches, bays, large rivers, bars.	Venice Beach, Los Angeles Harbor
Phalacrocoracidae	**Cormorant Family**			
Phalacrocorax auritus	double-crested cormorant	SSC	Coasts, bays, lakes, and rivers.	Ballona Creek, Los Angeles River
Pelecanidae	**Pelican Family**			
Pelecanus erythrorhynchos	American white pelican	SSC	Large lakes.	Ballona Wetlands
Pelecanus occidentalis cal.fornicus	California brown pelican	FE, SE, SFP	Coastal, salt bays, ocean, and beaches.	Dockweiler Beach
Ardeidae	**Heron Family**			
Ixobrychus exilis	least bittern	SSC	Emergent wetlands of cattails and tules.	Sepulveda Basin, Ballona Wetlands
Threskiornithidae	**Ibises and Spoonbill Family**			
Plegadis chihi	white-faced ibis	ST	Fresh emergent wetland, shallow lacustrine waters, wet meadows, irrigated or flooded pastures and cropland.	Sepulveda Basin, Ballona Wetlands
Cathartidae	**New World Vulture Family**			
Gymnogyps cal.fornianus	California condor	FE, SE, SFP	Montane and foothill regions; vast expanses of open savannah, grasslands, and chaparral, with cliffs, large trees, and snags.	Sylmar, San Gabriel Mountains

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VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Accipitridae	**Hawks, Kites, Harriers and Eagle Family**			
Accipiter cooperi	Cooper's hawk	SSC	Open woodlands especially riparian woodland.	Santa Monica Mountains, Santa Susan Mountains, Verdugo Mountains
Accipiter striatus	sharp-shinned hawk	SSC	Woodlands; forages over chaparral and other scrublands; prefers riparian habitats and north-facing slopes, with perch sites.	May winter in the Santa Monica Mountains but breeding is unlikely within City boundary.
Aquila chrysaetos	golden eagle	SSC, SFP	Mountains, deserts, and open country; prefer to forage over grasslands, deserts, savannahs and early successional stages of forest and shrub habitats.	May forage in the foothills surrounding the San Fernando Valley but unlikely to nest within the City boundary.
Buteo regalis	ferruginous hawk	SSC	Rivers, lakes, and coasts; open tracts of sparse shrubs and grasslands, and agricultural areas during winter.	No breeding within the City but may be seen during migration.
Buteo swainsoni	Swainson's hawk	ST	Plains, ranges, open hills, sparse trees.	Verdugo Mountains as migrant
Circus hudsonius	northern harrier	SSC	Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands.	Ballona Wetlands
Elanus leucurus	white-tailed kite	SFP	Grasslands with scattered trees, near marshes, along highways.	Sepulveda Basin, Ballona Wetlands

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VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Haliaeetus leucocephalus	bald eagle	FT, FPD, SSC, SE	Lakes, reservoirs, rivers, offshore islands, and some rangelands and coastal wetlands in Southern California.	No breeding in City, in transit over Ballona Creek
Pandionidae	**Osprey Family**			
Pandion haliaetus	osprey	SSC	Rivers, lakes, and coasts, mixed conifer.	Observed in much of the LA Basin; Santa Monica Mountains
Strigidae	**True Owl Family**			
Asio flammeus	short-eared owl	SSC	Prairies, marshes (fresh and salt) dunes, tundra.	Playa del Rey
Asio otus	long-eared owl	SSC	Riparian and live oak woodlands.	Baldwin Hills, Verdugo Mountains
Athene cunicularia hypugea	burrowing owl	SSC	Dry grasslands, desert habitats, open pinyon-juniper, and ponderosa pine woodlands below 5,300 feet; berms, ditches, and grasslands adjacent to rivers, agricultural, and scrub areas.	Sepulveda Basin
Falconidae	**Falcon Family**			
Falco columbarius	merlin	SSC	Coastlines, wetlands, woodlands, agricultural fields, and grasslands.	Many observations within the Los Angeles Basin
Falco mexicanus	prairie falcon	SSC	Grasslands, savannahs, rangeland, agricultural fields, and desert scrub; often uses sheltered cliff ledges for cover.	Observed in Warner Center and Verdugo Mountains
Falco peregrinus anatum	American peregrine falcon	SE, SFP,	Coastal estuaries, open country, cliffs to coasts.	Downtown Los Angeles; Santa Monica Mountains; Griffith Park

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Alaudidae	**Lark Family**			
Eremophila alpestris actia	California horned lark	SSC	Open habitats, grasslands along the coast, deserts near sea level to alpine dwarf shrub habitat, uncommon in coniferous and chaparral habitats.	Santa Susana Mountains
Cuculidae	**Cuckoos & Roadrunner Family**			
Icteridae	**Icterid and Blackbird Family**			
Agelaius tricolor	tricolored blackbird	ST	Freshwater marshes and riparian scrub.	Warner Center; Baldwin Hills;
Passerellidae	**New World Sparrow Family**			
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	SSC	Generally, steep, rocky areas within coastal sage scrub and chaparral, often with scattered bunches of grass; prefers relatively recently burned areas.	Santa Susana Mountains
Artemisiospiza belli	Bell's sparrow	SSC	Dense, dry chamise chaparral and coastal slopes of coastal sage scrub.	Simi Hills; Verdugo Mountains
Parulidae	**Wood Warbler Family**			
Setophaga petechia	yellow warbler	SSC	Sparse to dense woodland and forest habitats with or without heavy brush understory.	Potential where habitat occurs in Santa Monica Mountains; Ballona Wetlands, Verdugo Mountains; Sepulveda Basin

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Icteriidae	**Yellow-Breasted Chat Family**			
Icteria virens	yellow-breasted chat	SSC	Riparian woodlands with a thick understory.	Santa Monica Mountains; Verdugo Mountains; Ballona Wetlands
Gaviidae	**Loon Family**			
Gavia immer	common loon	SSC	Coasts, bays, lakes, rivers, and seas.	Ballona Lagoon; Sepulveda Basin
Hirundinidae	**Swallow Family**			
Progne subis	purple martin	SSC	Towns, farms, open or semi-open country.	Simi Hills; Los Angeles River
Riparia riparia	bank swallow	ST	Marshes, ponds, and agricultural fields; frequently over open water.	Sepulveda Basin
Laniidae	**Shrike Family**			
Lanius ludovicianus	loggerhead shrike	SSC	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Chaparral habitats in Santa Susana Mountains, Simi Hills
Polioptilidae	**Gnatcatcher Family**			
Polioptila californica californica	California coastal gnatcatcher	FT, SSC	Coastal sage scrub vegetation below 2,500 feet elevation in Riverside County and generally below 1,000 feet elevation along the coastal slope; generally avoids steep slopes and dense vegetation for nesting.	Sylmar
Troglodytidae	**Wren Family**			
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	SSC	Coastal sage scrub, vegetation with thickets of prickly pear or cholla cactus.	Palos Verdes Peninsula

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Tyrannidae	**Tyrant Flycatcher Family**			
Empidonax traillii	willow flycatcher	SE	Wet meadow and montane riparian habitats, river valleys and large mt. meadows.	Ballona Wetlands; Tujunga Wash
Pyrocephalus rubinus	vermilion flycatcher	SSC	Cottonwood-willow woodland and riparian scrub.	Sepulveda Basin; Baldwin Hills
Vireonidae	**Vireo Family**			
Vireo bellii pusillus	least Bell's vireo	FE, SE	Perennial and intermittent streams with low, dense riparian scrub and riparian woodland habitats below 2,000 feet elevation; nests primarily in willows and forages in the riparian and occasionally in adjoining upland habitats. Associated with willow, cottonwood woodlands.	Los Angeles River
Mammals				
Heteromyidae	**Pocket Mice and Kangaroo Rat Family**			
Perognathus alticola alticola	white-eared pocket mouse	SSC	Ponderosa and Jeffrey pine habitats, mixed chaparral and sagebrush habitats, fallow fields dominated by Russian thistle, requires loose soil for burrows.	Potential where habitat occurs

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Perognathus longimembris brevinasus	Los Angeles pocket mouse	SSC	Coastal sage scrub, and grasslands, desert cactus, creosote bush and sagebrush habitats.	Potential where habitat occurs
Neotoma lepida intermedia	San Diego desert woodrat	SSC	Chaparral, coastal sage scrub, and pinyon-juniper woodland.	Santa Monica Mountains
Molossidae	**Free-tailed Bats**			
Eumops perotis californicus	western mastiff bat	SSC	In arid and semi-arid lowlands; roosts in cliffs and rock crevices.	Potential where habitat occurs
Cricetidae	**New World Mice, Rats, and Vole Family**			
Microtus californicus stephensi	south coast marsh vole	SSC	Tidal marshes.	Ballona Wetlands
Procyonidae	**Raccoon Family**			
Bassariscus astutus	ringtail	SFP	Mixture of forest and shrublands in close association with rocky areas or riparian habitats.	San Gabriel Mountains
Vespertilionidae	**Evening Bat Family**			
Antrozous pallidus	pallid bat	SSC	Roosts in cliffs, crevices, mine tunnels, caves, house attics and other man-made structures.	Simi Hills
Myotis ciliolabrum	western small-footed bat	SSA	Primarily found in relatively arid wooded and brushy uplands near water from sea level to 8,900 ft.	Potential where habitat occurs
Leporidae	**Rabbit and Hare Family**			
Lepus californicus bennetti	San Diego black-tailed jackrabbit	SSC	Open brushlands and scrub habitats between sea level and 4,000 feet elevation.	Santa Susana Mountains; Tujunga Canyon
Felidae	**Big Cat Family**			

Legend
Agency Lists

FE	Federally Listed as Endangered	SE	State Listed as Endangered
FT	Federally Listed as Threatened	ST	State Listed as Threatened
FSC	Federal Species of Special Concern	SCE	State Candidate for Endangered
FPE	Federally Proposed as Endangered	SCT	State Candidate for Threatened
FPT	Federally Proposed as Threatened	SSA	State Special Animal
FPD	Federally Proposed for Delisting	SFP	State Fully Protected
		SSC	California Species of Special Concern

Special-Status Species
Occurring Or Potentially Occurring
Within the City of Los Angeles

VERTEBRATES

Scientific Name	Common Name	Agency Listing Status	Preferred Habitat	Record
Puma concolor	mountain lion	SCT	Riparian areas, and brushy stages of most habitats.	Santa Monica, San Gabriel, Verdugo Mountains

Legend

Agency Lists

FE	Federally Listed as Endangered	SE	State Listed as Endangered
FT	Federally Listed as Threatened	ST	State Listed as Threatened
FSC	Federal Species of Special Concern	SCE	State Candidate for Endangered
FPE	Federally Proposed as Endangered	SCT	State Candidate for Threatened
FPT	Federally Proposed as Threatened	SSA	State Special Animal
FPD	Federally Proposed for Delisting	SFP	State Fully Protected
		SSC	California Species of Special Concern

Appendix E
PAW Criteria Matrix

ESA

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
A. North Valley														
	Santa Susana Mountains and Simi Hills	1,2,3	x	Braunton's milk-vetch, tricolored blackbird (CNDDB), Braunton's milk-vetch CH, CAGN CH	x	Blochman's dudleya, many-stemmed dudleya, Plummer's mariposa lily, slender mariposa lily, Santa Susana tarplant, western spadefoot, San Diego desert woodrat, western mastiff bat, California Walnut Woodland, Southern Sycamore Alder Riparian Woodland (CNDDB); burrowing owl (eBird)			x	Constrained Corridors; connects to Santa Susana Mountains/Simi Hills SEA, Rim of the Valley Corridor; adjacent to Ventura County Wildlife Corridor, a California Essential Habitat Connectivity area, and a South Coast Wildlands Missing Linkage (Santa Monica-Sierra Madre)	x	142 bird species recorded at Chatsworth Nature Preserve, 94 bird species recorded at Chatsworth Oaks Park, 137 bird species recorded at O'Melveny Park (eBird)		
	Porter Ranch	2,3	x	CAGN CH (at Sesnon Canyon, Mormon Canyon, Browns Creek Park)		Southern Cottonwood Willow Riparian Forest, Southern Sycamore Alder Riparian Woodland (CNDDB)			x	Constrained Corridors; connects to PAW that connects to Santa Susana Mountains/Simi Hills SEA	x	25 bird species recorded at Limekiln Canyon Park (eBird)		
	Saddletree Ranch (*Santa Clara River*)	1,2,3	x	CAGN CH	x	Davidson's bush-mallow, Plummer's mariposa lily, Southern Coast Live Oak Riparian Forest (CNDDB)			x	Constrained Corridors; connects to Santa Clara River SEA, Rim of the Valley Corridor; adjacent to a California Essential Habitat Connectivity area	x	28 bird species recorded at Stetson Ranch Park, 129 bird species recorded at Wilson Canyon Park (eBird)		
	Pacoima Wash	2	x	least Bell's vireo (USFWS, CNDDB)	x	Plummer's mariposa lily (CNDDB)			x	Constrained Corridors; connects to Rim of the Valley Corridor	x	50 bird species recorded at Pacoima Wash (eBird)		
	Tujunga Valley and Hansen Dam	1,2,3	x	coastal California gnatcatcher, least Bell's vireo, Santa Ana sucker (USFWS, CNDDB), slender-horned spineflower, southwestern willow flycatcher (USFWS), southern mountain yellow-legged frog (CNDDB); Santa Ana Sucker CH	x	Davidson's bush-mallow, arroyo chub, Santa Ana speckled dace, California legless lizard, coast horned lizard, coastal whiptail, western pond turtle, San Diego black-tailed jackrabbit, Riversidean Alluvial Fan Sage Scrub, Southern Sycamore Alder Riparian Woodland (CNDDB)			x	Corridor; connects to Tujunga Valley/Hansen Dam SEA, Rim of the Valley Corridor, South Coast Wildlands Missing Linkage	x	281 bird species recorded at Hansen Dam (eBird)		
	San Gabriel Mountains	2,3	x	mountain lion (iNaturalist)	x	Davidson's bush-mallow, Greata's aster, Plummer's mariposa lily, coast horned lizard, Southern Coast Live Oak Riparian Forest, Southern Sycamore Alder Riparian Woodland (CNDDB)			x	Corridor; connects to Tujunga Valley/Hansen Dam SEA and Angeles National Forest, Rim of the Valley Corridor	x	110 bird species recorded at Haines Canyon Debris Basin (Angeles NF) (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
	Verdugo Mountains	1,2,3	x	mountain lion (iNaturalist)	x	Davidson's bush-mallow, Plummer's mariposa lily, slender mariposa lily, white rabbit-tobacco, Southern Coast Live Oak Riparian Forest, Southern Sycamore Adler Riparian Woodland (CNDDB)			x	Corridors; connects to Verdugo Mountains SEA, Rim of the Valley Corridor, South Coast Wildlands Missing Linkage				
B. South Valley														
	Santa Susana Mountains and Simi Hills	1, 2	x	Braunton's milk-vetch	x	chaparral nolina, Plummer's mariposa lily, Southern Coast Live Oak Riparian Forest (CNDDB)			x	Constrained Corridors; connects to Santa Susana Mountains/Simi Hills SEA, Rim of the Valley Corridor; adjacent to Ventura County Wildlife Corridor, a California Essential Habitat Connectivity area, and a South Coast Wildlands Missing Linkage (Santa Monica-Sierra Madre).	x	45 bird species recorded at Knapp Ranch Park (eBird)		
	Santa Monica Mountains West	1,2,3	x	mountain lion (iNaturalist)	x	California Walnut Woodland (CNDDB)			x	Constrained Corridor; connects to Santa Monica Mountains SEA, Rim of the Valley Corridor	x	81 bird species recorded at Serrania Avenue Park (eBird)		
	Santa Monica Mountains East	2,3	x	mountain lion (iNaturalist)	x	California Walnut Woodland (CNDDB)			x	Constrained Corridor; connects to PAWs that connects to Santa Monica Mountains SEA and Griffith Park SEA, and Rim of the Valley Corridor				
	Sepulveda Basin Recreation Area	2	x	least Bell's vireo (USFWS, CNDDB)	x	western pond turtle (CNDDB), burrowing owl (eBird)			x	Constrained Corridor; connects to Rim of the Valley Corridor	x	270 bird species recorded at Sepulveda Basin Wildlife Reserve, 216 bird species recorded at Lake Balboa (eBird)		
C. West Los Angeles														
	Santa Monica Mountains West	1,2,3	x	Braunton's milk-vetch, Santa Monica dudleya, steelhead (southern CA DPS) (CNDDB), Braunton's milk-vetch CH, mountain lion (iNaturalist)	x	Plummer's mariposa lily, white-veined monardella, coastal whiptail, two-striped garter snake, western mastiff bat, California Walnut Woodland, Southern Coast Live Oak Riparian Forest, Southern Sycamore Alder Riparian Woodland (CNDDB)			x	Constrained Corridors; connects to Santa Monica Mountains SEA, Rim of the Valley Corridor	x	monarch (overwintering population) (CNDDB); 93 bird species recorded at Will Rogers State Historic Park, 111 bird species recorded at Temescal Gateway State Park, 129 bird species recorded at Topanga State Park, 39 bird species recorded at Topanga State Park (Los Liones Trail) (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
	Santa Monica Mountains East	2, 3	x	mountain lion (iNaturalist)	x	Greata's aster, coast horned lizard, California Walnut Woodland (CNDDB)			x	Constrained Corridor; connects to PAWs that connects to Santa Monica Mountains SEA and Griffith Park SEA, and Rim of the Valley Corridor; UCLA 2012 Study	x	Various locations throughout this area with 200+ bird species sighted (eBird)		
	Will Rogers State Beach	2	x	western snowy plover (USFWS), SNPL CH					x	Constrained Corridor; connects to Rim of the Valley Corridor	x	99 bird species recorded at Will Rogers State Beach (eBird)		
	Temescal Canyon	2							x	Constrained Corridor; connects to Rim of the Valley Corridor	x	87 bird species recorded at Temescal Canyon, 39 bird species recorded at Palisades Park (eBird)		
	Brentwood Country Club	2									x	monarch (overwintering population) (CNDDB)		
	Venice Beach	2	x	western snowy plover (USFWS, CNDDB), California least tern (breeding colony) (CNDDB)							x	102 bird species recorded at Venice Beach (eBird)		
	Ballona Lagoon	2	x	California black rail (ST, SFP) (CNDDB), least tern (eBird)	x	Orcutt's pincushion (CNDDB)	x	Venice LCP ESHA			x	130 bird species recorded at Ballona Lagoon (eBird)		
	Ballona Wetlands	1,2,3	x	El Segundo blue butterfly, light-footed Ridgway's rail, least Bell's vireo (USFWS), Belding's savannah sparrow (CNDDB); least tern, snowy plover (eBird)	x	Orcutt's pincushion, southern tarplant, burrowing owl, south coast marsh vole, Southern Coastal Salt Marsh (CNDDB)			x	Corridor; connects to Ballona Wetlands SEA	x	monarch (overwintering population) (CNDDB); 224 bird species recorded at Ballona Wetlands Ecological Reserve (Salt Pan), 259 bird species recorded at Ballona Freshwater Marsh, 221 bird species recorded at Ballona Creek (Lower) (eBird)		
	Ballona Creek	2, 3	x	least tern (eBird)					x	Constrained Corridor; connects to Ballona Wetlands SEA; Waterway for shorebirds and coastal access	x	Various locations along channelized creek with 50-100+ bird species sighted (eBird)		
	Loyola Marymount University	2	x	least Bell's vireo (USFWS, CNDDB)							x	172 bird species recorded at Playa Vista Riparian Corridor, 143 bird species recorded at LMU (eBird)		
	Del Rey Lagoon Park	2	x	least tern (eBird)	x	burrowing owl (eBird)					x	201 bird species recorded at Del Rey Lagoon Park (eBird)		
	Dockweiler State Beach	2	x	El Segundo blue butterfly, western snowy plover (USFWS); least tern (eBird)	x	burrowing owl (eBird)					x	102 bird species recorded at Dockweiler State Beach (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
	El Segundo Dunes	1, 2	x	El Segundo blue butterfly (USFWS)	x	Southern Dune Scrub (CNDDB)								
	[Ballona Wetlands – County] (Considered but Rejected; Outside of City Limits)													
	Las Pulgas Canyon (Considered but Rejected)													
	Sepulveda Channel (Considered but Rejected)													
	Marina del Rey Extension (Considered but Rejected)													
	Centinela Creek (Considered but Rejected)													
	LAX North (Considered but Rejected)										x	56 bird species recorded at Los Angeles International Airport (eBird)		
	LAX South (Considered but Rejected)										x	56 bird species recorded at Los Angeles International Airport (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
D. Central														
	Santa Monica Mountains East	2,3	x	mountain lion (iNaturalist)					x	Constrained Corridor; connects to PAWs that connects to Santa Monica Mountains SEA and Griffith Park SEA, and Rim of the Valley Corridor				
	Griffith Park and Hollywood Hills	1,2,3	x	Nevin's barberry (CNDDB), mountain lion (iNaturalist)	x	mesa horkelia, Plummer's mariposa lily, slender mariposa lily, San Diego desert woodrat, California Walnut Woodland, Southern Coast Live Oak Riparian Forest, Southern Sycamore Alder Riparian Woodland (CNDDB)			x	Constrained Corridor; connects to Griffith Park SEA, Rim of the Valley Corridor	x	132 bird species recorded at Griffith Park, 25 bird species recorded at Lake Hollywood Park (eBird)		
	Los Angeles River	3,4							x	Constrained Corridor; connects to Griffith Park SEA, Rim of the Valley Corridor	x	110 bird species recorded at Los Angeles River Bike Path (eBird)	x	ARBOR, Los Angeles River Revitalization Master Plan
	MacArthur Park (Considered but Rejected)													
E. East Los Angeles														
	Los Angeles River	3,4	x	mountain lion (Boydston, Ordeñana, and Cooper 2014), least Bell's vireo (anecdotal data that Biologist Daryl Koutnik received from USFWS); From the Los Angeles River Ecosystem Restoration Integrated Feasibility Study (USACE 2015): "least Bell's vireo has been observed within the study area near Taylor Yard (USACE 2009)" and "Protocol level surveys for least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher were completed during the 2005 and 2007 bird-breeding season at USACE-managed areas within Los Angeles County. Least Bell's	x	peregrine falcon and Vaux's swift observed (Field Survey [Biologist Dale Hameister])			x	Constrained Corridor; connects to Griffith Park SEA, Rim of the Valley Corridor			x	ARBOR, Los Angeles River Revitalization Master Plan
	Silver Lake Reservoir	2									x	145 bird species recorded at Silver Lake Reservoir (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
	Echo Park	2									x	140 bird species recorded at Echo Park (eBird)		
	Elysian Park	2				California Walnut Woodland (Field Surveys [Biologist Dale Hameister])			x	Constrained Corridor; connects to Rim of the Valley Corridor	x	133 bird species recorded at Elysian Park (eBird)		
	Elyria Canyon Park	2				California Walnut Woodland (Field Surveys [Biologist Dale Hameister])					x	106 bird species recorded at Elyria Canyon Park (eBird)		
	Ernest E. Debs Regional Park	2			x	California Walnut Woodland (Field Surveys [Biologist Dale Hameister])			x	Constrained Corridor; connects to Rim of the Valley Corridor	x	133 bird species recorded at Ernest E. Debs Regional Park (eBird)		
	Moon Cayon and Heidberg Park	2			x	California Walnut Woodland (Field Surveys [Biologist Dale Hameister])								
	Eagle Rock	2							x	Constrained Corridor; connects to Rim of the Valley Corridor	x	42 bird species recorded at Eagle Rock Canyon Trail (eBird)		
	Fiji Hill (Considered but Rejected)													
	Elephant Hill (Considered but Rejected)										x	43 bird species recorded at Ernest Elephant Hill (eBird)		
	Ascot Hills Park (Considered but Rejected)										x	41 bird species recorded at Ascot Hills Park (eBird)		
F. South Los Angeles														
	Baldwin Hills	2			x	burrowing owl (eBird)					x	175 bird species recorded at Kenneth Hahn State Recreation Area (eBird)		
	South Los Angeles Wetlands Park (Considered but Rejected - Based on Field Verification)	2									x	52 bird species recorded at South Los Angeles Wetland Park (eBird)		
G. Harbor														
	Harbor Lake Regional Park	1,3	x	tricolored blackbird, least tern (CNDDB, eBird); post-breeding foraging ground for Terminal Island terns (CNDDB)	x	Coulter's goldfields, mud nama (CNDDB)			x	Constrained Corridor; this SEA connects to South Harbor Lake	x	250 bird species recorded at Ken Malloy Harbor Regional Park (eBird)		
	South Harbor Lake	2,3	x	CAGN, Palos Verdes blue butterfly (CNDDB)	x	southern tarplant (CNDDB)			x	Constrained Corridor; connects to Harbor Lake SEA				
	Banning Park	2									x	monarch (overwintering population) (CNDDB); 131 bird species recorded at Banning Park (eBird)		

Appendix E. PAW Criteria Matrix

Area Planning Commission	Proposed PAW*	Mapping Category: 1 = Existing SEA, 2 = Proposed PAW, 3 = Corridor, 4 = Restoration	Criteria 1:	E&T Plants/ Animals	Criteria 2:	Unique/ Restricted Distribution in SoCal	Criteria 3:	Unique/ Restricted Distribution in LA	Criteria 4:	Corridors/ Constrained Corridors	Criteria 5:	Breeding/ Feeding/ Resting/ Migrating Grounds with Limited Availability in SoCal/LA	Criteria 6:	Restoration Foreseeable
	White Point	2,3	x	CAGN observed (Field Survey [Biologist Karl Fairchild]); least tern (eBird)	x	burrowing owl (eBird)			x	Corridor; Coastal access between Palos Verdes Peninsula and Coastline SEA and coast/other undeveloped areas to the west	x	126 bird species recorded at White Point, 69 bird species recorded at Royal Palms Beach, 164 bird species recorded at White Point Nature Preserve (eBird)		
	Point Fermin	2	x	Palos Verdes blue butterfly (historic occurrence; potential to bring back with restoration) at Fort MacArthur (CNDDB); least tern (eBird)							x	monarch (historic overwintering population) (CNDDB); 181 bird species recorded at Point Fermin Park, 43 bird species recorded at Angels Gate Park, 60 bird species recorded at Joan Milke Flores Park (eBird)		
	Cabrillo Beach	2		least tern, snowy plover (eBird)							x	California grunion (spawning beach) (Cabrillo Marine Aquarium); 194 bird species recorded at Cabrillo Beach Park (eBird)		
	Terminal Island (Pier 400)	2	x	least tern (historic breeding colony) (anecdotal)										
	Dominguez Channel (Considered but Rejected)													
** Italics indicates that PAWs were adapted from LA County Existing SEAs*														
eBird occurrences of Federal or State listed-species were added when multiple occurrences were documented at a "Birding Hotspot" within an SEA.														

Appendix F

Potential for Medium and Large Mammal Species to Occur within Potential PAWs

ESA

Appendix F. Potential for Medium and Large Mammal Species to Occur within Potential PAW

		Wildlife Species Potential											
		Large Mammals					Medium Mammals						
Area Planning Commission	Potential PAW*	Black Bear	Bobcat	Coyote	Mountain Lion	Mule Deer	American Badger	Gray Fox	Long-Tailed Weasel	Raccoon	Striped Skunk	Virginia Opossum	Notes
A. North Valley													
	Santa Susana Mountains and Simi Hills	L	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Porter Ranch	L	L	H	L	L	L	L	L	H	M	H	High potential to support medium and large mammals.
	Saddletree Ranch (*Santa Clara River*)	M/L	M	H	L	M	L	L	L	H	M	H	High potential to support medium and large mammals.
	Pacoima Wash	L	L	H	L	M	L	L	L	H	M	H	High potential to support medium and large mammals.
	Tujunga Valley and Hansen Dam	M	M	H	M/L	H	L	M/L	L	H	H	H	High potential to support medium and large mammals.
	San Gabriel Mountains	H	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Verdugo Mountains	H	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
B. South Valley													
	Santa Susana Mountains and Simi Hills	L	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Santa Monica Mountains West	L	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Santa Monica Mountains East	L	H	H	M	H	L	M	L	H	H	H	Moderate to high potential to support medium and large mammals.
	Sepulveda Basin Recreation Area	L	L	H	L	L	L	L	L	H	M	H	High potential to support medium and large mammals.
C. West Los Angeles													
	Santa Monica Mountains West	L	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Santa Monica Mountains East	L	H	H	M	H	L	M	L	H	H	H	Moderate to high potential to support medium and large mammals.
	Will Rogers State Beach	L	L	L	L	L	L	L	L	L	L	L	Moderate potential to support medium mammals and a low potential to support large mammals.
	Temescal Canyon	L	M	H	L	L	L	L	L	H	M/L	H	High potential to support medium and large mammals.
	Brentwood Country Club	L	L	M/L	L	L	L	L	L	M	L	M	Moderate potential to support medium mammals and a low potential to support large mammals.
	Venice Beach	L	L	L	L	L	L	L	L	L	L	L	Moderate potential to support medium mammals and a low potential to support large mammals.
	Ballona Lagoon	L	L	L	L	L	L	L	L	H	M	H	Moderate potential to support medium mammals and a low potential to support large mammals.
	Ballona Wetlands	L	L	H	L	L	L	L	L	H	H	H	High potential to support medium and large mammals.
	Ballona Creek	L	L	L	L	L	L	L	L	H	L	H	Moderate potential to support medium mammals and a low potential to support large mammals.
	Loyola Marymount University	L	L	H	L	L	L	L	L	H	M	H	High potential to support medium and large mammals.
	Del Rey Lagoon Park	L	L	L	L	L	L	L	L	H	M	H	Moderate potential to support medium mammals and a low potential to support large mammals.
	Dockweiler State Beach	L	L	L	L	L	L	L	L	L	L	L	Moderate potential to support medium mammals and a low potential to support large mammals.
	El Segundo Dunes	L	L	L	L	L	L	L	L	M/L	L	M/L	Moderate potential to support medium mammals and a low potential to support large mammals.

Appendix F. Potential for Medium and Large Mammal Species to Occur within Potential PAW

		Wildlife Species Potential											
		Large Mammals					Medium Mammals						
Area Planning Commission	**Potential PAW***	**Black Bear**	**Bobcat**	**Coyote**	**Mountain Lion**	**Mule Deer**	**American Badger**	**Gray Fox**	**Long-Tailed Weasel**	**Raccoon**	**Striped Skunk**	**Virginia Opossum**	**Notes**
D. Central													
	Santa Monica Mountains East	L	H	H	M	H	L	M	L	H	H	H	Moderate to high potential to support medium and large mammals.
	Gr,,fith Park and Hollywood Hills	L	H	H	H	H	L	H	L	H	H	H	High potential to support medium and large mammals.
	Los Angeles River	L	M/L	H	M/L	M/L	L	M/L	L	H	M	H	Moderate potential to support medium and large mammals.
E. East Los Angeles													
	Los Angeles River	L	M/L	H	M/L	M/L	L	M/L	L	H	M	H	Moderate potential to support medium and large mammals.
	Silver Lake Reservoir	L	H	H	L	L	L	L	L	H	H	H	Moderate potential to support medium mammals and a low potential to support large mammals.
	Echo Park	L	L	L	L	L	L	L	L	H	M/L	H	Moderate potential to support medium mammals and a low potential to support large mammals.
	Elysian Park	L	H	H	L	L	L	H	L	H	M/L	H	High potential to support medium and large mammals.
	Elyria Canyon Park	L	L	H	L	L	L	L	L	H	M/L	H	High potential to support medium and large mammals.
	Ernest E. Debs Regional Park	L	H	H	L	L	L	L	L	H	M/L	H	High potential to support medium and large mammals.
	Moon Cayon and Heidberg Park	L	L	H	L	L	L	L	L	H	L	H	High potential to support medium and large mammals.
	Eagle Rock	L	H	H	L	H	L	L	L	M	M	M	High potential to support medium and large mammals.
F. South Los Angeles													
	Baldwin Hills	L	H	H	L	L	L	L	L	H	H	H	High potential to support medium and large mammals.
	South Los Angeles Wetlands Park	L	L	L	L	L	L	L	L	M/L	L	H	Low potential to support medium and large mammals.
G. Harbor													
	Harbor Lake Regional Park	L	L	H	L	L	L	L	L	H	H	M	High potential to support medium and large mammals.
	South Harbor Lake	L	L	H	L	L	L	L	L	H	H	M	High potential to support medium and large mammals.
	Banning Park	L	L	L	L	L	L	L	L	M	L	M	Low potential to support medium and large mammals.
	White Point	L	L	H	L	L	L	L	L	M	M/L	M/L	High potential to support medium and large mammals.
	Point Fermin	L	L	H	L	L	L	L	L	M	M/L	M/L	Moderate potential to support medium mammals and a low potential to support large mammals.
	Cabrillo Beach	L	L	H	L	L	L	L	L	H	L	M/L	Moderate potential to support medium mammals and a low potential to support large mammals.
	Terminal Island (Pier 400)	L	L	L	L	L	L	L	L	M/L	L	M/L	Low potential to support medium and large mammals.

**Entries in bold are ver.fied through observations within the PAW ana/or immediate vicinity.*

Appendix G
WMP Matrix

ESA

Appendix G. WMP Matrix

WMP #	WMP	Adjacent PAWs	Width (Min. <25 Feet)	Width (Min. 25-100 Feet)	Width (Min. >100 Feet)	Length (Min. <50 Feet)	Length (Min. 50-500 Feet)	Length (Min. >500 Feet)	Vegetative Cover Within WMP	Vegetative Cover Adjacent to WMP	Traffic	Human Activity	Fencing (Through WMP)	Fencing (Adjacent to WMP)	Other Barriers/ Deterrents	Highly Constrained	Constrained	Unconstrained	Notes
1	Valley Circle Boulevard	Santa Susana Mountains and Simi Hills PAW (Dayton Canyon Open Space Preserve) in W; Santa Susana Mountains and Simi Hills PAW (Chatsworth Natura Preserve) in NE		x				x		L	H		x				x		Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic and fencing.
2	Canoga Avenue	Santa Susana Mountains and Simi Hills PAW (Stoney Point Park) in SW; Santa Susana Mountains and Simi Hills PAW (Browns Canyon) in NE		x			x			L/M	M/H	L	x		Noise		x		Wildlife would travel under the State Route 118 bridge to move between undeveloped areas; hazards include road/traffic and some fencing.
3	Moonshine Canyon Park	Porter Ranch PAW (Moonshine Canyon Park) in W; Porter Ranch PAW (Limekiln Canyon Park) in E			x			x	H	H				x				x	Contiguous vegetated undeveloped pathways that would facilitate wildlife movement through surrounding developed areas.
4	Limekiln Canyon Park	Porter Ranch PAW (Moonshine Canyon Park) in W; Porter Ranch PAW (Wilbur Tampa Park) in E			x			x	H	H				x				x	Contiguous vegetated undeveloped pathways that would facilitate wildlife movement through surrounding developed areas.
5	Wilbur Tampa Park	Porter Ranch PAW (Limekiln Canyon Park) in W; Porter Ranch PAW (Aliso Canyon Park) in E			x			x	H	H		L						x	Contiguous vegetated undeveloped pathways that would facilitate wildlife movement through surrounding developed areas.
6	Aliso Canyon Park	Porter Ranch PAW (Wilbur Tampa Park) in W; Santa Susana Mountains and Simi Hills PAW in E			x			x	H	H		L		x				x	Contiguous vegetated undeveloped pathways that would facilitate wildlife movement through surrounding developed areas.
7	Longacre Avenue	Porter Ranch PAW (Aliso Canyon Park) in W; Santa Susana Mountains and Simi Hills PAW in E		x				x	H	H	L	L		x				x	Contiguous vegetated undeveloped pathways that would facilitate wildlife movement through surrounding developed areas; hazards include one residential road.
8	Balboa Boulevard	Santa Susana Mountains and Simi Hills PAW in SW; Saddletree Ranch (Santa Clara River) PAW in NE		x				x		M/H	H				Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
9	San Fernando Road	Santa Susana Mountains and Simi Hills PAW in SW; Saddletree Ranch (Santa Clara River) PAW in NE	x					x	L/M	M/H	H				Noise		x		Wildlife would have to travel along developed road and across railroad tracks to move between undeveloped areas; hazards include road/traffic.
10	Tujunga-Verdugo	Tujunga Valley and Hansen Dam PAW in N; Verdugo Mountains PAW in S		x				x	M	H	H	M	x	x	Fragmentation, Noise		x		Wildlife would have to cross multipled roads through marginal habitat areas to move between undeveloped areas; hazards include road/traffic and fencing.
11	La Tuna Canyon Road	Connects two areas of the Verdugo Mountains PAW		x				x		H	H			x	Noise		x		Wildlife would travel under the Interstate 210 bridge to move between undeveloped areas; hazards include road/traffic.
12	Los Angeles River	Sepulveda Basin Recreation Area PAW in W; Los Angeles River PAW in E			x			x	L/M/H	L/M	H	L/M		x	Fragmentation, Noise, Access (Vertical Banks, Gated Culverts)		x		Wildlife would have to travel across developed areas, multiple roads, and/or railroad tracks in some areas to access the river; hazards include road/traffic. Portions of the river are unvegetated concrete-lined channel.
13	Santa Monica Mountains-Griffith Park	Santa Monica Mountains West PAW and Santa Monica Mountains East PAW in W; Griffith Park and Hollywood Hills PAW and Los Angeles River PAW in E	x					x	M/H	M/H	H	M	x	x	Fragmentation	x			Wildlife would have to travel across a fragmented network of developed areas, multiple roads (including major freeways), and/or undeveloped areas; hazards include road/traffic.
14	Mulholland Bridge	Santa Monica Mountains West PAW in W; Santa Monica Mountains East PAW in E		x				x		H	H	M		x	Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
15	Skirball Center Drive	Santa Monica Mountains West PAW in W; Santa Monica Mountains East PAW in E		x				x		H	H				Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
16	Bel Air Crest Road	Santa Monica Mountains West PAW in W; Santa Monica Mountains East PAW in E		x				x		H	H				Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
17	Sepulveda Boulevard	Santa Monica Mountains West PAW in W; Santa Monica Mountains East PAW in E		x				x		H	H				Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
18	Getty Center Drive	Santa Monica Mountains West PAW in W; Santa Monica Mountains East PAW in E			x			x		H	H	M			Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
19	Casiano Road	Connects two areas of the Santa Monica Mountains East PAW			x		x		M	H	L	L	x	x	Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and fencing.
20	Linda Flora Drive	Connects two areas of the Santa Monica Mountains East PAW			x	x				H	L				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
21	Stone Canyon Road	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
22	Fawndale Place	Connects two areas of the Santa Monica Mountains East PAW			x		x		M	M/H		L			Fragmentation			x	Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas.
23	Oakfield Drive	Connects two areas of the Santa Monica Mountains East PAW		x		x				M/H	L	L			Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
24	Camino de la Cumbre	Connects two areas of the Santa Monica Mountains East PAW			x		x			M/H	M	L			Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
25	Beverly Glen Boulevard	Connects two areas of the Santa Monica Mountains East PAW		x			x			M/H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
26	Stone Canyon Overlook	Connects two areas of the Santa Monica Mountains East PAW			x		x			M/H	H	L			Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
27	N. Beverly Glen Boulevard - A	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
28	N. Beverly Glen Boulevard - B	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
29	N. Beverly Glen Boulevard - C	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
30	Mulholland Drive - A	Connects two areas of the Santa Monica Mountains East PAW		x			x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
31	Benedict Canyon Lane	Connects two areas of the Santa Monica Mountains East PAW		x			x			M/H	L				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
32	Mulholland Drive - B	Connects two areas of the Santa Monica Mountains East PAW		x			x			M	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.

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WMP #	WMP	Adjacent PAWs	Width (Min. <25 Feet)	Width (Min. 25-100 Feet)	Width (Min. >100 Feet)	Length (Min. <50 Feet)	Length (Min. 50-500 Feet)	Length (Min. >500 Feet)	Vegetative Cover Within WMP	Vegetative Cover Adjacent to WMP	Traffic	Human Activity	Fencing (Through WMP)	Fencing (Adjacent to WMP)	Other Barriers/ Deterrents	Highly Constrained	Constrained	Unconstrained	Notes
33	Mulholland Drive - C	Connects two areas of the Santa Monica Mountains East PAW			x		x			M/H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
34	Mulholland Drive - D	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	H	L		x	Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
35	Arby Drive	Connects two areas of the Santa Monica Mountains East PAW			x		x		M	L		L			Fragmentation			x	Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas.
36	Summitridge Drive - A	Connects two areas of the Santa Monica Mountains East PAW			x		x			H	L				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
37	Summitridge Drive - B	Connects two areas of the Santa Monica Mountains East PAW			x		x			L	L		x		Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and fencing.
38	Mulholland Drive - E	Connects two areas of the Santa Monica Mountains East PAW			x		x			L	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
39	Mulholland Drive - F	Connects two areas of the Santa Monica Mountains East PAW			x		x			L/M	H			x	Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
40	Mulholland Drive - G	Connects two areas of the Santa Monica Mountains East PAW		x			x			H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
41	Laurel Canyon Boulevard	Connects two areas of the Santa Monica Mountains East PAW		x			x			M/H	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
42	Nichols Canyon Road	Connects two areas of the Santa Monica Mountains East PAW			x		x			L/M	M		x		Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and fencing.
43	Astral Drive	Connects two areas of the Santa Monica Mountains East PAW			x		x			L/M	L		x		Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and fencing.
44	Mulholland Drive - H	Connects two areas of the Santa Monica Mountains East PAW			x		x			M	H				Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
45	Lakeridge Bridge	Santa Monica Mountains East PAW in W; Griffith Park and Hollywood Hills PAW in E		x			x			M/H	H				Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
46	Pilgrimage Bridge	Santa Monica Mountains East PAW in W; Griffith Park and Hollywood Hills PAW in E		x				x		M	H				Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic.
47	Forest Lawn Drive	Santa Monica Mountains East PAW in S; Los Angeles River PAW in N		x				x		L	H		x		Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic and fencing.
48	Los Angeles River Equestrian Trail	Santa Monica Mountains East PAW in S; Los Angeles River PAW in N	x					x	L	L/M	H				Fragmentation, Noise		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic.
49	Corralitas Red Car Trail	Griffith Park and Hollywood Hills PAW in N; Elysian Park PAW in S	x					x	L/M	L/M	H	M/H	x	x	Fragmentation, Noise	x			Wildlife would have to cross multipled roads through marginal habitat areas to move between undeveloped areas; hazards include road/traffic, fencing, and human activity.
50	Park Row Bridge	Connects two areas of the Elysian Park PAW		x			x			L/M	L	M			Fragmentation, Noise	x			Wildlife would have to travel along developed road to move between undeveloped areas; hazards include road/traffic and human activity.
51	Solano Avenue	Connects two areas of the Elysian Park PAW		x			x		L	M/H	M	M			Fragmentation, Noise		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and human activity.
52	Ballona Creek	Dockweiler State Beach PAW in W; Del Rey Lagoon Park PAW; Ballona Wetland PAW in E		x				x	L	L	L	M/H			Fragmentation		x		Wildlife would have to travel across a fragmented network of developed areas and undeveloped areas; hazards include road/traffic and human activity.
53	E. Pacific Coast Highway	Ballona Wetland PAW in W; Loyola Marymount University PAW in E		x			x			M	H	M/H			Noise		x		Wildlife would travel across a developed road to move between undeveloped areas; hazards include road/traffic.
54	Harbor Lake	Harbor Lake Regional Park PAW in N; South Harbor Lake PAW in S	x				x			L	H	M/H	x	x	Noise		x		Wildlife would travel across a developed road to move between undeveloped areas; hazards include road/traffic, fencing, and human activity.

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Policy	Chapter	Page	Source
General Plan Policies			
Goal 1: a city that preserves, protects and enhances its existing natural and related resources.	2 Resource Conservation and Management	II-1	City of Los Angeles General Plan, Conservation Element
Preamble: Conservation is the managed or controlled use of natural, cultural and historical resources. In Los Angeles it includes a diversity of programs, including acquiring, preserving and protecting large tracts of open space for habitat conservation, species protection, watershed maintenance and other purposes; acquiring, preserving and protecting cultural and historical resources; reducing the demand for nonrenewable mineral and petroleum resources, water and other natural resources; recycling water, wood products, metals, glass and other materials. Conservation is addressed by various sections of this element in relation to particular subject matter.	2 Resource Conservation and Management, Section 4 Conservation (Goal 1)	II-6	City of Los Angeles General Plan, Conservation Element
Objective 6: protect and promote the restoration, to the greatest extent practical, of sensitive plant and animal species and their habitats.	2 Resource Conservation and Management, Section 6 Endangered Species (Goal 1)	II-13	City of Los Angeles General Plan, Conservation Element
Policy 6.1: continue to require evaluation, avoidance, and minimization of potential significant impacts, as well as mitigation of unavoidable significant impacts on sensitive animal and plant species and their habitats and habitat corridors relative to land development activities.	2 Resource Conservation and Management, Section 6 Endangered Species	II-14	City of Los Angeles General Plan, Conservation Element
Policy 6.2: continue to administer city-owned and managed properties so as to protect and/or enhance the survival of sensitive plant and animal species to the greatest practical extent.	2 Resource Conservation and Management, Section 6 Endangered Species	II-14	City of Los Angeles General Plan, Conservation Element
Policy 6.3: continue to support legislation that encourages and facilitates protection of endangered, threatened, sensitive and rare species and their habitats and habitat corridors.	2 Resource Conservation and Management, Section 6 Endangered Species	II-14	City of Los Angeles General Plan, Conservation Element
Objective 8: protect the coastline and watershed from erosion and inappropriate sedimentation that may or has resulted from human actions.	2 Resource Conservation and Management, Section 8 Erosion (Goal 1)	II-19	City of Los Angeles General Plan, Conservation Element

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Policy	Chapter	Page	Source
Policy 8.2: continue to prevent or reduce erosion that will damage the watershed or beaches or will result in harmful sedimentation that might damage beaches or natural areas.	2 Resource Conservation and Management, Section 8 Erosion	II-22	City of Los Angeles General Plan, Conservation Element
Policy 9.1: continue to implement and to cooperate with lake fish stocking or enhancement programs.	2 Resource Conservation and Management, Section 9 Fisheries	II-25	City of Los Angeles General Plan, Conservation Element
Policy 9.2: continue to consider and implement measures that will mitigate potential damage to and will encourage maintenance or restoration of fisheries.	2 Resource Conservation and Management, Section 9 Fisheries	II-26	City of Los Angeles General Plan, Conservation Element
Objective 10: retain the forests as primary watershed, open space and recreational resources for the region.	2 Resource Conservation and Management, Section 10 Forest (Goal 1)	II-28	City of Los Angeles General Plan, Conservation Element
Policy 10.1: continue to support the preservation and protection of Angeles Forest and Santa Clarita Woodlands.	2 Resource Conservation and Management, Section 10 Forest	II-28	City of Los Angeles General Plan, Conservation Element
Preamble: The general plan Safety Element addresses seismic, geologic, flood, fire and other natural hazards, including identified risk areas within fault zones, potential liquefaction and landslide areas and flood plains. The general plan Infrastructure Systems Element will address associated facilities and systems.	2 Resource Conservation and Management, Section 11 Geologic Hazard	II-29	City of Los Angeles General Plan, Conservation Element
Preamble: Los Angeles has a rich biodiversity, principally within mountain and coastal habitats. Many of the natural areas are threatened by urbanization which encroaches upon, reduces and fragments them and severs connecting habitat corridors that are essential for the survival of some species.	2 Resource Conservation and Management, Section 12 Habitats	II-29	City of Los Angeles General Plan, Conservation Element
Objective 12: preserve, protect, restore and enhance natural plant and wildlife diversity, habitats, corridors and linkages so as to enable the healthy propagation and survival of native species, especially those species that are endangered, sensitive, threatened or species of special concern.	2 Resource Conservation and Management, Section 12 Habitats (Goal 1)	II-35	City of Los Angeles General Plan, Conservation Element
Policy 12.1: continue to identify significant habitat areas, corridors and buffers and to take measures to protect, enhance and/or restore them.	2 Resource Conservation and Management, Section 12 Habitats	II-35	City of Los Angeles General Plan, Conservation Element

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Policy	Chapter	Page	Source
Policy 12.2: continue to protect, restore and/or enhance habitat areas, linkages and corridor segments, to the greatest extent practical, within city owned or managed sites.	2 Resource Conservation and Management, Section 12 Habitats	II-35	City of Los Angeles General Plan, Conservation Element
Policy 12.3: continue to work cooperatively with other agencies and entities in protecting local habitats and endangered, threatened, sensitive and rare species.	2 Resource Conservation and Management, Section 12 Habitats	II-35	City of Los Angeles General Plan, Conservation Element
Policy 12.4: continue to support legislation that encourages and facilitates protection of local native plant and animal habitats.	2 Resource Conservation and Management, Section 12 Habitats	II-35	City of Los Angeles General Plan, Conservation Element
Objective 15: protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.	2 Resource Conservation and Management, Section 15 Land Form and Scenic Vistas (Goal 1)	II-48	City of Los Angeles General Plan, Conservation Element
Policy 15.1: continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms (e.g., ridge lines, bluffs, unique geologic features) and unique scenic features (historic, ocean, mountains, unique natural features) and/or make possible public view or other access to unique features or scenic views.	2 Resource Conservation and Management, Section 15 Land Form and Scenic Vistas	II-48	City of Los Angeles General Plan, Conservation Element
Policy 16.2: continue to support legislation and to seek funding and legislation intended for bay and coastal protection, enhancement and habitat restoration.	2 Resource Conservation and Management, Section 16 Ocean	II-55	City of Los Angeles General Plan, Conservation Element
Preamble: It is important to conserve natural open space lands and enhance urban open spaces. "Open space" is a broad term that can include virtually anything from a sidewalk or lawn to the mountains and ocean. It is defined by the California general plan law (Government Code Section 65560) as "any parcel or area of land or water that essentially is unimproved and devoted to an open-space use," whether for preservation and protection of natural resources or for human activity. Virtually every section of this element includes some aspect of open space protection, conservation or enhancement. The general plan Open Space Element will discuss the open space aspects of the city, including park sites and urbanized spaces, e.g., streets. The Public Facilities Element will address the human use aspects of city park sites. The Conservation Element primarily addresses conservation aspects of the natural open spaces that are addressed by the various subjects contained in this element.	2 Resource Conservation and Management, Section 17 Open Space/Parks	II-56	City of Los Angeles General Plan, Conservation Element

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Policy	Chapter	Page	Source
Goal 3A: A physically balanced distribution of land uses that contributes towards and facilitates the City's long-term fiscal and economic viability, revitalization of economically depressed areas, conservation of existing residential neighborhoods, equitable distribution of public resources, conservation of natural resources, provision of adequate infrastructure and public services, reduction of traffic congestion and improvement of air quality, enhancement of recreation and open space opportunities, assurance of environmental justice and a healthful living environment, and achievement of the vision for a more liveable city.	3 Land Use, Distribution of Land Use	NA	City of Los Angeles General Plan, Framework Element
Objective 3.1: Accommodate a diversity of uses that supports the needs of the City's existing and future residents, businesses, and visitors.	3 Land Use, Distribution of Land Use	NA	City of Los Angeles General Plan, Framework Element
Goal 3.1.3: Identify areas for the establishment of new open space opportunities to serve the needs of existing and future residents. These opportunities may include a citywide linear network of parklands and trails, neighborhood parks, and urban open spaces. (P1, P2, P19, P59)	3 Land Use, Distribution of Land Use	NA	City of Los Angeles General Plan, Framework Element
Goal 6A: An integrated citywide/regional public and private open space system that serves and is accessible by the City's population and is unthreatened by encroachment from other land uses.	6 Open Space and Conservation	NA	City of Los Angeles General Plan, Framework Element
Objective 6.1: Protect the City's natural settings from the encroachment of urban development, allowing for the development, use, management, and maintenance of each component of the City's natural resources to contribute to the sustainability of the region.	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.1: Consider appropriate methodologies to protect significant remaining open spaces for resource protection and mitigation of environmental hazards, such as flooding, in and on the periphery of the City, such as the use of tax incentives for landowners to preserve their lands, development rights exchanges in the local area, participation in land banking, public acquisition, land exchanges, and Williamson Act contracts. (P2)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.2: Coordinate City operations and development policies for the protection and conservation of open space resources, by: a. Encouraging City departments to take the lead in utilizing water re-use technology, including graywater and reclaimed water for public landscape maintenance purposes and such other purposes as may be feasible; b. Preserving habitat linkages, where feasible, to provide wildlife corridors and to protect natural animal ranges; and c. Preserving natural viewsheds, whenever possible, in hillside and coastal areas. (P2, P9, P59, P60)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.3: Reassess the environmental importance of the County of Los Angeles designated Significant Ecological Areas (SEAs) that occur within the City of Los Angeles and evaluate the appropriateness of the inclusion of other areas that may exhibit equivalent environmental value. (P2, P59)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element

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Policy	Chapter	Page	Source
Policy 6.1.4: Conserve, and manage the undeveloped portions of the City's watersheds, where feasible, as open spaces which protect, conserve, and enhance natural resources. (P2, P8)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.5: Provide for an on-site evaluation of sites located outside of targeted growth areas, as specified in amendments to the community plans, for the identification of sensitive habitats, sensitive species, and an analysis of wildlife movement, with specific emphasis on the evaluation of areas identified on the Biological Resource Maps contained in the Framework Element's Technical Background Report and Environmental Impact Report (Figures BR1A-D). (P2)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.6: Consider preservation of private land open space to the maximum extent feasible. In areas where open space values determine the character of the community, development should occur with special consideration of these characteristics. (P70)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Policy 6.1.7: Encourage an increase of open space where opportunities exist throughout the City to protect wild areas such as the Sepulveda Basin and Chatsworth Reservoir. (P1, P2, P59)	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Objective 6.2: Maximize the use of the City's existing open space network and recreation facilities by enhancing those facilities and providing connections, particularly from targeted growth areas, to the existing regional and community open space system.	6 Open Space and Conservation, Outdoor Recreation	NA	City of Los Angeles General Plan, Framework Element

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Policy	Chapter	Page	Source
Policy 6.2.1: Establish, where feasible, the linear open space system represented in the Citywide Greenways Network map, to provide additional open space for active and passive recreational uses and to connect adjoining neighborhoods to one another and to regional open space resources (see Figure 6-1). This Citywide Greenways Network is hierarchical and is composed of three levels: regional, community, and local/ neighborhood. While these levels are of equal importance, they vary in scale and the degree to which they impact the City at large. Additionally, while these levels overlap one another, they can still be differentiated and broken down as follows: a. The regional component of the network is composed of the beaches, the mountains, and the Los Angeles River system - the three most continuous natural features of the urban region and thus the primary elements of the network; river tributaries, arroyos and washes that take storm water to the ocean; rail lines and utility corridors, where feasible without compromising public safety or facility security, that may serve multiple purposes to become connectors to the beaches and the river and link adjacent districts to each other through the network; and all regional parks made accessible from the network. While considering open space improvements of the River and drainages, their primary purpose for flood control shall be considered. b. The community component is composed of parks and civic open spaces connected to the network, including elements such as community and neighborhood parks, connected by linear, non-motorized transportation linkages such as walking and hiking trails and local bike paths. c. The local/neighborhood components include pedestrian-supporting streets, open space associated with public facilities such as schools, small parks, and community gardens. (P2) (Figure 6-1 Greenways Network Map)	6 Open Space and Conservation, Outdoor Recreation	NA	City of Los Angeles General Plan, Framework Element
Policy 6.2.2: Protect and expand equestrian resources, where feasible, and maintain safe links in major public open space areas such as Hansen Dam, Sepulveda Basin, Griffith Park, and the San Gabriel, Santa Monica, Santa Susanna Mountains and the Simi Hills. a. Maintain the equestrian facilities on publicly owned lands, such as Hansen Dam and the Los Angeles Equestrian Center. b. Preserve, where feasible, the "Horsekeeping Supplemental Use District" ("K" District), with links to major open areas. c. Support the policies and objectives of the Rim of the Valley Trail Corridor Master Plan, the Urban Greenways Plan, and the Major Equestrian and Hiking Trails Plan (and all amendments) as a foundation for promoting and maintaining a trail system within the City. (P1, P58, P59)	6 Open Space and Conservation, Outdoor Recreation	NA	City of Los Angeles General Plan, Framework Element
Objective 6.3: Ensure that open space is managed to minimize environmental risks to the public.	6 Open Space and Conservation, Public Safety	NA	City of Los Angeles General Plan, Framework Element
Policy 6.3.1: Preserve flood plains, landslide areas, and steep terrain areas as open space, wherever possible, to minimize the risk to public safety. (P1, P2)	6 Open Space and Conservation, Public Safety	NA	City of Los Angeles General Plan, Framework Element

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Policy	Chapter	Page	Source
Policy 6.5.2: Establish programs for financing open space acquisition, development and maintenance.	6 Open Space and Conservation, Resource and Conservation Management	NA	City of Los Angeles General Plan, Framework Element
Goal 9J: Every neighborhood has the necessary level of fire protection service, emergency medical service (EMS) and infrastructure.	9 Infrastructure and Public Services, Fire	NA	City of Los Angeles General Plan, Framework Element
Objective 9.17: Assure that all areas of the City have the highest level of fire protection and EMS, at the lowest possible cost, to meet existing and future demand.	9 Infrastructure and Public Services, Fire	NA	City of Los Angeles General Plan, Framework Element
Policy 9.17.4: Consider the Fire Department's concerns and, where feasible adhere to them, regarding the quality of the area's fire protection and emergency medical services when developing general plan amendments and zone changes, or considering discretionary land use permits. (P1, P2, P18)	9 Infrastructure and Public Services, Fire	NA	City of Los Angeles General Plan, Framework Element
Goal 9Q: A sustainable urban forest that contributes to overall quality of life.	9 Infrastructure and Public Services, Urban Forest	NA	City of Los Angeles General Plan, Framework Element
Objective 9.41: Ensure that the elements of urban forestry are included in planning and programming of infrastructure projects which involve modification of dedicated parkway, sidewalk and/or raised median islands.	9 Infrastructure and Public Services, Urban Forest	NA	City of Los Angeles General Plan, Framework Element
Policy 9.41.2: Encourage the use of permeable paving wherever possible. (P24)	9 Infrastructure and Public Services, Urban Forest	NA	City of Los Angeles General Plan, Framework Element
Goal G-1: To insure the preservation and conservation of sufficient open space to serve the recreational, environmental, health and safety needs of the City.	NA	3	City of Los Angeles General Plan, Open Space Element
Goal G-2: To conserve unique natural features, scenic areas, cultural and appropriate historical monuments for the benefit and enjoyment of the public.	NA	3	City of Los Angeles General Plan, Open Space Element
Goal G-3: To conserve unique natural features, scenic areas, cultural and appropriate historical monuments for the benefit and enjoyment of the public.	NA	3	City of Los Angeles General Plan, Open Space Element
Goal G-4: To conserve and / or preserve those open space areas containing the City's environmental resources including air and water.	NA	3	City of Los Angeles General Plan, Open Space Element
Goal G-5: To provide access, where appropriate, to open space lands.	NA	3	City of Los Angeles General Plan, Open Space Element
Objective O-1: To establish standards, criteria and an order of importance for the location, quantity, quality, conservation and preservation of open space.	NA	4	City of Los Angeles General Plan, Open Space Element

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Policy	Chapter	Page	Source
Objective O-4: To develop programs and techniques to encourage private land owners to create and/or preserve open space areas and/or linear strips of land connecting open space areas.	NA	4	City of Los Angeles General Plan, Open Space Element
Objective O-5: To identify, preserve and/or conserve ecologically important areas within the City which are worthy of preservation and protection.	NA	4	City of Los Angeles General Plan, Open Space Element
Objective O-6: To identify unique natural features, scenic areas and historical sites which ore desirable for preservation.	NA	4	City of Los Angeles General Plan, Open Space Element
Objective O-7: To identify, preserve and/or conserve those lands necessary as open space land in order to protect the public health and safety.	NA	4	City of Los Angeles General Plan, Open Space Element
Objective O-8: To emphasize the importance of, and to preserve open space and natural features in private and public development.	NA	4	City of Los Angeles General Plan, Open Space Element
Policy 2.1: Ecologically important areas are generally considered as open space and shall be so designated. The following shall apply: a. To the extent feasible, ecologically important areas should be kept in a natural state. b. In the event a project is proposed within an ecologically important area, an environmental impact report shall be prepared. c. The construction of roads through ecologically important areas should be closely controlled in order to protect these areas.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.2: Flood endangered areas should be set aside for appropriate open space uses.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.3: Alteration of drainage patterns shall be minimized in the development of any land in mountain areas.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.4: Stream and wash areas should be conserved except where improvements are necessary to protect life and property.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.6: The amount of earth moved in grading operations within desirable open space areas should be limited and closely controlled. Aesthetic consideration should be incorporated into the City's approval of grading plans in these areas.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.13: Beaches and ocean areas containing abundant plant and marine life should be identified and, where appropriate, protected.	NA	5	City of Los Angeles General Plan, Open Space Element
Policy 2.15: When acting upon a specific plan on any matter pertaining to projects located in either the open space land or desirable open space areas shown in this Plan and where the Environmental Impact Report for the subject specific Plan has indicated that a significant environmental impact will occur if the resulting development or action is allowed to take place, the City Planning Commission and Council shall make findings showing the reasons for their action. If the Council does not adopt the Commission's findings and recommendations, the Council shall make its own findings.	NA	6	City of Los Angeles General Plan, Open Space Element

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Policy	Chapter	Page	Source
Policy 2.16: Subdivision and zoning regulations should provide standards emphasizing natural and topographic values and constraints through: density and/or intensity limitations, establishment of access standards, availability of public services, consideration of natural hazards, employment of aesthetic as well as safety aspects of grading practices and environmental preservation. This is especially important with respect lo preservation of vegetative cover and minimization of sheet erosion.	NA	7	City of Los Angeles General Plan, Open Space Element
Policy 2.18: Private development should be encouraged to provide ample landscaped spaces, molls, fountains, rooftop green areas and other aesthetic features which emphasize open space values through incentive zoning practices or other practicable means.	NA	7	City of Los Angeles General Plan, Open Space Element
Policy 2.19: Where development is allowed in ecologically important areas, the intensity of development should be kept at o minimum consistent with reasonable uses of the land. All measures should be taken to protect these areas including buffering ecologically important areas from conflicting or detrimental uses.	NA	7	City of Los Angeles General Plan, Open Space Element
Policy 2.20: Hazardous open space areas; including property especially subject to fire, steeply sloping hillsides and geologically unstable lands; are threats lo the public safety. Proposals for their use should be evaluated in light of more restrictive grading requirements, better provision for access and lower densities and/or intensities of development.	NA	7	City of Los Angeles General Plan, Open Space Element
Policy 2.22: Private development which occurs in proximity to desirable open space areas should include roads and trails adequate to serve both that development and the immediately adjacent recreation and open space areas.	NA	7	City of Los Angeles General Plan, Open Space Element
Policy 2.23: In desirable open space, areas with unique natural features or ecologically important areas, a preliminary development plan shall be provided. Proposals should include: zoning, subdivision, grading, design, landscaping, public improvements and phasing. Also included should be an Environmental Impact Report dealing in particular with open space concerns.	NA	8	City of Los Angeles General Plan, Open Space Element
Policy 2.32: Roads and other transportation systems through open spaces shall be compatible with the special nature of these lands. These roads shall be individually designed to emphasize scenic values and conform to the unique topography and setting of areas traversed. The standards and criteria set forth in the Scenic Highways Element of the General Plan should be applied, as appropriate, to roads within open space areas.	NA	8	City of Los Angeles General Plan, Open Space Element
Policy 2.33: Multiple use of land adjacent to reservoirs, land reclamation sites, spreading grounds, power line rights-of-way and flood control channels is encouraged consistent with meeting public health and safety standards and the primary functions of these resources. Operating agencies should enter into agreement with the agency responsible for administration of open space in each case, wherever feasible.	NA	9	City of Los Angeles General Plan, Open Space Element

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Policy	Chapter	Page	Source
Policy 3.5: Density and intensity of development in open space areas are indicated on the appropriate Community, District or Area Plan. However, dwelling unit density and intensity of development indicated therein may be further reduced if dictated by the following land carrying capability considerations: • Topography (slope) • Geology (slides, soil) • Vehicular access • Public facilities and services (availability) • Ground coverage of proposed improvements • Scenic values • Fire hazard • Earthquake hazard	NA	12	City of Los Angeles General Plan, Open Space Element
Policy 3.12: Lands subject to natural or manmade hazards, detrimental to life and property should be left in their natural state, where feasible, and considered as open space.	NA	13	City of Los Angeles General Plan, Open Space Element
Policy 3.13: Land, essentially in open space use, serving to enhance and protect the public health and welfare should be considered open space. Those lands in impacted areas are especially important.	NA	13	City of Los Angeles General Plan, Open Space Element
Policy 3.14: Open areas which preserve or protect environmental quality or the ecological balance should be considered open space.	NA	13	City of Los Angeles General Plan, Open Space Element
Policy 3.15: Scenic, historic, cultural, archaeological or geological sites and natural formations which are "unique," "one of a kind" or non-replaceable should be considered as open space.	NA	13	City of Los Angeles General Plan, Open Space Element
Policy 3.2: The order of importance for the creation, preservation, conservation or acquisition of open space areas or lands is as follows: • 1st Areas which should be maintained as open space in order to provide for public health and safety. This includes lands needed for life support systems such as the water supply, water recharge, water quality protection, wastewater disposal, solid waste disposal, air quality protection, energy production and noise prevention. Natural drainage channels, flood plains, fire hazard areas, airport clear zones and geological hazard areas are also open space necessary to the maintenance of public safety. • 2nd Scenic features, historic sites, natural resources, and other significant areas which are considered unique or irreplaceable in nature. This includes ecologically important areas. • 3rd Land well suited to recreational uses either through public acquisition or by privately owned and operated recreational facilities. • 4th Those lands in open space use which serve to link larger open space areas and the community and give form and identity to urban areas. The groupings indicated above are general in nature and do not reflect differences in quality or intensity of a particular need or area. Areas of open space which satisfy more than one of the above groupings should be given greater importance.	NA	14	City of Los Angeles General Plan, Open Space Element

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Policy	Chapter	Page	Source
Goal 1: A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.	NA	III-1	City of Los Angeles General Plan, Safety Element
Policy 1.15: Reduce potential risk hazards due to natural disaster to the greatest extent feasible within the resources available, including provision of information and training. [All programs that incorporate current data, knowledge and technology in revising and implementing plans (including this Safety Element), codes, standards and procedures that are designed to reduce potential hazards and risk from hazards potentially associated with natural disasters implement this policy.]	NA	III-1	City of Los Angeles General Plan, Safety Element
Community Plan Policies[1]			
Designated Open Space Lands are not intended to be developed for residential or other urban uses. These lands should be considered for recreation, wildlife refuge and preservation areas, and zoned appropriately depending on public or private ownership.	3 (Land Use Policies)	III-4	Bel Air-Beverly Crest Community Plan
The intensity of land use in the mountain and hillside areas and the density of the population which can be accommodated thereon, should be limited in accordance with the following: -The adequacy of the existing and assured street circulation system, both within the area and in peripheral areas, to accommodate traffic. -The availability of sewers, drainage facilities, fire protection services and facilities, and other public facilities. -The requirements of the City's Hillside Ordinance. -The suitability of the area for development, and the steepness of the natural topography. In areas designated for Minimum Density Housing, the dwelling unit density shall not exceed that allowed by the following formula, but in any case shall not be greater than one dwelling unit per acre nor less than 0.05 dwelling units per acre: D = (50-S)/35 Where D = The maximum number of dwelling units per gross acre allowable, and S = The average natural slope of the land in percent. -The use of landform grading techniques on prominent slopes, or slopes which are visible from scenic corridors and major public ways, according to the Landform Grading Manual adopted by the City Council. -The compatibility of proposed developments with existing adjacent development.	3 (Land Use Policies)	III-1	Bel Air-Beverly Crest Community Plan

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Policy	Chapter	Page	Source
Use of the "cluster concept" is to be considered for new residential development in hillside areas in order to preserve the natural terrain, minimize the amount of grading required, and provide more recreational land and open space. However, development by conventional subdivision should not be precluded. The "cluster" concept is defined as the grouping of residential structures on the more level parts of the terrain while retaining a large area (75 to 80 percent) in its natural state or in a park-like setting. Density patterns indicated on the Plan Map may be rearranged to facilitate cluster developments provided that the total number of dwelling units indicated in any development is not increased from that depicted on the Plan Map. Cluster developments should not be granted unless they are in general conformance with the following requirements: -Design should minimize adverse visual impact on neighboring single family uses. -Adequate access should be provided from at least two directions. -Grading should be controlled in accordance with the following criteria: -A detailed grading plan showing the amount of cut and fill within 10% accuracy to be required upon submission of any tentative tract map or change of zone request. -With the exception of roads and necessary drainage facilities, natural terrain to be retained and grading limited to the actual building site. -Setback requirements of the applicable zone should not be waived. -No more than 20% of the total land in a development should be in residential use. -At least 15% of the open land (5% slope or less), should be devoted to recreational activities. -Open space, and park and recreation lands, whether deeded to the City or privately held as Open Space Land, should be considered in calculating the potential density in associated subdivisions, and should be protected by provisions which would prohibit any future construction of non-recreational buildings on the protected areas.	3 (Land Use Policies)	III-2	Bel Air-Beverly Crest Community Plan
4-1.1 Natural resources should be conserved on privately-owned land of open space quality and preserved on state parkland. City parks should be further developed as appropriate.	3 (Land Use Policies and Programs)	III-13	Brentwood-Pacific Palisades Community Plan
Objective 7: To encourage open space for recreational uses, and to promote the preservation of views, natural character and topography of mountainous parts of the Community for the enjoyment of both local residents and persons throughout the Los Angeles region.	NA	2	Chatsworth-Porter Ranch Community Plan
Objective 13: To further define the link between the Chatsworth Reservoir, wildlife corridors, and the community by identifying natural wildlife habitats, migration paths, and archaeological/paleontological sites and planning for their preservation;	NA	3	Chatsworth-Porter Ranch Community Plan

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Policy	Chapter	Page	Source
The northwest border of the City of Los Angeles includes a wildlife migration corridor. The wildlife corridor through the Simi Hills and Santa Susana Mountains to the Santa Monica Mountains could be endangered by development and transportation arteries cutting through this vital link. The Plan encourages preservation by both public and private agencies of this critical natural feature. Within the Plan area, the Simi Freeway presents the most difficult barrier to wildlife. While there are several passes both under and over the freeway, they are predominately used by automobile traffic which presents a danger to wildlife. Culverts should be under the freeway west of Topanga Canyon Boulevard, constructed for wildlife and equestrians, and connected to trails.	NA	3	Chatsworth-Porter Ranch Community Plan
Policy 3: The steepness of the topography of the various parts of the area and the suitability of the geology of the area for development shall be guided by the following: In areas designated for Minimum density housing, the dwelling unit density shall not exceed that allowed by the slope density ordinance (LAMC Section 17.05 C). Hillside areas designated Very Low I or Very Low II on the Plan Map which contain limited areas of exceptionally steep topography should be restricted to even lower densities. It is the policy of the Planning Commission that the Deputy Advisory Agency must consider lower densities, including Minimum density, when considering applications for development of such areas. Factors to be considered should include, but not be limited to steepness of slope, amount of grading, soil stability, erosion, land division patterns, vehicular access, etc.	NA	5	Chatsworth-Porter Ranch Community Plan
Policy 3: A minimum 100-foot buffer zone should be designated from the top of a channel bank for all riparian habitats. Projects that affect wetlands or natural waterways should comply with requirements of the California Department of Fish and Game and U.S. Army Corps of Engineers.	NA	13	Chatsworth-Porter Ranch Community Plan
Wildlife. A detailed rare plant and wildlife survey should be conducted where there are existing native open spaces in the Santa Susana Mountains. Specific mitigation measures shall be developed for any sensitive species found on a given site. In developing specific mitigation measures, the following measures should be considered in descending order: • Avoid direct or indirect impacts. • Reduce or minimize impacts to an insignificant level by preserving a viable portion of the population. • Compensate for the impacts by transplanting, or by habitat enhancement elsewhere, or the preservation of population elsewhere.	3 (Land Use Policies and Programs)	III-9	Granada Hills-Knollwood Community Plan
Goal 4: Safe, well-designed hillside development that complements Granada Hills-Knollwood's natural environment and preserves the scenic vistas, foothills, and vast open spaces.	3 Land Use and Design	3-14	Granada Hills-Knollwood Community Plan
Policy 4.1: Hillside Density. Limit the intensity and density in hillside areas to that which can be reasonably accommodated by infrastructure and natural topography. Notwithstanding any land use designation maps to the contrary, all projects with average natural slopes in excess of 15 percent, including Tract Maps and Parcel Maps, shall be limited to the minimum density housing category for the purposes of enforcing the slope density formula of LAMC Sections 17.05C and 17.50E (including as may be amended from time to time).	3 Land Use and Design	3-14	Granada Hills-Knollwood Community Plan

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Policy	Chapter	Page	Source
Policy 4.3: Topography Preservation. Use the natural topography as the primary criteria to determine the placement and/or alignment of houses, roads, drainage facilities, equestrian facilities, and other necessary structures. Design developments to be integrated with and visually subordinate to natural features and terrain. Condition new development in the hills to protect views from public roadways and parklands to the maximum extent feasible.	3 Land Use and Design	3-14	Granada Hills-Knollwood Community Plan
Policy 4.4: Slope Preservation and Grading. Cluster houses on those portions of undeveloped hillside areas that have less than a 15 percent slope in order to retain the steeper slopes in their natural state or in a natural park-like setting, minimize the amount of grading and the alteration of the natural topography, and provide more open space opportunities for recreation and equestrian use. The density pattern indicated in the Plan may be adjusted to facilitate development on the more level portions of the terrain provided that the total number of dwelling units indicated in any development is not increased over that allowed by the Plan based on the net area of development.	3 Land Use and Design	3-14	Granada Hills-Knollwood Community Plan
Policy 4.5: Mountain Viewshed Protection. Design development near ridgelines so as to avoid breaking the mountain silhouette of a significant ridgeline. Discourage building and grading on ridgelines to protect ridges and environmentally sensitive areas, and to prevent erosion associated with development and visual interruption of the ridge profile.	3 Land Use and Design	3-14	Granada Hills-Knollwood Community Plan
Policy 4.6: Landscaping. Incorporate landscaping that supports slope stability and provides fire protection.	3 Land Use and Design	3-15	Granada Hills-Knollwood Community Plan
Goal 6: A community with sufficient open space in balance with new development to serve the recreational, environmental, health and safety needs of the area and to protect environmental and aesthetic resources.	5 Community Facilities, Infrastructure, Open Space	5-23	Granada Hills-Knollwood Community Plan
Policy 6.1: Conservation. Preserve passive and visual open space that provides wildlife habitat and corridors, wetlands, watersheds, groundwater recharge areas, and other natural resource areas.	5 Community Facilities, Infrastructure, Open Space	5-23	Granada Hills-Knollwood Community Plan
Policy 6.4: Natural Drainage. Minimize the alteration of natural drainage patterns, canyons, and water courses, except where improvements are necessary to protect life and property	5 Community Facilities, Infrastructure, Open Space	5-23	Granada Hills-Knollwood Community Plan
Policy 6.6: Ecologically Sensitive Area. Coordinate with the County of Los Angeles in identifying significant ecological areas featuring ecological or scenic resources that should be preserved and protected within State reserves, preserves, parks, or natural wildlife refuges.	5 Community Facilities, Infrastructure, Open Space	5-23	Granada Hills-Knollwood Community Plan
Goal 8: A healthy and safe tree population in all neighborhoods to maximize the benefits gained from the urban forest, such as air quality improvement and aesthetic enhancement, and pedestrian-friendly shade in Granada Hills-Knollwood.	5 Community Facilities, Infrastructure, Open Space	5-26	Granada Hills-Knollwood Community Plan

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Policy	Chapter	Page	Source
Policy 8.4: Native Trees. Encourage the use of plant communities native to Los Angeles which achieve native biodiversity and enhance existing wildlife habitats.	5 Community Facilities, Infrastructure, Open Space	5-27	Granada Hills-Knollwood Community Plan
Goal LU1: Complete, livable and quality residential neighborhoods that provide a variety of housing types, densities, forms, and designs and a mix of uses and services that support the needs of residents throughout Hollywood.	3 (Land Use Policies and Programs)	3-10	Hollywood Community Plan (Proposed Update)
Policy LU1.4: Limit density in hillside areas. Notwithstanding any land use designation maps to the contrary, all projects with average natural slopes in excess of 15 percent, including both Tract Maps and Parcel Maps, shall be limited to the minimum density housing category for the purposes of enforcing the slope density formula of LAMC Section 17.05 and 17.50E.	3 (Land Use Policies and Programs)	3-10	Hollywood Community Plan (Proposed Update)
Policy LU1.5: Condition the approval of lot line adjustments, where either lot is subject to the Slope Density Ordinance prior to the lot adjustment, to document existing average natural slopes for the entire parcel and maintaining overall density restrictions pursuant to the intent of the slope density formula of Section 17.05.	3 (Land Use Policies and Programs)	3-10	Hollywood Community Plan (Proposed Update)
Goal PR.3: New and improved open space and public parks that provide opportunities for recreation and social gathering.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.1: Preserve open space. Maintain, preserve, and enhance open space, and recreational facilities, and park space within the Hollywood Community Plan Area. Encourage the retention of passive open space which provides a balance to the urban development of the Community Plan Area.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.2: Green space and plazas. Develop new public green spaces and public plazas where possible.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.3: Site remediation. Pursue resources to clean up land, especially brown-fields, that could safely be used for public recreation or open space.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.4: Open space easements. Support the rezoning of paper streets for open space easements that can be used to connect trails and access recreational uses.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.5: Preserve easements. Discourage the paving over of easements.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.6: Underutilized rights-of-way. Identify opportunities to increase recreational resources by converting underutilized rights-of-way like railroads and powerlines to accommodate greenways and bicycle trails, and by utilizing public easements for community gardens. Promote resource efficient new infill development that creates recreational open space and creative placemaking projects in public rights of way.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)

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Policy	Chapter	Page	Source
Policy PR3.8: Acquire vacant land. Encourage and support continuing efforts of non-profits in partnership with County, State and Federal agencies to acquire vacant land for publicly owned open space.	3 (Land Use Policies and Programs)	4-9	Hollywood Community Plan (Proposed Update)
Policy PR3.10: Access to open space. Maintain and improve access to existing open space and new open space including walking, hiking, and equestrian trails. Maintain and improved bicycle access to open space. Support the connection of existing walking, hiking and equestrian trail segments in the Plan Area, including the Rim of the Valley trails corridor, where feasible.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR3.11: Rooftops. Support the use of rooftops for Open Space, including running tracks, gardens and other recreational purposes, where public safety permits.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR3.12: Rivers and streams. Maintain and expand public green space around rivers and streams.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR3.13: Los Angeles River. Support recommendations of the Los Angeles River Revitalization Master Plan for establishing parks, walking paths, bicycle trails, gathering spaces, and public art along the Los Angeles River.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR3.14: Los Angeles River Improvement Overlay (RIO) Zone. Observe guidelines for mobility, watershed management and urban design as established by the Los Angeles RIO Zone.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR3.16: Headworks Reservoir. Support the plans of LADWP to provide parkland on top of the proposed Headworks Reservoir in Griffith Park between Ventura Freeway and Forest Lawn Drive and in future infrastructure projects, where apprpriate.	3 (Land Use Policies and Programs)	4-10	Hollywood Community Plan (Proposed Update)
Policy PR4.5: Open space designations. Maintain all open space designations within the Hollywood Community Plan Area. Designate parkland as Open Space as it is acquired by the Department of Recreation and Parks.	3 (Land Use Policies and Programs)	4-11	Hollywood Community Plan (Proposed Update)
Policy PR5.5: Improve accessibility. Prioritize and improve accessibility to recreational uses in Griffith Park suing tools such as easements and trail and greenway linkages.	3 (Land Use Policies and Programs)	4-11	Hollywood Community Plan (Proposed Update)
Policy PR5.6: Greenways and trail systems. Preserve and encourage acquisition, development and funding of new recreational facilities and park space with the goal of creating greenways and trail systems.	3 (Land Use Policies and Programs)	4-11	Hollywood Community Plan (Proposed Update)
Goal PR6: Protect existing natural areas and wildlife habitat.	3 (Land Use Policies and Programs)	4-12	Hollywood Community Plan (Proposed Update)
Policy PR6.1: Wildlife habitats. Evaluate existing conditions and identify areas important for supporting habitat and movement for wildlife.	3 (Land Use Policies and Programs)	4-12	Hollywood Community Plan (Proposed Update)

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Policy	Chapter	Page	Source
Policy PR6.2: Conservation. Preserve passive and visual open space that provides wildlife habitat and corridors, wetlands, watershed, groundwater recharge areas, and other natural resources areas.	3 (Land Use Policies and Programs)	4-12	Hollywood Community Plan (Proposed Update)
Policy PR6.4: Ecologically sensitive areas. Coordinate with the County of Los Angeles in identifying significant ecological areas featuring ecological or scenic resources that should be preserved and protected within State reserves, preserves, parks, or natural wildlife refuges.	3 (Land Use Policies and Programs)	4-12	Hollywood Community Plan (Proposed Update)
5-1.2 Protect significant environmental resources from environmental hazards.	3 (Land Use Policies and Programs)	III-18	San Pedro Community Plan
5-1.5 The alteration of natural drainage patterns, canyons, and water courses shall be minimized except where improvements are necessary to protect life and property.	3 (Land Use Policies and Programs)	III-19	San Pedro Community Plan
5-1.7 Offshore oil drilling be strictly controlled in the immediate area off San Pedro so as to safeguard against oil spillage, prevent interference with shipping lanes, preserve the scenic value of the coastline, and protect ecologically important areas and designated wildlife refuges.	3 (Land Use Policies and Programs)	III-19	San Pedro Community Plan
5-1.8 Coastal areas containing ecological or scenic resources be preserved and protected within State reserves, preserves, parks, or natural wildlife refuges.	3 (Land Use Policies and Programs)	III-19	San Pedro Community Plan
Goal 1: A safe, secure, and high quality residential environment for all economic, age, and ethnic segments of the community.	3 (Land Use Policies and Programs)	III-2	Sun Valley-La Tuna Canyon Community Plan
Objective 1-6: To limit residential density and minimize grading in hillside areas.	3 (Land Use Policies and Programs)	III-5	Sun Valley-La Tuna Canyon Community Plan
Policy 1-6.3: Minimize grading. Require that grading be minimized to reduce the effects on environmentally sensitive areas.	3 (Land Use Policies and Programs)	III-5	Sun Valley-La Tuna Canyon Community Plan
Goal 6: Facilitate the provision of public schools and adequate school facilities to serve every neighborhood in the Westchester-Playa Del Rey community plan area.	3 (Land Use Policies and Programs)	III-24	Westchester-Playa Del Rey Community Plan
Objective 6-4: Coordinate and integrate the development and operation of the Loyola Marymount University (LMU) campus into the surrounding Westchester-Playa del Rey community.	3 (Land Use Policies and Programs)	III-26	Westchester-Playa Del Rey Community Plan
Policy 6-4.2: Protect sensitive terrain and nearby natural habitats, such as blufflines and wetland environments, from potentially adverse impacts during all phases of development and operation of the University.	3 (Land Use Policies and Programs)	III-27	Westchester-Playa Del Rey Community Plan
Objective 10-2: Operate the Hyperion Treatment Plant in a manner that is safe and protective of the fragile coastal ecosystem.	3 (Land Use Policies and Programs)	III-32	Westchester-Playa Del Rey Community Plan

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Policy	Chapter	Page	Source
Goal 18: Protect Westchester-Playa Del Rey's unique coastal qualities by maintaining the coastal zone in an environmentally sensitive manner and preserving the scenic views of the area, while ensuring access and public use of coastal resources.	3 (Land Use Policies and Programs)	III-52	Westchester-Playa Del Rey Community Plan
Objective 18-2: Protect, maintain, and where feasible enhance and restore the quality of the Coastal Zone environment and its natural resources. Assure the orderly and balanced use and conservation of coastal ecological amenities, taking into account the social and economic needs of the people of the region.	3 (Land Use Policies and Programs)	III-53	Westchester-Playa Del Rey Community Plan
Policy 18-2.1: New development should be located in a manner that best preserves identified coastal resources, including wetland and support areas. Promote the concentration or grouping of structures to retain larger areas of open land. Open space buffer areas should be established between new development and sensitive ecological environments.	3 (Land Use Policies and Programs)	III-53	Westchester-Playa Del Rey Community Plan
Policy 18-2.2: Wetland preservation. Preserve and enhance Ballona Wetlands by consolidating and restoring all wetlands and environmentally sensitive habitats within the Ballona area.	3 (Land Use Policies and Programs)	III-53	Westchester-Playa Del Rey Community Plan
Policy 18-2.3: Preserve and enhance Del Rey Lagoon as a community and visitor serving park with significant ecological functions.	3 (Land Use Policies and Programs)	III-54	Westchester-Playa Del Rey Community Plan
Policy 18-2.4: Wildlife protection. Preserve and protect the unique and distinctive landforms of Playa del Rey Coastal Bluffs, which remain habitat to birds, small mammals, and native plants.	3 (Land Use Policies and Programs)	III-54	Westchester-Playa Del Rey Community Plan
Goal 4: Adequate recreation and park facilities which meet the needs of the residents in the plan area.	3 (Land Use Policies and Programs)	III-19	Wilmington-Harbor City Community Plan
Objective 4-6: Preserve wildlife habitats. To preserve unique wildlife habitats and ecologically important areas within parks and recreation areas in a natural state, for the protection of plant and animal species, and for public enjoyment, health and safety.	3 (Land Use Policies and Programs)	III-21	Wilmington-Harbor City Community Plan
Policy 4-6.1: Identify and preserve wildlife habitats and ecologically improved areas in a natural state, consistent with the public need, health and safety.	3 (Land Use Policies and Programs)	III-21	Wilmington-Harbor City Community Plan
Policy 5-1.2: Protect significant environmental resources from environmental hazards.	3 (Land Use Policies and Programs)	III-22	Wilmington-Harbor City Community Plan
Policy 4: Zoning amendments. Consider possible amendments to the Zoning and/or Building Codes to limit the quantity of cut and fill grading in hillside and mountainous areas.	3 (Land Use Policies and Programs)		Venice Community Plan
Policy 18-1.2: The protection of estuaries and wetlands and the restoration and protection of the Venice Canals.	3 (Land Use Policies and Programs)	III-36	Venice Community Plan

Appendix H. City of Los Angeles Policy Summary Matrix

Policy	Chapter	Page	Source
Public works improvements in the study area shall be designed to protect sensitive habitat resources, accommodate new development permitted in the area and provide for future public access needs.	3 (Land Use Policies and Programs)	III-38	Venice Community Plan
Specific Plan Policies[1]			
7. Provide well-designed, energy efficient, architectural and landscape lighting that contributes to a safe and inviting atmosphere without casting light into the night sky, adjacent properties, or sensitive habitat areas.	2 (Zoning and Standards)	2-39	Cornfield Arroyo Seco Specific Plan
6. Provide open space areas that provide for native habitat and facilitate the migration of local species.	2 (Zoning and Standards)	2-55	Cornfield Arroyo Seco Specific Plan
Restoration and Maintenance of the Preserve. The Dunes Habitat Preserve, as shown on the Map, shall be restored as reasonably feasible to natural state for the express purpose of providing a permanent preserve for dune-dependent species. The Executive Director of the Department of Airports (Executive Director) and the General Manager of the Department of Environmental Affairs (General Manager) shall prepare a report describing a program for the phased restoration and maintenance of the Preserve consistent with this Specific Plan. Within 180 days of the approval of the Specific Plan by the Coastal Commission, the Executive Director shall submit the Executive Director's and General Manager's Report (Report) to the Board of Airport Commissioners (Board) for its approval. Within 90 days of the receipt of the Report, the Board shall submit the Report to the Coastal Commission for its review and comment. The Board shall initiate the Program within 180 days of the completion of the Coastal Commission review of the Report. The General Manager and the Board shall have responsibility for the restoration of the Preserve as funding for restoration efforts become available. The Board and the General Manager may seek funding for the Program from any available source. The Board shall have the responsibility for operation and maintenance of the Preserve. The General Manager, the Board, and the Executive Director (upon approval of the Board) may retain parties to assist in carrying out their duties and responsibilities under the Program and this Specific Plan. The General Manager shall submit an annual report to the Coastal Commission on the progress of the restoration Program.	3 (Land Use Regulations)	4-5	Los Angeles Airport/El Segundo Dunes Specific Plan
Access to the Preserve shall be restricted consistent with the site's environmental sensitivity. Regulations for such access (including hours and terms of supervision) shall be approved by the Board. Access may also be restricted by the Board and/or Executive Director based on the security needs of the Department of Airports. Principal uses within the Preserve shall be limited to habitat restoration and maintenance directed primarily toward enhancement for threatened and endangered species; scientific research; and education. Except when associated with habitat restoration and maintenance, site alteration shall be kept to an absolute minimum. Existing Airport navigational and safety facilities are permitted. To the extent consistent with Federal laws and legally enforceable Federal regulations, development of additional navigational and safety facilities shall require a Coastal Development Permit. Placement of such facilities shall be compatible with the preservation of habitat values. The Federal Aviation Administration's			

Appendix H. City of Los Angeles Policy Summary Matrix

Policy	Chapter	Page	Source
Very-High Omni Range (VOR) Navigation Beacon and the remote antennae shall have their own security and access provisions. Routine operations and maintenance of the VOR area shall be conducted in such manner as to minimize disruption to adjacent habitat			
4. Relocation and Remove. No Native Tree or Significant Tree may be relocated or removed except as provided in Article 7 of Chapter I or Article 6 of Chapter IV of the LAMC or unless a Project Permit is obtained pursuant to Section 8 of this Plan. Removal shall include any act which will cause a Native or Significant Tree to die, including but not limited to acts which inflict damage upon the root system or other part of tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling dripline area around the trunk, or by changing the local drainage pattern, either inside or outside the dripline, such that it significantly affects the amount of water that reaches the tree roots.	6.F (Landscaping and Preservation, Relocation, and Removal of Native and Significant Trees)	7	Mount Washington/Glassell Park Specific Plan
2. Streams. No project shall be constructed and no more than 100 cubic yards of earth shall be moved within 100 feet of either stream bank without the prior written approval of the Director pursuant to Section 11. In granting an approval, the Director shall make the following findings: a. The applicant has employed a biologist to prepare a report which contains the following: the location(s) of the stream's banks, an assessment of the riparian resources, an evaluation of the project's impact on the riparian resources and a recommendation of feasible mitigation measures. b. The applicant has submitted to the Director for his approval, a copy of the biologist's report and a covenant and agreement which runs with the land and which states that the mitigation measures recommended by the biologist and approved by the Director will be incorporated in the project and maintained. The covenant and agreement shall be recorded by the applicant. c. The project preserves the natural vegetation and the existing ecological balance. d. The project protects prominent ridges, streams, and environmentally sensitive areas and the aquatic, biologic geologic and topographic features therein. e. The project will not damage the integrity of a stream.	5.B (Environmental Protection Measures)	10	Mulholland Scenic Parkway Specific Plan
3. Projects Near Parklands. No project shall be erected and no earth shall be graded within 200 feet of the boundaries of any public parkland without the prior written approval of the Director pursuant to Section 11. The Director may approve the construction of a project or grading within 200 feet of public parkland after making the following findings: a. The project preserves the residential character along the right-of-way. b. The project will minimize erosion. c. The project preserves the natural vegetation and the existing ecological balance. d. The project protects identified archaeological and paleontological sites. e. The project minimizes driveway access into the right-of-way	5.B (Environmental Protection Measures)	10-11	Mulholland Scenic Parkway Specific Plan

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Policy	Chapter	Page	Source
4. Oak Trees. No oak tree (*quercus agrifolia*, *lobata*, *q. virginiana*) shall be removed, cut down or moved without the prior written approval of the Director. The Director may approve the removal, cutting down or moving of an oak tree after making the following findings: a. The removal, cutting down or moving of an oak tree will not result in an undesirable, irreversible soil erosion through diversion or increased flow of surface waters. b. The oak tree is not located with reference to other trees or monuments in such a way as to acquire a distinctive significance at said location.	5.B (Environmental Protection Measures)	11	Mulholland Scenic Parkway Specific Plan
No building permit shall be issued for any building, structure or other development property within the Specific Plan Area unless and until Community Plan policies with respect to the preparation of the Habitat Management Plan for the Ballona Wetlands and the funding thereof, the funding for the restoration of the Ballona Wetlands in accordance with such Plan, and the conveyance of fee title to the Habitat Management Area to the designated owner/manager, have been implemented. (This prohibition shall not apply to building permits for Southern California Gas Company for the maintenance and operation of its existing gas storage facility.) Such Habitat Management Plan for the Ballona Wetlands will be prepared and submitted to the City Council for approval. The Habitat Management Plan must be consistent with Los Angeles County's Marina del Rey/Ballona Land Use Plan (LUP) approved by the California Coastal Commission on December 9, 1986 and the City's Playa Vista Land Use Plan, and must provide for the consolidation and restoration of all wetlands and environmentally sensitive habitats within the Ballona area as part of a single management unit located within the area designated OS(PV) on the Map, including the restoration of 175.4 acres of wetlands and 21.6 acres of ecological support area. The Habitat Management Plan also shall include the following specific objectives: ***(see Specific Plan)***	10 (The Ballona Wetlands Habitat Management Program)	17	Playa Vista Area B Specific Plan
(c) Public Open Space Area: In approving any subdivision of property in Subareas A or B, the Advisory Agency must find that the Applicant has set aside as recreation area the areas identified as public open space on the Chatsworth-Porter Ranch Community Plan land use map within the Specific Plan area. The Applicant shall make an irrevocable offer to dedicate this property to the City of Los Angeles. Except for the equestrian and hiking trails, this area, combined with park lands along the northern and western boundaries of the Specific Plan area already owned by the City, shall remain in a substantially natural state and serve as a wildlife corridor. The dedication of property as public open space as required pursuant to this paragraph may be used as a set-off against the requirements of LAMC Section 17.12 for dedication of real property for park and recreational purposes, or for payment of an in lieu fee, in connection with the construction or development of any and all dwelling units within the Specific Plan area.	8 (Advisory Agency Approvals)	24	Porter Ranch Specific Plan
1. No Project may be constructed within any Prominent Ridgeline Protection Area or portion of the area except as permitted pursuant to Section 6 B. Prominent Ridgeline Protection Area. The area 60 vertical feet from any point along the long axis of the crest of a Prominent Ridgeline and designated on Map No. 2 as a shaded area. Final determination of the Prominent Ridgeline Protection Area is made by the Director of Planning or the Advisory Agency using a topographic survey provided by the applicant as part of any Project Permit Compliance Review or subdivision action.	6. Prominent Ridgeline Protection	7	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan

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Policy	Chapter	Page	Source
2. No Project shall be constructed so that the highest point of the roof, structure, or parapet wall, is less than 25 vertical feet from the designated Prominent Ridgeline directly above the highest point of the building or structure.	6. Prominent Ridgeline Protection	7	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan
3. Where Prominent Ridgeline Protection Areas are shown on only one side of a ridge line, buildings or structures built on the portion of the Site without Prominent Ridgeline Protection Areas shall not be allowed to break the silhouette of the applicable protected ridge.	6. Prominent Ridgeline Protection	8	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan
4. No grading or berming shall occur that alters the elevation of the crest of the Prominent Ridgeline on the Site.	6. Prominent Ridgeline Protection	8	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan
5. Graded slopes should be Landform Graded where practical in accordance with the provisions of the Department of City Planning's Landform Grading Manual. In order to create slopes that reflect as closely as possible the surrounding natural hills, graded hillsides should have a variety of slope ratios, should not exceed a ratio of 2:1, and should transition to the natural slope in a manner that produces a natural appearance.	6. Prominent Ridgeline Protection	8	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan
6. No native vegetation shall be removed within any Prominent Ridgeline Protection Area, except for driveways, building footprints and any required equine pad or stable areas, or as necessary to meet fire safety and brush clearance regulations, to develop recreational trails, or for landscaping associated with residential lots.	6. Prominent Ridgeline Protection	8	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan
B. Oak Trees. Notwithstanding L.A.M.C. Section 46.00 to the contrary, no oak tree (*Quercus agrifolia, Q. lobata*) of eight inches or more as measured four and one-half feet above the ground level at the base of the tree shall be removed, cut down or moved without the prior written approval of the Director or the Advisory Agency on lots 20,000 square feet or larger. The Director or the Advisory Agency may approve the removal, cutting down or moving of an oak tree if one of the following findings can be made: 1. It is necessary to remove the oak tree because its continued existence at its present location prevents the reasonable development of the subject property; or 2. The oak tree shows a substantial decline from a condition of normal health and vigor, and restoration, through appropriate and economically reasonable preservation procedures and practices, is not advisable (as evidenced by an oak tree report); or 3. Because of an existing and irreversible adverse condition of the oak tree, the tree is in danger of falling, notwithstanding the tree having been designated an Historical Monument or as part of an Historic Preservation Overlay Zone; or 4. The presence of the oak tree interferes with utility services and roadways within or without the subject property and the only reasonable alternative to the interference is the removal of the tree; or 5. It has no apparent aesthetic value that will contribute to the appearance and design of the surrounding properties, or is not located with reference to other trees or monuments in such a way as to acquire a distinctive significance at that location. If an approval to remove an oak tree has been obtained from the Director or Advisory Agency, no further approval is required from the Board of Public Works.	8. General Development Standards	13	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan

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Policy	Chapter	Page	Source
C. Prohibited Plant Materials. The following plant materials shall be prohibited within the Plan area for all new Projects (as defined in Section 4): *Acacia* green wattle *Ailanthus altissima* tree of heaven *Arundinaria pygmaea* *Arundo donax* giant reed *Atriplex semibaccata* Australia saltbush *Avena* spp. wild oats *Brassica* spp. (non-native) mustard *Bromus rubens* red brome *Centranthus ruber* Jupiter's beard *Cypressus sempervirens* Italian cypress *Cortaderia jubata* pampas grass *Cortaderia sellowiana* pampas grass *Cytisus canariensis* Canary Island broom *Cytisus scoparius* Scotch broom *Cytisus spachianus* (*Genista racemosa*) broom *Erodium botrys* storksbill *Erodium cicutarium* storksbill *Erodium cygnorum* storksbill *Erodium malacoides* storksbill *Erodium moschatum* storksbill *Eucalytpus globulus* blue gum *Lolium perenne* perennial ryegrass *Malva parvifolia* cheeseweed *Pennisetum setaceum* fountain grass *Ricinus communis* castor bean *Robinia pseudoacacia* black locust *Schinus molle* California pepper *Schinus terebinthefolius* Brazilian pepper *Spartium junceum* Spanish broom *Tamarix* sp. salt cedar *Vulpia megalura* foxtail fescue palm	8. General Development Standards	13-14	San Gabriel/Verdugo Mountains Scenic Preservation Specific Plan

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Lots located between Topsail Street and Via Marina: (2) No development other than public access improvements and habitat restoration shall be permitted within the easterly fifteen-foot portion of the 25-foot required setback area. The City may require dedication of easements as a condition of development if the City finds that there is a nexus between the impacts of the Venice Coastal Development Project and the need to protect the Lagoon Buffer Strip for public access improvements and habitat restoration.	10 (Land Use and Development Regulations for Subareas)	12	Venice Coastal Zone Specific Plan
Lots located north of Ironsides Street: 3. Fill. No Fill shall be permitted in the lagoon and buffer area, except for the minimum amount necessary for habitat restoration and public access.	10 (Land Use and Development Regulations for Subareas)	13	Venice Coastal Zone Specific Plan
Lots fronting on the lagoon and lots adjacent to Esplanade East: (1) Lagoon Buffer Strip. No Venice Coastal Development Project other than public access improvements and habitat restoration shall be permitted within a 40-foot strip immediately adjacent to the Ballona Lagoon, as established by the amended Coastal Permit A-266-77. The City right-of-way (Esplanade) comprises part of the 40-foot wide buffer, with the remainder comprised of 24 to 30-foot wide portions of the lagoon fronting lots over which easements have been, or shall be, dedicated to the City for open space and public access per the requirements of amended Coastal Permit A-266-77. The City may require dedication of easements as a condition of development if the City finds that there is a nexus between the impacts of the Venice Coastal Development Project and the need to protect the Lagoon Buffer Strip for public access improvements and habitat restoration.	10 (Land Use and Development Regulations for Subareas)	14	Venice Coastal Zone Specific Plan
7. Light. Lighting from commercial Venice Coastal Development Projects shall be directed away from residential Venice Coastal Development Projects and Environmentally Sensitive Habitat Areas.	11 (Commercial and Industrial Design Standards)	22	Venice Coastal Zone Specific Plan

NOTES:

[1] Some community and specific plans do not contain wildlife-/habitat-related policies and, therefore, are not referenced herein.

Appendix I

Best Practice Policy Matrix

ESA

Appendix I. Best Practice Policy Matrix

Topic	Best Practice Policies	Source	Justification/Benefit
Open Space/Wildlife Habitat Preservation	6.1.1 Consider appropriate methodologies to protect significant remaining open spaces for resource protection and mitigation of environmental hazards, such as flooding, in and on the periphery of the City, such as the use of tax incentives for landowners to preserve their lands, development rights exchanges in the local area, participation in land banking, public acquisition, land exchanges, and Williamson Act contracts.	City of Los Angeles General Plan, Framework Element (Chapter 6, Open Space and Conservation)	These existing City policies appropriately focus on continued study of potential conservation areas as well as promoting the consideration of a variety of mechanisms for securing and financing acquisitions. One consideration related to policy 6.5.2 are standardized development fees earmarked for conservation efforts. East Contra County Ordinance 2007-53 provides an example of development fees which are used to implement the County's NCCP/HCP.
	6.1.5 Provide for an on-site evaluation of sites located outside of targeted growth areas, as specified in amendments to the community plans, for the identification of sensitive habitats, sensitive species, and an analysis of wildlife movement, with specific emphasis on the evaluation of areas identified on the Biological Resource Maps contained in the Framework Element's Technical Background Report and Environmental Impact Report (Figures BR1A-D).		
	6.5.2 Establish programs for financing open space acquisition, development and maintenance.		
	Objective 1.1. Protect a range of environmental gradients (such as slope, elevation, aspect) across a diversity of natural communities within the conservation zones.	East Alameda County Conservation Strategy (Section 3.5.1 Landscape-Level Goals and Objectives)	These objectives ensure that habitat preservation targets a range of habitat types and that preserved areas are managed to ensure habitat integrity/quality is maintained.
	Objective 1.3. Allow natural disturbance regimes required for natural community regeneration and structural diversity and native species germination and recruitment to occur on protected lands within the study area or implement management actions that mimic those natural disturbances.		
	Objective 1.4. Eradicate or reduce the cover, biomass, and distribution of targeted nonnative invasive plants and reduce the number and distribution of nonnative invasive animals using Integrated Pest Management (IPM) principles to enhance natural communities and native species habitat on protected lands within the study area.		

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Topic	Best Practice Policies	Source	Justification/Benefit
Open Space/Wildlife Habitat Preservation (cont.)	Buffer widths for fish and wildlife habitat conservation areas shall be determined by the department, based on a critical area report prepared by a qualified professional pursuant to this chapter and in consideration of the following factors: 1. Research and evaluation of best available science sources relevant to species and habitat present within the city, as documented in City of Kent Best Available Science Review for Fish and Wildlife Habitat Conservation Areas, 2004, or amendments thereto. 2. Species-specific management guidelines of the Washington Department of Fish and Wildlife. 3. Recommendations contained in the wildlife study submitted by a qualified professional, following the reporting requirements of these regulations. 4. The nature and intensity of land uses and activities occurring on the site and on adjacent sites. Buffers are encouraged but are not required for secondary habitat.	City of Kent (WA) Municipal Code (Section 11.06.720)	Buffer zones between open space/wildlife habitat and development, minimize edge effects associated with human activity (e.g., noise, light, invasive/non-native species). Buffer zones may include managed natural habitat areas (e.g., fuel modification zones) or passive park/landscaped areas that are vegetated with native species.
	Volunteer Preserve Monitor. Encourage the formation of volunteer preserve managers that are incorporated into each community planning group to supplement professional enforcement staff	County of San Diego General Plan (Chapter 5; Policy COS-1.11)	Open space management is vital to maintaining functionality but costly on local agencies. Seeking volunteer or other partnerships can mitigate staff/budgetary limitations.
Habitat Linkage Preservation	Discretionary development shall be sited a minimum of 100 feet from significant wetland habitats to mitigate the potential impacts on said habitats. Buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and approval by the decision-making body. Factors to be used in determining adjustment of the 100 foot buffer include soil type, slope stability, drainage patterns, presence or absence of endangered, threatened or rare plants or animals, and compatibility of the proposed development with the wildlife use of the wetland habitat area. The requirement of a buffer (setback) shall not preclude the use of replacement as a mitigation when there is no other feasible alternative to allowing a permitted use, and if the replacement results in no net loss of wetland habitat. Such replacement shall be "in kind" (i.e. same type and acreage), and provide wetland habitat of comparable biological value. On-site replacement shall be preferred wherever possible. The replacement plan shall be developed in consultation with California Department of Fish and Game.	County of Ventura General Plan (Biological Resources; Section 1.5.2; Policy 4)	Waterways and associated riparian habitat are considered important habitat linkages. Wetland buffers can benefit the functionality of waterways/riparian habitat to function as a wildlife movement corridor by limiting edge effects (e.g., noise and light) that could deter wildlife use of the habitat.

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Topic	Best Practice Policies	Source	Justification/Benefit
Habitat Linkage Preservation (cont.)	Identify and rank the relative importance of potential wildlife road crossings statewide based on the structural suitability of adjacent habitat.	Vermont Fish and Wildlife Department Habitat Block Report (Objective 3; p. 2).	When properly designed, man-made features, such as constructed undercrossings/overcrossings to link open space separated by transportation corridors, can be important linkages between habitat blocks.
	Based on the review and recommendation of a qualified biologist, the design of road and floodplain improvements shall incorporate all feasible measures to accommodate wildlife passage.	County of Ventura General Plan (Biological Resources; Section 1.5.2; Policy 6)	
Native Tree Preservation	Maintain and plant additional trees along the City's sidewalks, civic places, parks, and in private developments to support the health and diversity of wildlife, sequester GHG emissions, and contribute to the reduction of the urban heat-island.	City of Pasadena General Plan (Land Use Element; Section 1; Policy 10.13)	Native trees provide is nesting and roosting habitat for birds. Even trees outside of open space areas can provide nesting and roosting habitat for urban-adapted avian species. While the City's municipal code does contain provision for protecting the more prominent native trees within the region (oak, walnut, sycamore and California bay laurel trees), prescribing planting and maintenance/avoidance of native trees can further promote preservation and establishment of such trees.
	No Native Tree or Significant Tree may be relocated or removed except as provided in Article 7 of Chapter I or Article 6 of Chapter IV of the LAMC or unless a Project Permit is obtained pursuant to Section 8 of this Plan. Removal shall include any act which will cause a Native or Significant Tree to die, including but not limited to acts which inflict damage upon the root system or other part of tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling dripline area around the trunk, or by changing the local drainage pattern, either inside or outside the dripline, such that it significantly affects the amount of water that reaches the tree roots.	Mount Washington/Glassell Park Specific Plan (Section 6.F - Landscaping and Preservation, Relocation, and Removal of Native and Significant Trees; Policy 4)	
	If the loss of any significant native trees is determined unavoidable, the Specific Plan requires that they be replaced by new trees of the same species at a ratio of two-to-one. Additional replacement trees may be recommended to mitigate the loss of native trees.	Mulholland Scenic Parkway Specific Plan - Design and Preservation Guidelines; Guideline 55)	

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Topic	Best Practice Policies	Source	Justification/Benefit
Design Guidelines/ Mitigation Requirements	**Drainage.** All new and proposed parking lots and developed areas in and adjacent to the preserve must not drain directly into the MHPA. All developed and paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials and other elements that might degrade or harm the natural environment or ecosystem processes within the MHPA. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. These systems should be maintained approximately once a year, or as often as needed, to ensure proper functioning. Maintenance should include dredging out sediments if needed, removing exotic plant materials, and adding chemical-neutralizing compounds (e.g., clay compounds) when necessary and appropriate. **Toxics**. Land uses, such as recreation and agriculture, that use chemicals or generate by-products such as manure, that are potentially toxic or impactive to wildlife, sensitive species, habitat, or water quality need to incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. Such measures should include drainage/detention basins, swales, or holding areas with non-invasive grasses or wetland-type native vegetation to filter out the toxic materials. Regular maintenance should be provided. Where applicable, this requirement should be incorporated into leases on publicly owned property as leases come up for renewal. **Lighting**. Lighting of all developed areas adjacent to the MHPA should be directed away from the MHPA. Where necessary, development should provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the MHPA and sensitive species from night lighting.	City of San Diego Multiple Species Conservation Plan Subarea Plan (Section 1.4.3). See also Western Riverside Multiple Species Habitat Conservation Plan (Section 6.1.4).[1]	Specific design guidelines and mitigation measures can bolster protection of wildlife resources by ensuring new development projects are constructed in a habitat-/wildlife-friendly manner.

[1] For brevity sake, the land use adjacency guidelines from the City of San Diego's MSCP Subarea Plan are presented herein; the Urban Wildland Interface Guidelines in Section 6.1.4 of the Western Riverside MSHCP are similar in nature and should be referred to in the drafting of design guidelines.

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Topic	Best Practice Policies	Source	Justification/Benefit
Design Guidelines/ Mitigation Requirements (cont.)	**Noise**. Uses in or adjacent to the MHPA should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas, recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the MHPA. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise reduction measures and be curtailed during the breeding season of sensitive species. Adequate noise reduction measures should also be incorporated for the remainder of the year. **Barriers**. New development adjacent to the MHPA may be required to provide barriers (e.g., non-invasive vegetation, rocks/boulders, fences, walls, and/or signage) along the MHPA boundaries to direct public access to appropriate locations and reduce domestic animal predation. **Invasives**. No invasive non-native plant species shall be introduced into areas adjacent to the MHPA. **Brush Management**. New residential development located adjacent to and topographically above the MHPA (e.g., along canyon edges) must be set back from slope edges to incorporate Zone 1 brush management areas on the development pad and outside of the MHPA. Zones 2 and 3 will be combined into one zone (Zone 2) and may be located in the MHPA upon granting of an easement to the City (or other acceptable agency) except where narrow wildlife corridors require it to be located outside of the MHPA. Zone 2 will be increased by 30 feet, except in areas with a low fire hazard severity rating where no Zone 2 would be required. Brush management zones will not be greater in size that is currently required by the City's regulations. The amount of woody vegetation clearing shall not exceed 50 percent of the vegetation existing when the initial clearing is done. Vegetation clearing shall be done consistent with City standards and shall avoid/minimize impacts to covered species to the maximum extent possible. For all new development, regardless of the ownership, the brush management in the Zone 2 area will be the responsibility of a homeowners association or other private party. For existing project and approved projects, the brush management zones, standards and locations, and clearing techniques will not change from those required under existing regulations.		

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Topic	Best Practice Policies	Source	Justification/Benefit
	Grading/Land Development. Manufactured slopes associated with site development shall be included within the development footprint for projects within or adjacent to the MHPA.		
Design Guidelines/ Mitigation Requirements (cont.)	Discretionary development which could potentially impact biological resources shall be evaluated by a qualified biologist to assess impacts and, if necessary, develop mitigation measures. Discretionary development shall be sited and designed to incorporate all feasible measures to mitigate any significant impacts to biological resources. If the impacts cannot be reduced to a less than significant level, findings of overriding considerations must be made by the decision-making body.	County of Ventura General Plan (Biological Resources; Section 1.5.2; Policy 1 and 2)	Requirements for new development projects to provide mitigation for habitat/wildlife impacts can ensure no-net-loss of resources.

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Topic	Best Practice Policies	Source	Justification/Benefit
	Policy C/NR 3.9: Consider the following in the design of a project that is located within an SEA, to the greatest extent feasible: • Preservation of biologically valuable habitats, species, wildlife corridors and linkages; • Protection of sensitive resources on the site within open space; • Protection of water sources from hydromodification in order to maintain the ecological function of riparian habitats; • Placement of the development in the least biologically sensitive areas on the site (prioritize the preservation or avoidance of the most sensitive biological resources onsite); • Design required open spaces to retain contiguous undisturbed open space that preserves the most sensitive biological resources onsite and/or serves to maintain regional connectivity; • Maintenance of watershed connectivity by capturing, treating, retaining, and/or infiltrating storm water flows on site; and • Consideration of the continuity of onsite open space with adjacent open space in project design. Policy C/NR 3.10: Require environmentally superior mitigation for unavoidable impacts on biologically sensitive areas, and permanently preserve mitigation sites.	County of Los Angeles General Plan (Chapter 9; Section III; Policy C/NR 3.9 and 3.10)	Discourage development in areas with identified significant biological resources, such as SEAs, and provides requirements for new development projects to provide environmentally superior mitigation for unavoidable impacts on biologically sensitive areas, and permanently preserve mitigation sites.
Regional Planning	Support the acquisition of new available open space areas. Augment this strategy by leveraging County resources in concert with the compatible open space stewardship actions of other agencies, as feasible and appropriate.	County of Los Angeles General Plan (Chapter 9; Section II; Policy C/NR 1.3)	A regional-level planning approach to open space conservation is important as wildlife populations are not bound by land ownership/political boundaries. Also, geographic shifts and harm to wildlife and their associated habitats resulting from climate change requires a regional planning approach. Leveraging City resources in concert with the compatible open space stewardship actions of other public and private partners can lead to more meaningful conservation efforts.
	COS-1.5 Regional Funding. Collaborate with other jurisdictions and federal, state, and local agencies to identify regional, long-term funding mechanisms that achieve common resource management goals.	County of San Diego General Plan (Chapter 5; Policy COS-1.5)	
	Objective 6.3: Collaborate to develop cross-jurisdictional conservation plans to protect and restore connectivity and other landscape-scale components of resilience. Protecting and restoring corridors (passageways that connect habitat patches) and connectivity across landscapes will require strong collaboration with partners and programs Recent Progress on Wildlife Corridor and Ecological Connectivity Policy 2007-2010 Center for Large Landscape Conservation 13 to share knowledge, develop repositories of genetic	National Park Service, "Climate Change Response Strategy", September 2010.	

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Topic	Best Practice Policies	Source	Justification/Benefit
	resources, and, where appropriate, develop cross-jurisdictional conservation.		
	ER 2.1.14 Climate Change-Related Habitat Shifts. The City shall support the efforts of The Natomas Basin Conservancy and other habitat preserve managers to adaptively manage wildlife preserves to ensure adequate connectivity, habitat range, and diversity of topographic and climatic conditions are provided for species to move as climate shifts.	City of Sacramento General Plan (Part 2, Environmental Resources)	Coordinating planning in a manner that accounts for climate change is important to ensure habitats and wildlife are able to adapt on a regional scale.
Regional Planning (cont.)	Option 5: Promote Regional Partnerships for Species Migration and Relocation. Promote regional partnerships to enhance the success of species migration and relocation in response to climate change.	Report of the Subcommittee on Land and Water Management, an Analysis of Climate Change Impacts and Options Relevant to the Department of Interior's Managed Lands and Waters. 2008.	
	6.1.3 Reassess the environmental importance of the County of Los Angeles designated Significant Ecological Areas (SEAs) that occur within the City of Los Angeles and evaluate the appropriateness of the inclusion of other areas that may exhibit equivalent environmental value.	City of Los Angeles General Plan, Framework Element (Chapter 6, Open Space and Conservation)	This existing policy is in the process of being implemented. It is a good example of supporting/coordinating other regional planning efforts to improve/modify conservation priorities based on City-level analysis.

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 6

May 5, 2026 Letter – Footnote 15, 16

Construction Class "B" Permits

"B" PERMITS DESCRIPTION

A "B" Permit (LAMC 62.106.b) is issued for extensive public works improvements including the widening of streets and alleys, the changing of existing street grade, construction of bridges, retaining walls, and the installation of sewer, storm drains, street lighting, and traffic signals. Construction plans are required which must be signed by a California licensed Civil and/or Electrical and/or Traffic Engineer.

B-Permits have four phases: bond estimate, design, construction and post-construction. The permit covers plan check engineering, installation of traffic control devices, inspection, testing during construction, and maintenance of street trees.

"B" Permits are most frequently issued for public works improvements adjacent to land being developed. In these instances, the extent and type of improvements depend on conditions imposed by the Council, City Engineer, Department of City Planning, or some other jurisdictional body in accordance with the Municipal Code, City Charter, State Law, or City Ordinance.

Definitions/ Roles

ACCESS TO THE PERMIT APPLICATION:

The individual applying can always grant access to the other parties who may need access to the permit application including:

- Owner
- Engineer of Record

This can be done under the Permit Details/Grant Access menu option under a specific permit application.

INSTRUCTIONS

The online B-Permit application is a step-by-step wizard which guides the applicant through completing an application including submitting relevant documents and making payment. Applicants will always be able to log in to their account at https://engpermits.lacity.org/public/ to check status and updates to their B-Permit. Applicants will also receive email notifications at key stages of the process.

For office locations, hours and contact information go to: https://eng.lacity.org/office-locations

GENERAL INFORMATION

1. LIABILITY INSURANCE and performance bonds are only required for approval of construction B-Permits.

2. PERMIT OWNER must be the same as the performance bond principal. Contractors for governmental agencies under faithful performance bonds shall be entered as PERMIT OWNER. Applications issued to CORPORATIONS shall be executed by the President, Vice-President, Secretary or Asst. Secretary.

3. SAFETY ORDERS - Sec. 6500 of the STATE LABOR CODE requires the APPLICANT to obtain a STATE DIVISION OF INDUSTRIAL SAFETY (DIS) PERMIT and a copy of STATE INDUSTRIAL SAFETY ORDERS before beginning work on any trench or excavation FIVE FEET OR DEEPER into which a person must descend. City personnel will not enter such excavations until the required permit and safety orders have been obtained and are displayed on the job site.

4. PCF percentage factors apply to possible construction change orders. CIF percentage factors apply to cost increases through the life of the project. (See CONSTRUCTION ITEMS on the application.)

5. PLAN CHECKING DEPOSITS are subject to charges for engineering, testing, traffic signal design, street lighting design, and administrative service.

6. CONSTRUCTION INSPECTION DEPOSITS may be charged against for engineering, testing, surveying, inspection, administrative services, emergency light and barricade services, street tree planting and maintenance, street lighting burn tests, Street Name signs, traffic warning and regulatory signs, sandblasting and painting of traffic markings, erosion control, etc. Unused fees are refunded after closure of the permit. The applicant will be billed for unreimbursed charges (fee deficits).

7. DESIGN OFFICE will determine if applicant must dedicate a right of way to the City for construction purposes. The applicant shall open a right of way work order and deposit necessary fees with the REAL ESTATE DIVISION, BUREAU OF ENGINEERING.

8. NOT MORE THAN ONE TRACT OR PARCEL MAP SHALL BE ASSIGNED TO A SINGLE B-PERMIT.

- THIS CONSTRUCTION B-PERMIT MUST BE ON THE JOB SITE AT ALL TIMES.
- THIS PERMIT VALID ONLY IF ACCOMPANIED BY A DIS PERMIT AND SAFETY ORDERS (SEE NOTE 3 ABOVE). DIS PERMIT MAY BE OBTAINED FROM STATE DIVISION OF INDUSTRIAL SAFETY, 3460 WILSHIRE BOULEVARD, LOS ANGELES. NOTE: GOVERNMENTAL AGENCIES AND PUBLIC UTILITIES UNDER PUC CONTROL ARE EXEMPT. PRIVATE CONTRACTORS ACTING AS PERMITTEE FOR SUCH AGENCIES ARE NOT EXEMPT.

NOTE: CHARGES AGAINST THE PERMIT FEE DEPOSIT WILL BE COMPILED APPROXIMATELY 6 TO 8 WEEKS AFTER THE DATE FINAL INSPECTION IS COMPLETED. THE B-PERMIT WILL BE CLOSED AND THE IMPROVEMENT BOND EXONERATED AFTER ALL PERMIT FEE CHARGES HAVE BEEN ACCUMULATED AND PAID.

TERMS AND CONDITIONS OF NEW APPLICATION

- PERMIT OWNER must be the same as the performance bond PRINCIPAL. Contractors for governmental agencies under faithful performance bonds shall be entered as PERMIT OWNER. Applications issued to CORPORATIONS shall be executed by the President, Vice President, Secretary or Asst. Secretary.
- PLAN CHECKING DEPOSITS are subject to charges for engineering, testing, traffic signal design, street lighting design, and administrative service.
- CONSTRUCTION INSPECTION DEPOSITS may be charged against for engineering, testing, surveying, inspection, administrative services, emergency light and barricade services, street tree planting and maintenance, street lighting burn tests, Street Name signs, traffic warning and regulatory signs, sandblasting and painting of traffic markings, erosion control, etc. Unused fees are refunded after closure of the permit. The applicant will be billed for unreimbursed charges (fee deficits).
- All deposits made to this B permit are assigned to the Permit Owner as listed.
- NOTE: CHARGES AGAINST THE PERMIT FEE DEPOSIT COMPILATION WILL COMMENCE APPROXIMATELY 6 TO 8 WEEKS AFTER THE DATE FINAL INSPECTION IS COMPLETED. THE B-PERMIT WILL BE CLOSED once final accounting of the permit has been completed.

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Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 7

May 5, 2026 Letter – Footnote 26

See the **Emergency Closures** page before visiting a CDFW office, facility or property.

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News Releases, 2022-Present

California Fish and Game Commission Finds CESA Protections Warranted for Southern California and Central Coast Mountain Lion

February 20, 2026

In Other Regulatory Action, Commission Streamlines Charitable Donation of Sport-Caught Fish

The California Fish and Game Commission (Commission) at its Feb. 11-12 meeting voted to list mountain lion populations in parts of southern California and the central coast as a threatened species under the California Endangered Species Act (CESA).

In a unanimous vote, the Commission determined that listing a distinct population segment of mountain lions in southern California and the central coast is warranted due to threats such as habitat loss, habitat fragmentation and isolation of small populations as a result of expanding human infrastructure, among others. The Commission considered presentations from the California Department of Fish and

Wildlife (CDFW) on its species status review and from the listing petitioner the Center for Biological Diversity, as well as public comment. The Commission will adopt its findings at a future meeting.

“This segment of the mountain lion population is clearly at risk from distinct threats,” said President Eric Sklar. “Habitat loss, habitat fragmentation by roads, freeways and housing, and mortality from vehicle strikes, rodenticides and risks of isolation and inbreeding would lead to the extinction of these mountain lions if we remained on the same trajectory.”

Following the 1974 ban on hunting mountain lions in California, in 1990 voters approved Proposition 117, which designated mountain lion a specially protected mammal in the state and established some exemptions for lethal removal of mountain lions to preserve public safety and to protect private property and livestock. The Commission noted that those statutory provisions remain intact and that this listing is focused specifically on preventing the potential loss of the identified population segment through science-based management and conservation action.

Donation of Sport-Caught Fish

The Commission adopted regulatory amendments related to processing and donating sport-caught fish. Sport fishing license holders who exchange fish for processing will be able to donate their fish to charities directly through fish processors rather than having to deliver the fish themselves as presently allowed. The adopted amendments streamline the donation of sport-caught fish to nonprofit organizations, California Native American tribes, public schools within a California unified school district and California city or county government programs. The changes will provide sport fishing license holders the opportunity to support nonprofit, community, school and tribal initiatives addressing food insecurity, access and distribution.

Commission Elections, Committee Assignments and Meeting Participation

In its first meeting of 2026, Commissioner Eric Sklar was elected Commission president and Commissioner Darius Anderson vice president. The Commission moved to retain Marine Resources, Wildlife Resources and Tribal Committee co-chair assignments — Sklar and Commissioner Samantha Murray will continue to serve on the Marine Resources Committee, Anderson and Commissioner Erica Zavaleta on the

Wildlife Resources Committee and Commissioner Jacque Hostler-Carmesin on the Tribal Committee.

Sklar, Zavaleta and Murray were in attendance for both days of the February Commission meeting held in Sacramento; Hostler-Carmesin and Anderson were absent both meeting dates.

The complete agenda for the meeting, along with supporting information, is available on the Commission website. Archived video of past Commission meetings is available online. The next meeting of the Commission is scheduled for April 15-16, 2026, at the California Natural Resources Agency building in Sacramento. Participants are encouraged to attend in person, with options available for Zoom or phone; for more information visit the Commission website.

The Commission authorized public notice of upcoming potential regulation changes related to:

Central Valley and Klamath River Basin sport fishing regulations: A discussion hearing is scheduled for April 15-16 and an adoption hearing for May 6 on proposed amendments related to Central Valley and Klamath River Basin sport fishing regulations.

Media Contacts:

Krysten Kellum, CDFW Communications, (916) 825-7120
Jen Benedet, CDFW Communications, (916) 202-4465

Categories: FGC, Marine, Species, Wildlife

Tagged: mountain lion | sport-caught fish donation | California Fish and Game Commission | California Department of Fish and Wildlife

Office of Communications, Education and Outreach
P.O. Box 944209, Sacramento, CA 94244-2090
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May 13, 2026

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EXHIBIT 8

May 5, 2026 Letter – Footnote 28

State of California
Office of the Attorney General

ROB BONTA
ATTORNEY GENERAL

Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act

I. Introduction

Wildfires are part of California's present, and with the effects of climate change, an increasing part of our future. Development in fire-prone areas increases the likelihood that more destructive fires will ignite, fire-fighting resources will be taxed, more habitat and people will be put in harm's way or displaced, and more structures will burn. It is therefore imperative that local jurisdictions making decisions to approve new developments carefully consider wildfire impacts as part of the environmental review process, plan where best to place new development, and mitigate wildfire impacts to the extent feasible.

This guidance is designed to help lead agencies[1] comply with the California Environmental Quality Act, Public Resources Code, section 21000 et seq. (CEQA), when considering whether to approve projects in wildfire-prone areas. These areas are often in the wildland-urban interface, generally defined as the area where the built environment meets or intermingles with the natural environment.[2] The California Department of Forestry and Fire Protection (CAL FIRE) has classified lands based on fire hazard, the highest being those classified as high or very high fire hazard severity zones. It has also identified areas where the State (as opposed to a local agency) has responsibility for fire-fighting.[3] Particularly in these high-risk areas, but also throughout the

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[1] Lead agencies are any public agencies with "principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." (Pub. Resources Code, § 21067.)

[2] CAL FIRE has published an instructive map on the wildland-urban interface in California: https://frap.fire.ca.gov/media/10300/wui_19_ada.pdf. The wildland-urban interface is defined differently by different agencies for different purposes, but the most widely used definition for wildfire purposes include the intermix and interface areas mapped by Radeloff et al. 2005, 2018. See Volker C. Radeloff, et al., *Rapid Growth of the US Wildland-Urban Interface Raises Wilafire Risk.* PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA, 115(13):3314-3319 (2018), available at https://www.pnas.org/doi/10.1073/pnas.1718850115.

[3] See https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/. Note that areas mapped by CAL FIRE as high or very high fire hazard are not always coextensive with the wildland-urban interface. In addition, CAL FIRE's maps are currently in the process of being updated and lead agencies should consult with CAL

wildland-urban interface, wildfire risks must be considered during the environmental review process for individual development projects.

This guidance provides suggestions for how best to comply with CEQA when analyzing and mitigating a proposed project's impacts on wildfire ignition risk, emergency access, and evacuation.[4] This guidance is aimed at proposed development projects, such as residential, recreational, or commercial developments.[5] The extent to which it applies will inherently vary by project, based on project design and location. This document does not impose additional requirements on local governments or alter any applicable laws or regulations. Rather, it is intended to provide guidance on some of the issues, alternatives, and mitigation measures that should be considered during the environmental review process. This guidance is based on the Office of the Attorney General's experience reviewing, commenting on, and litigating CEQA documents for projects in high wildfire prone areas, and is intended to assist lead agencies with their planning and approval of future projects. The guidance reflects current requirements and conditions and may need to be updated as changes occur.

II. Background

Although wildfires are and have been an important natural process throughout California's history, recent changes in fire frequency, intensity, and location are posing increasing threats to the residents and environment of California. More acres of California have burned in the past decade than in the previous 90 years[6] and eight of the State's ten largest fires since 1932 have occurred in the last decade.[7] While lightning is a common cause of some of the State's largest

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FIRE before relying on the classifications listed on this map. CAL FIRE's list of state responsibility areas (defined as areas where the State of California, as opposed to a local agency, is financially responsible for prevention and suppression of wildfires) can be found at: https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=468717e399fa4238ad86861638765ce1. Each county should have a map of the very high or high fire hazard severity zones in its jurisdiction, and they are also included on the CAL FIRE zone map: https://egis.fire.ca.gov/FHSZ/.

[4] Readers who want to determine their legal obligations under CEQA should consult their own attorney for legal advice.

[5] This guidance is not intended to apply to state and local agency fire management activities, such as prescribed burns, approval of vegetation management plans to reduce wildfire risk, and review of timber harvesting plans.

[6] CAL FIRE, Top 20 Largest California Wildfires (Jan. 13, 2022), available at https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf. See also Hugh D. Safford et al., *The 2020 California Fire Season: A Year Like No Other, a Return to the Past or a Harbinger of the Future?* (Apr. 17, 2022) GLOBAL ECOLOGY AND BIOGEOGRAPHY, available at https://onlinelibrary.wiley.com/doi/10.1111/geb.13498?af=R.

[7] Paul Rogers, *Map: 1 of Every 8 acres in California has Burned in the Last 10 Years. Here's Where the Biggest Fires Spread—and are Burning Now*, Mercury News (Sept. 29, 2021), available at https://www.mercurynews.com/2021/09/29/top-10-california-wildfires-megafires-map/. Notably, the large fires of late are not unprecedented in the State's history with similarly large fires occurring specifically during the 1920s. See Jon E. Keeley & Alexandra D. Syphard, *Large California Wilafires: 2020*

fires, in recent years, many of the State's most destructive fires have been caused by human activity, such as downed powerlines or electrical sources associated with residential development or industrial facilities.[8]

Wildfires can have dramatic, adverse ecological impacts. Frequent wildfires can result in habitat loss and fragmentation, shifts in vegetative compositions, reductions in small mammal populations, and accelerated loss of predatory species.[9] Wildfire can also have adverse impacts on erosion and water quality. During active burning, ash and associated contaminants can enter water supplies. Later, after large burns, rainstorms can flush vast amounts of sediment from exposed soils into those same water supplies.[10]

Wildfires also have tragic consequences for California's residents. Since 2010, wildfires have killed nearly 150 people in California[11] and, since 2005, wildfires have destroyed over 97,000 structures,[12] requiring mass evacuations and exacerbating the State's already-pressing need for more housing. In addition, wildfire smoke is unhealthy to breathe and is a public health concern.[13] Further, wildfire losses are not experienced equally. Lower-income households are more likely to lose all of their assets and less likely to have adequate insurance to cover their losses.[14] Meanwhile, the costs of wildfire suppression and resiliency have become significant. In

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Fires in Historical Context (Aug. 25, 2021) FIRE ECOLOGY, available at https://fireecology.springeropen.com/articles/10.1186/s42408-021-00110-7.

[8] See CAL FIRE, Top 20 Largest California Wildfires (Jan. 13, 2022), available at https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf; CalFire, Top 20 Most Destructive California Wildfires (Jan. 13, 2022), available at https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf.

[9] See Alexandra D. Syphard, et al., *Human Influence on California Fire Regimes.* ECOLOGICAL APPLICATION 17:1388-1402 (2007).

[10] United States Environmental Protection Agency, Wildfires: How do They Affect Our Water Supplies? (Aug. 13, 2019), available at https://www.epa.gov/sciencematters/wildfires-how-do-they-affect-our-water-supplies#:~:text=Vegetation%20that%20holds%20soil%20in,%2C%20rivers%2C%20and%20downstream%20reservoirs.

[11] CAL FIRE, Top Deadliest California Wildfires (Oct. 22, 2021), available at https://www.fire.ca.gov/media/lbfd0m2f/top20_deadliest.pdf.

[12] Headwaters Economics, Wildfires Destroy thousands of structures each year (Nov. 2020, updated Aug. 2022), available at https://headwaterseconomics.org/natural-hazards/structures-destroyed-by-wildfire/.

[13] See Kurtis Alexander, *California Ranks Worst in Nation for Air Pollution Because of Wildfire Smoke*, S.F. Chronicle (June 23, 2022), available at https://www.sfchronicle.com/bayarea/article/california-air-quality-17259687.php. See also Lora Kolodny, *The West Coast Is Suffering from Some of the Worst Air in the World — These Apps Show How Bad it Is*, CNBC (Sept. 13, 2020), available at https://www.cnbc.com/2020/09/12/air-quality-apps-purpleair-airnow-iqair-essential-in-western-us.html; and California Air Resources Board, *Protecting Yourself from Wildfire Smoke*, available at https://ww2.arb.ca.gov/protecting-yourself-wildfire-smoke.

[14] California Council on Science and Technology, The Costs of Wildfire in California (Oct. 2020), at p. 69, available at https://ccst.us/reports/the-costs-of-wildfire-in-california/.

2021, the State invested $1.5 billion in wildfire resiliency efforts, and the 2022-2023 budget includes an additional $1.2 billion to support wildfire and forest resilience.[15] The changing nature of wildfires, under various metrics—frequency, area burned, adverse ecological impacts, the number of Californians displaced—is a worsening crisis that will unfortunately be part of California's future.[16]

As of 2010, about one-third of California's housing units were located within the wildland-urban interface.[17] Residential developments in the wildland-urban interface and other wildfire prone areas can significantly increase the risks of wildfires and the risk to public safety for several reasons. First, introducing more people—via additional development—into a flammable landscape increases the likelihood of: (1) a wildfire igniting due to the increased presence of people; and (2) the ignition becoming a wildfire because of the placement of homes amongst the flammable vegetation.[18] Second, building housing units in the wildland-urban interface puts more people in harm's way.[19] Wildfires, particularly those that impact developments in relatively remote locations, may impede the evacuation of communities and emergency access, making it more difficult to ensure public safety and to limit, control, or extinguish wildfires. Finally, fires in remote locations require significant fire-fighting resources and mobilization of fire-fighters from all over the State—putting a major strain on the State's fire-fighters and the State's budget. Put simply, bringing more people into or near flammable wildlands leads to more frequent, intense, destructive, costly, and dangerous wildfires.[20]

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[15] Gavin Newsom, California State Budget (2022-2023), at p. 61, available at https://www.ebudget.ca.gov/FullBudgetSummary.pdf; California State Budget, Budget Addendum (2021-2022), at p. 3, available at https://www.ebudget.ca.gov/BudgetAddendum.pdf.

[16] See California Council on Science and Technology, *The Costs of Wilafire in California* (Oct. 2020), at p. 17, available at https://ccst.us/reports/the-costs-of-wildfire-in-california/.

[17] Community Wildfire Planning Center, Land Use Planning Approaches in the Wildland-Urban Interface (Feb. 2021), at p. 7, available at https://www.communitywildfire.org/wp-content/uploads/2021/02/CWPC_Land-Use-WUI-Report_Final_2021.pdf; see also Heather Anu Kramer, et al., *High Wilafire Damage in Interface Communities in California* (2019) INTERNATIONAL JOURNAL OF WILDLAND FIRE, available at https://www.fs.usda.gov/nrs/pubs/jrnl/2019/nrs_2019_kramer_001.pdf. At the current rate of growth and under current growth patterns, it is anticipated that an additional 645,000 housing units will be developed in areas designated by CAL FIRE as very high fire hazard severity zones by 2050. Next 10, Rebuilding for a Resilient Recovery: Planning in California's Wildland Urban Interface (June 2021), at p. 9, available at https://www.next10.org/publications/rebuilding-resilient.

[18] See Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) Fremontia, *47*(2), at p. 29; Volker C. Radeloff, et al., *Rapid Growth of the US Wildland-Urban Interface Raises Wilafire Risk.* PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA, 115(13):3314-3319 (2018).

[19] See Heather Anu Kramer, et al., *High Wilafire Damage in Interface Communities in California* (2019) International Journal of Wildland Fire, available at https://www.fs.usda.gov/nrs/pubs/jrnl/2019/nrs_2019_kramer_001.pdf; Volker C. Radeloff, et al., *Rapid growth of the US wildland-Urban interface raises wilafire risk.* PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA, 115(13):3314-3319 (2018).

[20] See Michael L. Mann, et al., *Incorporating Anthropogenic Influences into Fire Probability Models: Effects of Human Activity and Climate Change on Fire Activity in California* (Apr. 28, 2016) PLOS ONE

III. Wildfire and Land Use Planning

While this guidance is focused on best practices to disclose, analyze, and mitigate wildfire impacts in compliance with CEQA, it is important to note that general planning also provides a critical opportunity for local jurisdictions to think proactively about how to accommodate their housing and development needs while reducing the risks of wildfire.[21] In the last ten years, new legislation has passed requiring local jurisdictions to consider wildfire risks in their general planning processes.[22] The Governor's Office of Planning and Research (OPR) recently published comprehensive guidance to help local agencies comply with these requirements.[23] We encourage local jurisdictions to consult this guidance and to thoughtfully plan for new development given the increasing risk of wildfires throughout the state.[24]

11(4), available at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0153589; Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at pp. 28-35, available at https://pubs.er.usgs.gov/publication/70215982; Alexandra D. Syphard, et al., *Land Use Planning and Wilafire: Development Policies Influence Future Probability of Housing Loss* (2013) PLOS ONE, available at https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0071708&type=printable; see also Final Statement of Reasons for Regulatory Action re Amendments to the State CEQA Guidelines OAL Notice File No. Z-2018-0116-12 ("Statement of Reasons"), at p. 87, available at https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf.

[21] See Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at p. 33, available at https://pubs.er.usgs.gov/publication/70215982 [concluding that "the most effective strategy at reducing future structure loss would focus on reducing the extent of low-density housing via careful land planning decisions"].

[22] See Sen Bill No. 1241 (2011-2012 Reg. Sess.), amending and/or adding Gov. Code, §§ 65302, subd. (g)(3), 65302.5, subd. (b), and 66474.02) [requiring local jurisdictions within state responsibility areas or very high fire hazard severity zones to address wildfire risk when updating their safety elements and to submit their draft updates to the State Board of Forestry and Fire Protection for review]; Sen. Bill No. 99 (2019-2020 Reg. Sess.), amending Gov. Code, § 65302, subd. (g)(5) [requiring updated safety elements to identify residential developments within hazard areas that do not have at least two evacuation routes]; Assem. Bill No. 747 (2019-2020 Reg. Sess.), adding Gov. Code, § 65302.15 [requiring local jurisdictions to update their safety element to address the capacity of evacuation routes under a range of various emergency scenarios]; Assem. Bill No. 1409 (2020-2021 Reg. Sess.), amending Gov. Code, § 65302.15 [requiring that safety elements identify locations where people can evacuate to].

[23] Governor's Office of Planning and Research, Fire Hazard Planning Technical Advisory, 2022 Update (Aug. 2022), available at https://opr.ca.gov/docs/20220817-Fire_Hazard_Planning_TA.pdf; and Wildland-Urban Interface Planning Guide: Examples and Best Practices for California Communities (Aug. 2022), available at https://opr.ca.gov/docs/20220817-Complete_WUI_Planning_Guide.pdf.

[24] Local jurisdictions that have complied with their general planning obligations, including incorporating wildfire and evacuation planning considerations into their general plans, may benefit from streamlined CEQA requirements at the project approval level. If a development project is consistent with an updated general plan and an environmental impact report (EIR) was prepared for that plan, the CEQA review for the project may be limited to the parcel-specific impacts of the project or impacts that new information,

IV. Analyzing and Mitigating Wildfire Risk Impacts Under CEQA

A. CEQA's requirements for analyzing wildfire risks

CEQA requires local jurisdictions considering development projects to prepare an environmental impact report (EIR) or a mitigated negative declaration[25] if the project may potentially have a significant impact on the environment and is not otherwise exempt from CEQA.[26] Under CEQA, local jurisdictions may act as lead agencies with responsibility for preparing the EIR (or other CEQA document), or as responsible agencies relying on an EIR prepared by a lead agency. CEQA provides a critical process for local jurisdictions to understand how new developments will exacerbate existing wildfire risks, allowing them to consider project design features, alternatives, and mitigation measures that provide for smarter development and the protection of existing communities.

The CEQA Guidelines[27] require that an EIR include a description of the physical environmental conditions in the vicinity of the project, at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced.[28] This "baseline" of existing environmental conditions is generally used to determine the significance of project-related impacts. In the EIR's discussion of the existing environmental conditions, lead agencies should include information about open space areas and habitats within the project area that may be fire prone, as well as a discussion of fire history and fuels on the project site. Including a discussion of existing available water supplies for fire-fighting is also critical. Providing detail about existing environmental conditions at the project site that may exacerbate or minimize wildfire impacts will help ensure that the EIR fully considers the project's impacts on wildfire risk.

The CEQA Guidelines require an analysis of "any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected," including by locating development in wildfire risk areas.[29] The "environmental checklist form" in Appendix G of the CEQA Guidelines, Section XX, directs lead agencies to assess whether

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arising since adoption of the general plan, shows will be more significant than described in the prior EIR. (Pub. Resources Code, § 21083.3; CEQA Guidelines, § 15193).

[25] Where "EIR" is used in this guidance it should also be considered to refer to a mitigated negative declaration.

[26] Pub. Resources Code, § 21067; CEQA Guidelines, §§ 15050 and 15367.

[27] The CEQA Guidelines are found at California Code of Regulations, title 14, section 15000, et seq.

[28] CEQA Guidelines, § 15125.

[29] CEQA Guidelines, § 15126.2.

projects located *in or near* state responsibility areas or lands classified as very high fire hazard severity zones,[30] would:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan;
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.[31]

In addition to the four questions above, Section IX(g) of the checklist broadly directs lead agencies to consider whether a project will "expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires."[32] In answering these questions, lead agencies must consider both on- and off-site impacts.[33]

B. Analyzing a project's impact on wildfire risks

Several variables should be considered in analyzing a project's impact on wildfire risk, including:

- **Project Density:** Project density influences how likely a fire is to start or spread, and how likely it is that the development and its occupants will be in danger when a fire starts. Fire spread and structure loss is more likely to occur in low- to intermediate-density developments.[34] This is because there are more people present to ignite a fire (as compared to undeveloped land), and the development is not concentrated enough

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[30] See footnote 1 for more information on state responsibility areas and very high fire hazard severity zones.

[31] CEQA Guidelines, Appendix G, XX.

[32] CEQA Guidelines, Appendix G, IX(g). This Guidance focuses on these key wildfire-related questions in Sections IX(g) and XX of the checklist, but in conducting environmental review, lead agencies must continue to thoroughly address the other questions identified in Section XX and the checklist more generally.

[33] CEQA Guidelines, § 15360 [defining the environment to be considered as "the area in which significant effects would occur either directly or indirectly as a result of the project"].

[34] Alexandra D. Syphard, *The Relative Influence of Climate and Housing Development on Current and Projected Future Fire Patterns and Structure Loss Across Three California Landscapes* (2019) GLOBAL ENVIRONMENTAL CHANGE; Alexandra D. Syphard, et al., *Housing Arrangement and Location Determine the Likelihood of Housing Loss Due to Wildfire* (Mar. 28, 2012) PLOS ONE, available at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0033954.

(as compared to high-density developments) to disrupt fire spread by removing or substantially fragmenting wildland vegetation.[35] "Isolated clusters of development and low housing density mean that homes are embedded within, and more exposed to, a matrix of wildland vegetation."[36] Moreover, fire-fighters may have difficulty accessing more remote and disconnected developments.[37]

- **Project Location in the Landscape:** Project placement in the landscape relative to fire history, topography and wind patterns also influences wildfire risk. Although wildfire ignitions are primarily human-caused in California, wildfire behavior is largely driven by topography, fuel, climatic conditions, and fire weather (such as low humidity and high winds). How a development project is planned within the landscape determines to what extent it will influence fire risk.[38] For example, if a project site is located in a wind corridor, above-ground power lines may become a source of ignition. Similarly, siting residential structures in rugged terrain or on the top of steep hills may increase the wildfire risk. By contrast, if a project site includes landscape features that could prevent or slow the spread of fire, such as a lake or an irrigated golf course, the development may be strategically located so as to capitalize on that feature as a natural fuel break.[39]

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[35] See generally Alexandra D. Syphard, et. al., *Multiple-Scale Relationships between Vegetation, the Wildland-Urban Interface, and Structure Loss to Wildfire in California* (Mar. 12, 2021) MDPI FIRE 2021.

[36] Max A. Moritz, et al., *Learning to Coexist with Wildfire* (2014) NATURE 515(7525), at p. 64; see also Alexandra D. Syphard, et. Al., *Multiple-Scale Relationships between Vegetation, the Wildland-Urban Interface, and Structure Loss to Wildfire in California* (March 12, 2021) MDPI FIRE 2021.

[37] See Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at p. 31.

[38] See generally Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020) University of California Agriculture and Natural Resources, Publication 8680, available at https://escholarship.org/uc/item/6n12m6pn; Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at pp. 28-35, available at https://pubs.er.usgs.gov/publication/70215982.

[39] See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020) University of California Agriculture and Natural Resources, Publication 8680, at p. 10, available at https://escholarship.org/uc/item/6n12m6pn; see also Conservation Biology Institute, *Paradise Nature-Based Fire Resilience Project Final Report* (June 2020), available at https://d2k78bk4kdhbpr.cloudfront.net/media/reports/files/CBI_Paradise_Final_Report_for_Posting_Online.pdf [An examination of how siting and greenbelts may have protected homes during the Paradise fire]. Siting of a new fire-resistant development between wildlands and existing development may even serve as a protective barrier for the existing development. But there can still be some risk of ember spread if the new development succumbs to fire. See Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at pp. 28-35, available at https://pubs.er.usgs.gov/publication/70215982; California Council on Science and Technology, The Costs of Wildfire in California (Oct. 2020), at p. 67, available at https://ccst.us/reports/the-costs-of-wildfire-in-california/.

- **Water Supply and Infrastructure**: As part of evaluating a project's wildfire risk impacts, an EIR should analyze the adequacy of water supplies and infrastructure to address fire-fighting within the project site.[40] This analysis should consider the potential loss of water pressure during a fire, which may decrease available water supply[41] and the potential loss of power, which may eliminate the supply.[42]

To understand how a project may exacerbate the risk of wildfire, an EIR should qualitatively assess these variables and also use fire modeling and other spatial and statistical analyses to quantify the risks to the extent feasible. Experts should utilize fire models to account for various siting and design elements, as well as a variety of different fire scenarios. The modeling should include scenarios for fires that start in, near, and far from the project site, as well as extreme weather conditions that exacerbate fire spread.

Lead agencies are encouraged to develop thresholds of significance that either identify an increase in wildfire risk as a significant impact or determine, based on substantial evidence, that some increase in the risk of wildfires is not considered a significant impact. Relevant factors should include the project's impact on ignition risk, the likelihood of fire spread, and the extent of exposure for existing and new residents based on various fire scenarios. Modeling the various scenarios enables local agencies to quantify increased wildfire risks resulting from a project adding more people to wildfire prone areas and to assess the risks according to the threshold of significance.

Some EIRs have concluded that the conversion of some wildland vegetation into paved development reduces or does not increase wildfire risk. This conclusion is contrary to existing evidence and the well-accepted understanding that the fundamental driver of increased wildfire risk is the introduction of people into a flammable landscape.[43] Accordingly, the conversion of vegetation into developed land does not obviate the need for lead agencies to carefully consider and model how the addition of development into wildfire prone areas contributes to the risk of wildfire.

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[40] See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020) University of California Agriculture and Natural Resources, Publication 8680, at p. 19 and Appendix B, available at https://escholarship.org/uc/item/6n12m6pn.

[41] See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020), at p. 19, University of California Agriculture and Natural Resources, Publication 8680, available at https://escholarship.org/uc/item/6n12m6pn.

[42] See Alexandra D. Syphard, *Nexus Between Wilafire, Climate Change and Population Growth in California* (2020) FREMONTIA, *47*(2), at p. 26.

[43] See Heather Anu Kramer, et al., *High Wilafire Damage in Interface Communities in California* (2019) INTERNATIONAL JOURNAL OF WILDLAND FIRE, available at https://www.fs.usda.gov/nrs/pubs/jrnl/2019/nrs_2019_kramer_001.pdf; see also Exhibit A to the Final Statement of Reasons for Regulatory Action re Amendments to the State CEQA Guidelines, OAL Notice File No. Z-2018-0116-12, at p. 212, available at https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/2018_CEQA_ExA_FSOR.pdf.

C. Analyzing the project's impact on evacuation and emergency access

The addition of new development into high wildfire risk or adjacent areas may impact the evacuation of project residents, as well as the existing population (e.g., residents, workers, students, visitors, and possibly livestock) in the area and the ability of emergency responders to simultaneously access the area to fight wildfire. This can, in turn, impact the risk and extent of large-scale fire spread and community safety within and around the new development. The EIR should evaluate these impacts both during construction and over the life of the project. The required analysis is relative to a project's impacts and risks; e.g., a higher density infill project within an already developed area would likely not require the same level of analysis as a new low-density development within the wildland-urban interface and surrounded largely by open space.[44]

For projects located in high wildfire risk areas that present an increased risk of ignition and/or evacuation impacts, evacuation modeling and planning should be considered and developed at the time of project review and approval—when there is greater flexibility to modify a project's design, density, siting, and configuration to address wildfire considerations—rather than deferred to a later stage of the development process. Lead agencies will be best-positioned to ensure proposed development projects facilitate emergency access and ease constraints on evacuation with this information in hand prior to project approval. The ultimate objective is to allow for informed decision-making that minimizes the environmental and public safety hazards associated with new developments that increase the risk of ignition and impede evacuation in high wildfire prone areas.

Evacuation modeling and analysis should include the following:

- Evaluation of the capacity of roadways to accommodate project and community evacuation and simultaneous emergency access.
- Assessment of the timing for evacuation.
- Identification of alternative plans for evacuation depending upon the location and dynamics of the emergency.
- Evaluation of the project's impacts on existing evacuation plans.
- Consideration of the adequacy of emergency access, including the project's proximity to existing fire services and the capacity of existing services.
- Traffic modeling to quantify travel times under various likely scenarios.

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[44] See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020), University of California Agriculture and Natural Resources, Publication 8680, at p. 5, available at https://escholarship.org/uc/item/6n12m6pn [describing the benefits of infill development].

In considering these evacuation and emergency access impacts, lead agencies may use existing resources and analyses, but such resources and analyses should be augmented when necessary. For example, agencies should:

- Utilize information from the EIR's analysis of traffic/transportation impacts, but they should not limit themselves to that information, which may not reflect the impact of emergency conditions on travel times.
- Consult with local fire officials and ensure that assumptions and conclusions regarding evacuation risk are substantiated with sound facts. Emergency conditions may not allow for ideal evacuation scenarios—staggered, staged, or targeted evacuation in response to a wildfire may sometimes be possible, but human behavior is difficult to predict and wildfires can be erratic, unpredictable, and fast-moving.[45]
- Consider impacts to existing evacuation plans, but recognize that, depending on the scope of an existing evacuation plan, additional analyses or project-specific plans may be needed. Community evacuation plans often identify roles and responsibilities for emergency personnel and evacuation routes, but do not necessarily consider the capacity of roadways, assess the timing for community evacuation, or identify alternative plans for evacuation depending upon the location and dynamics of the emergency.
- Avoid overreliance on community evacuation plans identifying shelter-in-place locations. Sheltering in place, particularly when considered at the community planning stage,[46] can serve as a valuable contingency, but it should not be relied upon in lieu of analyzing and mitigating a project's evacuation impacts.[47]

Local jurisdictions are encouraged to develop thresholds of significance for evacuation times. These thresholds should reflect any existing planning objectives for evacuation, as well as

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[45] See FEMA and U.S. Fire Administration, *Wildland Urban Interface: A Look at Issues and Resolutions* (June 2022), available at https://www.usfa.fema.gov/downloads/pdf/publications/wui-issues-resolutions-report.pdf.

[46] FEMA, *Planning Considerations: Evacuation and Shelter-in-Place* (July 2019), available at https://www.fema.gov/sites/default/files/2020-07/planning -considerations-evacuation-and-shelter-in-place.pdf. The distinction between temporary shelter-in-place locations and buildings designed or retrofitted for longer term shelter-in-place should also be considered. See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020) University of California Agriculture and Natural Resources, Publication 8680, at p. 17, available at https://escholarship.org/uc/item/6n12m6pn [discussing the difference between "safety zones"—areas with little flammable vegetations, such as golf courses—versus buildings that are designed to provide protection from heat and embers while the front of a fire passes, typically for a duration of at least 30-60 minutes].

[47] See Mejia, *Pepperdine University Defends 'Shelter in Place' Decision During Woolsey Fire*, Los Angeles Times (Nov. 13, 2018), available at https://www.latimes.com/local/lanow/la-me-ln-pepperdine-shelter-20181113-story.html; Chandler, *Am I Going to Stay in the Parking Lot . . . While the Fires Burn Around Me?*, Record Searchlight (Dec. 12, 2019), available at https://www.redding.com/in-depth/news/2019/04/25/california-wildfire-shelter-place-plans-questioned-evacuation-preparation/3427075002/.

informed expert analysis of safe and reasonable evacuation times given the existing and proposed development. Local jurisdictions should consider whether any increase in evacuation times for the local community would be a significant impact. A conclusion that an increase in evacuation times is a less than significant impact should be based on a threshold of significance that reflects community-wide goals and standards.

In establishing thresholds, local jurisdictions should consider referring to successful evacuations from prior emergencies within their community or similarly situated communities. The thresholds should include, but not be limited to, whether the project creates an inconsistency with: (1) an adopted emergency operations or evacuation plan; (2) a safety element that has been updated per the requirements in Government Code sections 65302(g)(5) and 65302.15 to integrate wildfire and evacuation concerns; or (3) recommendations developed by the California Board of Forestry and Fire Protection regarding the safety of subdivisions pursuant to Public Resources Code section 4290.5.

D. Mitigating wildfire risk, evacuation, and emergency access impacts

If a project presents significant increased wildfire risks and/or evacuation and access impacts, CEQA requires the lead agency to consider and adopt feasible alternatives and mitigation measures to avoid or reduce the project's impacts (or make a finding of overriding consideration).[48] Not all project design features or mitigation measures will achieve the same reduction in impacts for every project—the effects and effectiveness of measures will vary geographically and by project. An EIR that baldly concludes that certain project design features or mitigation measures will reduce or eliminate all potential wildfire risks, without first describing those risks, fails to fully analyze the project's impacts. Compressing the analysis of impacts and mitigation deprives decision makers of a full description of the project's adverse impacts and, therefore, fails to equip the decision makers with the necessary information to properly address the impacts by adopting project design features, mitigation measures, or alternatives. To avoid this error and provide for better project design, the project EIR should first analyze the increased wildfire risks and evacuation impacts, and then consider feasible mitigation and alternatives to avoid or reduce those impacts.

Set forth below are some examples of potential mitigation measures and design alternatives that may reduce wildfire risk impacts. This list is not exclusive and a lead agency's adoption of some or all of these mitigation measures for a particular project may not be sufficient to comply with CEQA's requirement to adopt all feasible mitigation measures.

- Increasing housing density and consolidated design, relying on higher density infill developments as much as possible.
- Avoidance and minimization of low-density exurban development patterns or leapfrog-type developments (i.e., those with undeveloped wildland between developed areas).

[48] Pub. Resources Code, § 21081.

- Decreasing the extent and amount of "edge," or interface area, where development is adjacent to undeveloped wildlands.
- Creation of buffer zones and defensible space within and adjacent to the development, with particular attention to ensuring that vegetation will not touch structures or overhang roofs.[49] It is also important that legal obligations are structured so that defensible space measures are retained over time.[50]
- Siting projects to maximize the role of low-flammability landscape features that may buffer the development from fire spread.
- Undergrounding power lines.
- Limiting development along steep slopes and amidst rugged terrain, so as to decrease exposure to rapid fire spread and increase accessibility for fire-fighting.
- Placement of development close to existing or planned ingress/egress and designated evacuation routes to efficiently evacuate the project population and the existing community population, consistent with evacuation plans, while simultaneously allowing emergency access.
- Placement of projects close to adequate emergency services.
- Construction of additional points of ingress and egress and modification of evacuation routes to minimize or avoid increasing evacuation times or emergency access response times.
- Fire hardening structures and homes—upgrading the building materials and installation techniques to increase the structure's resistance to heat, flames, and embers—beyond what is required in applicable building codes, both for new structures and existing structures in proximity to the new development.
- Requiring fire-hardened communication to the project site including high-speed internet service.
- Enhanced communication to the project population about emergency evacuation plans and evacuation zones.
- Parking limitations to ensure access roads are not clogged with parked vehicles.
- On-site water supply/storage to augment ordinary supplies that may be lost during a wildfire.

In all situations, mitigation measures should be combined and tailored to the specifics of the project, the surrounding landscape, and nearby existing uses. In some contexts, the mitigation measure itself may have an adverse impact that should be evaluated in an EIR. In addition,

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[49] Note, however, that defensible space around homes does not alone tend to account for structural survival. See Alexandra D. Syphard, *Why Are so Many Structures Burning in California?* (2020) FREMONTIA, *47*(2), at p. 32, available at https://pubs.er.usgs.gov/publication/70215982; Alexandra D. Syphard et al., *The Role of Defensible Space for Residential Structure Protection During Wildfires* (Oct. 14, 2014) INTERNATIONAL JOURNAL OF WILDLAND FIRE, available at http://dx.doi.org/10.1071/WF13158.

[50] See Max Moritz, et al., *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (Apr. 2020), at p. 12, University of California Agriculture and Natural Resources, Publication 8680, available at https://escholarship.org/uc/item/6n12m6pn.

mitigation measures may not provide the same level of protection or mitigation in all scenarios.[51] For example, home hardening has been shown to be an extremely effective measure for preventing structure loss during a wildfire. The California Building Code was updated in 2008 to require more advanced fire hardening and homes built to the revised standards were shown to be 40 percent less likely to be destroyed by a wildfire than similarly situated homes built prior to the update.[52] However, home hardening by itself may not be an adequate mitigation measure in all situations. During the Camp Fire, which swept through Paradise in 2018, homes built before and after the 2008 Building Code update were destroyed at roughly equal rates.[53] Home hardening in conformance with the 2008 Building Code alone did not meaningfully effect survivability; rather, proximity to other destroyed structures, the extent of vegetative overstory, and defensive space around homes was more relevant to whether or not a home survived.[54] While home hardening may be a worthy measure, this highlights the importance of combining measures, with an awareness to overall landscape conditions, to maximize public safety and minimize wildfire-related losses. It also demonstrates that defensive measures can improve but do not guarantee survivability, which highlights the continued importance of planning for evacuation and emergency access.

VII. Conclusion

As climate change and housing pressure continue to impact the State's landscape, wildfire risks, and development needs, local agencies need to thoroughly evaluate where and how new development is planned and constructed. With careful forethought during the various planning processes and thoughtful environmental review at the individual project development stage, new development can be designed and positioned to minimize future wildfire risks, enhance fire resiliency of our communities, and protect the health and safety of California's residents and natural resources. While the applicable rules, requirements, and analytical tools to reduce wildfire risk are evolving, this guidance is intended to provide suggestions for how best to comply with CEQA when analyzing and mitigating the wildfire risks of development projects in the wildland-urban interface and other fire prone areas.

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[51] See Alexandra D. Syphard, et. al., *Multiple-Scale Relationships between Vegetation, the Wildland-Urban Interface, and Structure Loss to Wildfire in California* (Mar. 12, 2021), at p. 13, MDPI FIRE 2021 [noting that "the most effective fire risk reduction approach will account for multiple factors at multiple scales and will incorporate simultaneous strategies"].

[52] Patrick W Baylis, et al., *Mandated vs. Voluntary Adaptation to Natural Disasters: the Case of U.S. Wildfires* (Dec. 2021), National Bureau of Economic Research, available at https://www.nber.org/papers/w29621.

[53] Eric E. Knapp, et al., *Housing Arrangement and Vegetation Factors Associated with Single-Family Home Survival in the 2018 Camp Fire, California* (2021) FIRE ECOLOGY 17:25, available at https://fireecology.springeropen.com/track/pdf/10.1186/s42408-021-00117-0.pdf [37 percent of homes built between 1997 and 2008 survived, while 44 percent of homes built between 2008 and 2018 survived].

[54] Eric E. Knapp, et al., *Housing Arrangement and Vegetation Factors Associated with Single-Family Home Survival in the 2018 Camp Fire, California* (2021) FIRE ECOLOGY 17:25, available at https://fireecology.springeropen.com/track/pdf/10.1186/s42408-021-00117-0.pdf.

Channel Law Group, LLP

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Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 9

May 5, 2026 Letter – Footnote 34

Cal. Code Regs. Tit. 14, § 1270.01 - Definitions

The following definitions are applicable to Subchapter 2.

(a) Agriculture: Land used for agricultural purposes as defined in a Local Jurisdiction's zoning ordinances.

(b) Board: California Board of Forestry and Fire Protection.

(c) Building: Any Structure used or intended for supporting or sheltering any use or Occupancy, except those classified as Utility and Miscellaneous Group U.

(d) CAL FIRE: California Department of Forestry and Fire Protection.

(e) Dead-end Road: A Road that has only one point of vehicular ingress/egress, including cul-de-sacs and Roads that loop back on themselves

(f) Defensible Space: The area within the perimeter of a parcel, Development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching Wildfire or defense against encroaching Wildfires or escaping Structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or Development, excluding the physical Structure itself. The area is characterized by the establishment and maintenance of emergency

vehicle access, emergency water reserves, Road names and Building identification, and fuel modification measures.

(g) Development: As defined in section 66418.1 of the California Government Code.

(h) Director: Director of the Department of Forestry and Fire Protection or their designee.

(i) Driveway: A vehicular pathway that serves no more than four (4) Residential Units and any number of non-commercial or non-industrial Utility or Miscellaneous Group U Buildings on each parcel. A Driveway shall not serve commercial or industrial uses at any size or scale.

(j) Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions, such as recorded historical sites, that provides mitigation of the problem.

(k) Fire Apparatus: A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support emergency response, including but not limited to the suppression of fires.

(l) Fire Authority: A fire department, agency, division, district, or other governmental body responsible for regulating and/or enforcing minimum fire safety standards in the Local Jurisdiction.

(m) Fire Hydrant: A valved connection on a water supply or storage system for the purpose of providing water for fire protection and suppression operations.

(n) Fuel Break: A strategically located area where the volume and arrangement of vegetation has been managed to limit fire intensity, fire severity, rate of spread, crown fire potential, and/or ember production.

(o) Greenbelts: open space, parks, wildlands, other areas, or a combination thereof, as designated by Local Jurisdictions, which are in, surround, or are adjacent to a city or urbanized area, that may function as Fuel Breaks and where Building construction is restricted or prohibited.

(p) Greenways: Linear open spaces or corridors that link parks and neighborhoods within a community through natural or manmade trails and paths.

(q) Hammerhead/T: A "T" shaped, three-point Turnaround space for Fire Apparatus on a Road or Driveway, being no narrower than the Road or Driveway that serves it.

(r) Hazardous Land Use: A land use that presents a significantly elevated potential for the ignition, prolonged duration, or increased intensity of a Wildfire due to the

presence of flammable materials, liquids, or gasses, or other features that initiate or sustain combustion. Such uses are determined by the Local Jurisdiction and may include, but are not limited to, power-generation and distribution facilities; wood processing or storage sites; flammable gas or liquids processing or storage sites; or shooting ranges.

(s) Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that approves or has the authority to regulate Development.

(t) Municipal-Type Water System: A system having water pipes servicing Fire Hydrants and designed to furnish, over and above domestic consumption, a minimum of 250 gpm (950 L/min) at 20 psi (138 kPa) residual pressure for a two (2) hour duration.

(u) Occupancy: The purpose for which a Building, or part thereof, is used or intended to be used.

(v) One-way Road: A Road that provides a minimum of one Traffic Lane width designed for traffic flow in one direction only.

(w) Residential Unit: Any Building or portion thereof which contains living facilities including provisions for sleeping, eating, cooking and/or sanitation, for one or more persons. Manufactured homes, mobile homes, and factory-built housing are considered Residential Units.

(x) Ridgeline: The line of intersection of two opposing slope aspects running parallel to the long axis of the highest elevation of land; or an area of higher ground separating two adjacent streams or watersheds.

(y) Road: A public or private vehicular pathway to more than four (4) Residential Units, or to any industrial or commercial Occupancy.

(z) Road or Driveway Structures: Bridges, culverts, and other appurtenant Structures which supplement the Traffic Lane or Shoulders.

(aa) Same Practical Effect: As used in this subchapter, means an Exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:

(1) access for emergency wildland fire equipment,

(2) safe civilian evacuation,

(3) signing that avoids delays in emergency equipment response,

(4) available and accessible water to effectively attack Wildfire or defend a Structure from Wildfire, and

(5) fuel modification sufficient for civilian and fire fighter safety.

(bb) Shoulder: A vehicular pathway adjacent to the Traffic Lane.

(cc) State Responsibility Area (SRA): As defined in Public Resources Code sections 4126-4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220-1220.5.

(dd) Strategic Ridgeline: a Ridgeline identified pursuant to § 1276.02(a) that may support fire suppression activities or where the preservation of the Ridgeline as an Undeveloped Ridgeline would reduce fire risk and improve fire protection.

(ee) Structure: That which is built or constructed or any piece of work artificially built up or composed of parts joined together in some definite manner.

(ff) Traffic Lane: The portion of a Road or Driveway that provides a single line of vehicle travel.

(gg) Turnaround: An area which allows for a safe opposite change of direction for Fire Apparatus at the end of a Road or Driveway.

(hh) Turnout: A widening in a Road or Driveway to allow vehicles to pass.

(ii) Undeveloped Ridgeline: A Ridgeline with no Buildings.

(jj) Utility and Miscellaneous Group U: A Structure of an accessory character or a miscellaneous Structure not classified in any specific Occupancy permitted, constructed, equipped, and maintained to conform to the requirements of Title 24, California Building Standards Code.

(kk) Vertical Clearance: The minimum specified height of a bridge, overhead projection, or vegetation clearance above the Road or Driveway.

(ll) Vertical Curve: A curve at a high or low point of a Road that provides a gradual transition between two Road grades or slopes.

(mm) Very High Fire Hazard Severity Zone (VHFHSZ): As defined in Government Code section 51177(i).

(nn) Wildfire: Has the same meaning as "forest fire" in Public Resources Code Section 4103.

Notes

Cal. Code Regs. Tit. 14, § 1270.01

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Change without regulatory effect amending subsections (a) and (b) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
4. Repealer and new section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Change without regulatory effect amending subsections (a) and (b) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
4. Repealer and new section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1270.02 - Purpose

(a) Subchapter 2 has been prepared and adopted for the purpose of establishing state minimum Wildfire protection standards in conjunction with Building, construction, and Development in the State Responsibility Area (SRA) and, after July 1, 2021, the Very High Fire Hazard Severity Zones, as defined in Government Code § 51177(i) (VHFHSZ).

(b) The future design and construction of Structures, subdivisions and Developments in the SRA and, after July 1, 2021, the VHFHSZ shall provide for basic emergency access and perimeter Wildfire protection measures as specified in the following articles.

(c) These standards shall provide for emergency access; signing and Building numbering; private water supply reserves for emergency fire use; vegetation modification, Fuel Breaks, Greenbelts, and measures to preserve Undeveloped Ridgelines. Subchapter 2 specifies the minimums for such measures.

Notes

Cal. Code Regs. Tit. 14, § 1270.02
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).

3. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 7-27-2020 as an emergency; operative 7-27-2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Change without regulatory effect amending subsection (a)(1) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
8. Amendment refiled 5-10-2021 as an emergency; operative 5-10-2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
9. Amendment refiled 12-6-2021 as an emergency; operative 12-6-2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
10. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
11. Editorial correction reinstating language in subsection (a)(1) from 2-1-2021 nonsubstantive action (Register 2022, No. 18).
12. Repealer and new section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 7-27-2020 as an emergency; operative 7/27/2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language

will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Change without regulatory effect amending subsection (a)(1) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
8. Amendment refiled 5-10-2021 as an emergency; operative 5/10/2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
9. Amendment refiled 12-6-2021 as an emergency; operative 12/6/2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
10. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
11. Editorial correction reinstating language in subsection (a)(1) from 2-1-2021 nonsubstantive action (Register 2022, No. 18).
12. Repealer and new section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1270.03 - Scope

(a) Subchapter 2 shall apply to:

(1) the perimeters and access to all residential, commercial, and industrial Building construction within the SRA approved after January 1, 1991, and those approved after July 1, 2021 within the VHFHSZ, except as set forth below in subsection (b).

(2) the siting of newly installed commercial modulars, manufactured homes, mobilehomes, and factory-built housing, as defined in Health and Safety Code sections 18001.8, 18007, 18008, and 19971;

(3) all tentative and parcel maps or other Developments approved after January 1, 1991; and

(4) applications for Building permits on a parcel approved in a pre-1991 parcel or tentative map to the extent that conditions relating to the perimeters and access to the Buildings were not imposed as part of the approval of the parcel or tentative map.

(b) Subchapter 2 does not apply where an application for a Building permit is filed after January 1, 1991 for Building construction on a parcel that was formed from a parcel map or tentative map (if the final map for the tentative map is approved within

the time prescribed by the local ordinance) approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the Buildings were imposed by the parcel map or final tentative map approved prior to January 1, 1991.

(c) Affected activities include, but are not limited to:

(1) permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d);

(2) application for a Building permit for new construction not relating to an existing Structure;

(3) application for a use permit;

(4) Road construction including construction of a Road that does not currently exist, or extension of an existing Road.

(d) The standards in Subchapter 2 applicable to Roads shall not apply to Roads used solely for Agriculture; mining; or the management of timberland or harvesting of forest products.

Notes

Cal. Code Regs. Tit. 14, § 1270.03
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section and NOTE filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Change without regulatory effect amending subsection (a) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
5. Renumbering of former section 1270.03 to section 1270.04 and new section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

2. Amendment of section and Note filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Change without regulatory effect amending subsection (a) filed 2-1-2021 pursuant to section 100, title 1, California Code of Regulations (Register 2021, No. 6).
5. Renumbering of former section 1270.03 to section 1270.04 and new section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1270.04 - Provisions for Application of these Regulations

This Subchapter shall be applied as follows:

(a) the Local Jrisdictions shall provide the Director of the California Department of Forestry and Fire Protection (CAL FIRE) or their designee with notice of applications for Building permits, tentative parcel maps, tentative maps, and installation or use permits for construction or Development within the SRA, or if after July, 1 2021, the VHFHSZ.

(b) the Director or their designee may review and make fire protection recommendations on applicable construction or development permits or maps provided by the Local Jrisdiction.

(c) the Local Jrisdiction shall ensure that the applicable sections of this Subchapter become a condition of approval of any applicable construction or Development permit or map.

Notes

Cal. Code Regs. Tit. 14, § 1270.04

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of subsection (b) filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading, section and NOTE filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 7-27-2020 as an emergency; operative 7-27-2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Amendment refiled 5-10-2021 as an emergency; operative 5-10-2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
8. Amendment refiled 12-6-2021 as an emergency; operative 12-6-2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
9. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
10. Renumbering of former section 1270.04 to section 1270.05 and renumbering of former section 1270.03 to section 1270.04, including amendment of section, filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Sections 4111 and 4290, Public Resources Code. Reference: Sections 4117 and 4290, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of subsection (b) filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading, section and Note filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 7-27-2020 as an emergency; operative 7/27/2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency

language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Amendment refiled 5-10-2021 as an emergency; operative 5/10/2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
8. Amendment refiled 12-6-2021 as an emergency; operative 12/6/2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
9. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
10. Renumbering of former section 1270.04 to section 1270.05 and renumbering of former section 1270.03 to section 1270.04, including amendment of section, filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1270.05 - Local Regulations

(a) Subchapter 2 shall serve as the minimum Wildfire protection standards applied in SRA and VHFHSZ. However, Subchapter 2 does not supersede local regulations which equal or exceed the standards of this Subchapter.

(b) A local regulation equals or exceeds a minimum standard of this Subchapter only if, at a minimum, the local regulation also fully complies with the corresponding minimum standard in this Subchapter.

(c) A Local Jurisdiction shall not apply exemptions to Subchapter 2 that are not enumerated in Subchapter 2. Exceptions requested and approved in conformance with § 1270.07 (Exceptions to Standards) may be granted on a case-by-case basis.

(d) Notwithstanding a local regulation that equals or exceeds the State Minimum Fire Safe Regulations, Building construction shall comply with the State Minimum Fire Safe Regulations.

Notes

Cal. Code Regs. Tit. 14, § 1270.05
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).

2. Amendment of subsection (a)(3), new subsections (a)(4) and (b), subsection relettering and amendment of newly designated subsection (c) and NOTE filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Repealer of subsections (b)-(b)(2) and subsection relettering filed 7-27-2020 as an emergency; operative 7-27-2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Repealer of subsections (b)-(b)(2) and subsection relettering refiled 5-10-2021 as an emergency; operative 5-10-2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
8. Repealer of subsections (b)-(b)(2) and subsection relettering refiled 12-6-2021 as an emergency; operative 12-6-2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
9. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
10. Renumbering of former section 1270.05 to section 1270.06 and renumbering of former section 1270.04 to section 1270.05, including amendment of section, filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Sections 4111, 4119 and 4290, Public Resources Code. Reference: Section 4290, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of subsection (a)(3), new subsections (a)(4) and (b), subsection relettering and amendment of newly designated subsection (c) and Note filed 1-31-2013; operative 4-1-

2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Repealer of subsections (b)-(b)(2) and subsection relettering filed 7-27-2020 as an emergency; operative 7/27/2020 (Register 2020, No. 31). A Certificate of Compliance must be transmitted to OAL by 1-25-2021 or emergency language will be repealed by operation of law on the following day.
5. Emergency filed 7-27-2020 extended an additional 60 days (Executive Order N-40-20). A Certificate of Compliance must be transmitted to OAL by 3-26-2021 or emergency language will be repealed by operation of law on the following day.
6. Emergency filed 7-27-2020 extended an additional 60 days pursuant to Executive Order N-66-20 (Register 2020, No. 38). A Certificate of Compliance must be transmitted to OAL by 5-25-2021 or emergency language will be repealed by operation of law on the following day.
7. Repealer of subsections (b)-(b)(2) and subsection relettering refiled 5-10-2021 as an emergency; operative 5/10/2021 (Register 2021, No. 20). Emergency expiration extended 60 days (Executive Order N-40-20) plus an additional 60 days (Executive Order N-71-20). A Certificate of Compliance must be transmitted to OAL by 12-7-2021 or emergency language will be repealed by operation of law on the following day.
8. Repealer of subsections (b)-(b)(2) and subsection relettering refiled 12-6-2021 as an emergency; operative 12/6/2021 (Register 2021, No. 50). A Certificate of Compliance must be transmitted to OAL by 3-7-2022 or emergency language will be repealed by operation of law on the following day.
9. Reinstatement of section as it existed prior to 7-27-2020 amendment by operation of Government Code section 11346.1(f) (Register 2022, No. 15).
10. Renumbering of former section 1270.05 to section 1270.06 and renumbering of former section 1270.04 to section 1270.05, including amendment of section, filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1270.06 - Inspections

Inspections shall conform to the following requirements:

(a) Inspections in the SRA shall be made by:

(1) the Director, or

(2) Local Jurisdictions that have assumed state fire protection responsibility on SRA lands, or

(3) Local Jurisdictions where the inspection duties have been formally delegated by the Director to the Local Jurisdictions, pursuant to subsection (b).

(b) The Director may delegate inspection authority to a Local Jurisdiction subject to all of the following criteria:

(1) The Local Jurisdiction represents that they have appropriate resources to perform the delegated inspection authority.

(2) The Local Jurisdiction acknowledges that CAL FIRE's authority under subsection (d) shall not be waived or restricted.

(3) The Local Jurisdiction consents to the delegation of inspection authority.

(4) The Director may revoke the delegation at any time.

(5) The delegation of inspection authority, and any subsequent revocation of the delegation, shall be documented in writing, and retained on file at the CAL FIRE Unit headquarters that administers SRA fire protection in the area.

(c) Inspections in the VHFHSZ shall be made by the Local Jurisdiction.

(d) Nothing in this section abrogates CAL FIRE's authority to inspect and enforce state forest and fire laws in the SRA even when the inspection duties have been delegated pursuant to this section.

(e) Reports of violations within the SRA shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in the Local Jurisdiction.

(f) When inspections are conducted, they shall occur prior to: the issuance of the use permit or certificate of Occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or Building permit.

Notes

Cal. Code Regs. Tit. 14, § 1270.06
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Renumbering of former section 1270.06 to section 1270.07 and renumbering of former section 1270.05 to section 1270.06, including amendment of section and NOTE, filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).

4. Renumbering of former section 1270.06 to section 1270.07 and renumbering of former section 1270.05 to section 1270.06, including amendment of section and Note, filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1270.07 - Exceptions to Standards

(a) Upon request by the applicant, an Exception to standards within this Subchapter may be allowed by the Inspection entity in accordance with 14 CCR § 1270.06 (Inspections) where the Exceptions provide the Same Practical Effect as these regulations towards providing Defensible Space. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06, shall be made on a case-by-case basis only. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06 shall be forwarded to the appropriate CAL FIRE unit headquarters that administers SRA fire protection in that Local Jurisdiction, or the county in which the Local Jurisdiction is located and shall be retained on file at the Unit Office.

(b) Requests for an Exception shall be made in writing to the Local Jurisdiction listed in 14 CCR § 1270.06 by the applicant or the applicant's authorized representative. At a minimum, the request shall state the specific section(s) for which an Exception is requested; material facts supporting the contention of the applicant; the details of the Exception proposed; and a map showing the proposed location and siting of the Exception. Local Jurisdictions listed in § 1270.06 (Inspections) may establish additional procedures or requirements for Exception requests.

(c) Where an Exception is not granted by the inspection entity, the applicant may appeal such denial to the Local Jurisdiction. The Local Jurisdiction may establish or

utilize an appeal process consistent with existing local building or planning department appeal processes.

(d) Before the Local Jurisdiction makes a determination on an appeal, the inspector shall be consulted and shall provide to that Local Jurisdiction documentation outlining the effects of the requested Exception on Wildfire protection.

(e) If an appeal is granted, the Local Jurisdiction shall make findings that the decision meets the intent of providing Defensible Space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in that Local Jurisdiction.

Notes

Cal. Code Regs. Tit. 14, § 1270.07
1. Renumbering of former section 1270.06 to new section 1270.07, including amendment of section, filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. For prior history, see Register 2019, No. 36.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. Renumbering of former section 1270.06 to new section 1270.07, including amendment of section, filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. For prior history, see Register 2019, No. 36.

Cal. Code Regs. Tit. 14, § 1270.08 - Distance Measurements

All specified or referenced distances are measured along the ground, unless otherwise stated.

Notes

Cal. Code Regs. Tit. 14, § 1270.08
1. New section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. For prior history, see Register 2019, No. 36.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a)

extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. For prior history, see Register 2019, No. 36.

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Cal. Code Regs. Tit. 14, § 1270.09 - Appeals [Repealed]

Notes

Cal. Code Regs. Tit. 14, § 1270.09
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Repealer filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 1-31-2013; operative 4-1-2013 (Register 2013, No. 5).
3. Repealer filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).

Cal. Code Regs. Tit. 14, § 1273.00 - Intent

Roads, and Driveways, whether public or private, unless exempted under 14 CCR § 1270.03(d), shall provide for safe access for emergency Wildfire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a Wildfire emergency consistent with 14 CCR §§ 1273.00 through 1273.09.

Notes

Cal. Code Regs. Tit. 14, § 1273.00
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of article heading filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment of article heading and section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to

Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of article heading filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment of article heading and section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1273.01 - Width

State Regulations Compare

(a) All roads shall be constructed to provide a minimum of two ten (10) foot traffic lanes, not including shoulder and striping. These traffic lanes shall provide for two-way traffic flow to support emergency vehicle and civilian egress, unless other standards are provided in this article or additional requirements are mandated by Local Jurisdictions or local subdivision requirements. Vertical clearances shall conform to the requirements in California Vehicle Code section 35250.

(b) All One-way Roads shall be constructed to provide a minimum of one twelve (12) foot traffic lane, not including Shoulders. The Local Jurisdiction may approve One-way Roads.

(1) All one-way roads shall, at both ends, connect to a road with two traffic lanes providing for travel in different directions, and shall provide access to an area currently zoned for no more than ten (10) Residential Units.

(2) In no case shall a One-way Road exceed 2,640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each One-way Road.

(c) All driveways shall be constructed to provide a minimum of one (1) ten (10) foot traffic lane, fourteen (14) feet unobstructed horizontal clearance, and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

Notes

Cal. Code Regs. Tit. 14, § 1273.01
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1273.02 - Road Surface

(a) Roads shall be designed and maintained to support the imposed load of Fire Apparatus weighing at least 75,000 pounds, and provide an aggregate base.

(b) Road and Driveway Structures shall be designed and maintained to support at least 40,000 pounds.

(c) Project proponent shall provide engineering specifications to support design, if requested by the Local Jurisdiction.

Notes

Cal. Code Regs. Tit. 14, § 1273.02
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Repealer and new section filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission

deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Repealer and new section filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
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Cal. Code Regs. Tit. 14, § 1273.03 - Grades

State Regulations Compare

(a) At no point shall the grade for all Roads and Driveways exceed 16 percent.

(b) The grade may exceed 16%, not to exceed 20%, with approval from the Local Jurisdiction and with mitigations to provide for Same Practical Effect.

Notes

Cal. Code Regs. Tit. 14, § 1273.03
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1273.04 - Radius

State Regulations Compare

(a) No Road or Road Structure shall have a horizontal inside radius of curvature of less than fifty (50) feet. An additional surface width of four (4) feet shall be added to curves of 50-100 feet radius; two (2) feet to those from 100-200 feet.

(b) The length of vertical curves in Roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than one hundred (100) feet.

Notes

Cal. Code Regs. Tit. 14, § 1273.04
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to

Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1273.05 - Turnarounds

State Regulations Compare

(a) Turnarounds are required on Driveways and Dead-end Roads.

(b) The minimum turning radius for a turnaround shall be forty (40) feet, not including parking, in accordance with the figures in 14 CCR §§ 1273.05(e) and 1273.05(f). If a hammerhead/T is used instead, the top of the "T" shall be a minimum of sixty (60) feet in length.

(c) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the Driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

(d) A turnaround shall be provided on Driveways over 300 feet in length and shall be within fifty (50) feet of the building.

(d) Each Dead-end Road shall have a turnaround constructed at its terminus. Where parcels are zoned five (5) acres or larger, turnarounds shall be provided at a maximum of 1,320 foot intervals.

(e) Figure A. Turnarounds on roads with two ten-foot traffic lanes.
Figure A/Image 1 is a visual representation of paragraph (b).

Click here to view image

(f) Figure B. Turnarounds on driveways with one ten-foot traffic lane.
Figure B/Image 2 is a visual representation of paragraph (b).

Click here to view image

Notes

Cal. Code Regs. Tit. 14, § 1273.05
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section and new illustration filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section and new illustration filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1273.06 - Turnouts

State Regulations Compare

Turnouts shall be a minimum of twelve (12) feet wide and thirty (30) feet long with a minimum twenty-five (25) foot taper on each end.

Notes

Cal. Code Regs. Tit. 14, § 1273.06
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment of section heading filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and

4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment of section heading filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1273.07 - Road and Driveway Structures

(a) Appropriate signing, including but not limited to weight or vertical clearance limitations, One-way Road or single traffic lane conditions, shall reflect the capability of each bridge.

(b) Where a bridge or an elevated surface is part of a Fire Apparatus access road, the bridge shall be constructed and maintained in accordance with the American Association of State and Highway Transportation Officials Standard Specifications for Highway Bridges, 17th Edition, published 2002 (known as AASHTO HB-17), hereby incorporated by reference. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the local authority having jurisdiction.

(c) Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, barriers, or signs, or both, as approved by the local authority having jurisdiction, shall be installed and

maintained.

(d) A bridge with only one traffic lane may be authorized by the Local Jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

Notes

Cal. Code Regs. Tit. 14, § 1273.07
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of subsections (a) and (c) filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment of subsections (a), (b) and (d) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of subsections (a) and (c) filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment of subsections (a), (b) and (d) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1273.08 - Dead-End Roads

(a) The maximum length of a Dead-end Road, including all Dead-end Roads accessed from that Dead-end Road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:
parcels zoned for less than one acre - 800 feet

parcels zoned for 1 acre to 4.99 acres - 1,320 feet

parcels zoned for 5 acres to 19.99 acres - 2,640 feet

parcels zoned for 20 acres or larger - 5,280 feet

All lengths shall be measured from the edge of the Road surface at the intersection that begins the Road to the end of the Road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes requiring different length limits, the shortest allowable length shall apply.

(b) See 14 CCR § 1273.05 for dead-end road turnaround requirements.

Notes

Cal. Code Regs. Tit. 14, § 1273.08

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment of subsection (a) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment of subsection (a) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1273.09 - Gate Entrances

State Regulations Compare

(a) Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving that gate and a minimum width of fourteen (14) feet unobstructed horizontal clearance and unobstructed vertical clearance of thirteen feet, six inches (13' 6").

(b) All gates providing access from a Road to a Driveway shall be located at least thirty (30) feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that Road.

(c) Where a One-way Road with a single traffic lane provides access to a gated entrance, a forty (40) foot turning radius shall be used.

(d) Security gates shall not be installed without approval. Where security gates are installed, they shall have an approved means of emergency operation. Approval shall be by the local authority having jurisdiction. The security gates and the emergency operation shall be maintained operational at all times.

Notes

Cal. Code Regs. Tit. 14, § 1273.09

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of subsections (b) and (c) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of subsections (b) and (c) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1274.00 - Intent

State Regulations Compare

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved Roads and Buildings shall be designated by names or numbers posted on signs clearly visible and legible from the Road. This section shall not restrict the size of letters or numbers appearing on road signs for other purposes.

Notes

Cal. Code Regs. Tit. 14, § 1274.00
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1274.01 - Road Signs

(a) Newly constructed or approved Roads must be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming within each Local Jurisdiction. This section does not require any entity to rename or renumber existing roads, nor shall a Road providing access only to a single commercial or industrial Occupancy require naming or numbering.

(b) The size of letters, numbers, and symbols for Road signs shall be a minimum four (4) inch letter height, half inch (.5) inch stroke, reflectorized, contrasting with the background color of the sign.

Notes

Cal. Code Regs. Tit. 14, § 1274.01
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).

3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
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1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1274.02 - Road Sign Installation, Location, and Visibility

(a) Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet.

(b) Signs required by this article identifying intersecting Roads shall be placed at the intersection of those Roads.

(c) A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end roads, one-way roads, or single lane conditions, shall be placed:

(1) at the intersection preceding the traffic access limitation, and

(2) no more than one hundred (100) feet before such traffic access limitation.

(d) Road signs required by this article shall be posted at the beginning of construction and shall be maintained thereafter.

Notes

Cal. Code Regs. Tit. 14, § 1274.02

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of subsection (b) and renumbering of former subsections (c)(i)-(c)(ii) to (c)(1)-(c)(2) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of subsection (b) and renumbering of former subsections (c)(i)-(c)(ii) to (c)(1)-(c)(2) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1274.03 - Addresses for Buildings

(a) All Buildings shall be issued an address by the Local Jurisdiction which conforms to that jurisdiction's overall address system. Utility and miscellaneous Group U Buildings are not required to have a separate address; however, each Residential Unit within a Building shall be separately identified.

(b) The size of letters, numbers, and symbols for addresses shall conform to the standards in the California Fire Code, California Code of Regulations title 24, part 9.

(c) Addresses for residential Buildings shall be reflectorized.

Notes

Cal. Code Regs. Tit. 14, § 1274.03
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of subsections (a) and (c) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days

pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of subsections (a) and (c) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1274.04 - Address Installation, Location, and Visibility

(a) All buildings shall have a permanently posted address which shall be plainly legible and visible from the Road fronting the property.

(b) Where access is by means of a private Road and the address identification cannot be viewed from the public way, an unobstructed sign or other means shall be used so that the address is visible from the public way.

(c) Address signs along one-way Roads shall be visible from both directions.

(d) Where multiple addresses are required at a single driveway, they shall be mounted on a single sign or post.

(e) Where a Road provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest Road intersection providing access to that site, or otherwise posted to provide for unobstructed visibility from that intersection.

(f) In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter.

Notes

Cal. Code Regs. Tit. 14, § 1274.04
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of subsections (a)-(c) and (e) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of subsections (a)-(c) and (e) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1275.00 - Intent

Emergency water for Wildfire protection shall be available, accessible, and maintained in quantities and locations specified in the statute and these regulations in order to attack a Wildfire or defend property from a Wildfire.

Notes

Cal. Code Regs. Tit. 14, § 1275.00
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1275.01 - Application

The provisions of this article shall apply in the tentative and parcel map process when new parcels are approved by the Local Jurisdiction.

Notes

Cal. Code Regs. Tit. 14, § 1275.01
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and

4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1275.02 - Water Supply

(a) When a water supply for structure defense is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when alternative methods of protection are provided and approved by the Local Jurisdiction.

(b) Water systems equaling or exceeding the California Fire Code, California Code of Regulations title 24, part 9, or, where a municipal-type water supply is unavailable, National Fire Protection Association (NFPA) 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 2017 Edition, hereby incorporated by reference, shall be accepted as meeting the requirements of this article.

(c) Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or man made containment structure, as long as the specified quantity is immediately available.

(d) Nothing in this article prohibits the combined storage of emergency Wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

(e) Where freeze or crash protection is required by Local Jurisdictions, such protection measures shall be provided.

Notes

Cal. Code Regs. Tit. 14, § 1275.02
1. Renumbering of former section 1275.10 to new section 1275.02, including amendment of section heading and section, filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
2. Amendment of subsections (a), (d) and (e) filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. Renumbering of former section 1275.10 to new section 1275.02, including amendment of section heading and section, filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
2. Amendment of subsections (a), (d) and (e) filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1275.03 - Hydrants

(a) The Fire Hydrant shall be eighteen (18) inches above the finished surface. Its location in relation to the Road or dRiveway and to the Building(s) or Structure(s) it serves shall comply with California Fire Code, California Code of Regulations title 24, part 9, Chapter 5, and Appendix C.

(b) The Fire Hydrant head shall be a two and half (2 1/2) inch National Hose male thread with cap for pressure and gravity flow systems and four and a half (4 1/2) inch for draft systems.

(c) Fire Hydrants shall be wet or dry barrel and have suitable freeze or crash protection as required by the Local Jurisdiction.

Notes

Cal. Code Regs. Tit. 14, § 1275.03
1. Renumbering of former section 1275.15 to new section 1275.03, including amendment of section heading and section, filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
2. Amendment of section heading and section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60

calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. Renumbering of former section 1275.15 to new section 1275.03, including amendment of section heading and section, filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
2. Amendment of section heading and section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1275.04 - Signing of Water Sources

(a) Each Fire Hydrant or access to water shall be identified as follows:

(1) if located along a Driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the Driveway address sign and mounted on a fire retardant post, or

(2) if located along a Road,

(1) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said Fire Hydrant with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the Driveway, or

(2) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

Notes

Cal. Code Regs. Tit. 14, § 1275.04

1. Renumbering and amendment of former section 1275.20 to new section 1275.04 filed

9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
2. Amendment filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. Renumbering and amendment of former section 1275.20 to new section 1275.04 filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
2. Amendment filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1276.00 - Intent

State Regulations Compare

To reduce the intensity of a Wildfire, reducing the volume and density of flammable vegetation around Development through strategic fuel modification, parcel siting and Building setbacks, and the protection of Undeveloped Ridgelines shall provide for increased safety for emergency fire equipment, including evacuating civilians, and a point of attack or defense from a Wildfire.

Notes

Cal. Code Regs. Tit. 14, § 1276.00
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
4. Amendment of article heading and amendment of section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline

specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Amendment of article heading and amendment of section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1276.01 - Building and Parcel Siting and Setbacks

(a) All parcels shall provide a minimum thirty (30) foot setback for all Buildings from all property lines and/or the center of a Road, except as provided for in subsection (b).

(b) A reduction in the minimum setback shall be based upon practical reasons, which may include but are not limited to, parcel dimensions or size, topographic limitations, Development density requirements or other Development patterns that promote low-carbon emission outcomes; sensitive habitat; or other site constraints, and shall provide for an alternative method to reduce Structure-to-Structure ignition by incorporating features such as, but not limited to:

(1) non-combustible block walls or fences; or

(2) non-combustible material extending five (5) feet horizontally from the furthest extent of the Building; or

(3) hardscape landscaping; or

(4) a reduction of exposed windows on the side of the Structure with a less than thirty (30) foot setback; or

(5) the most protective requirements in the California Building Code, California

Code of Regulations Title 24, Part 2, Chapter 7A, as required by the Local Jurisdiction.

Notes

Cal. Code Regs. Tit. 14, § 1276.01
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of section heading and section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of section heading and section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1276.02 - Ridgelines

(a) The Local Jurisdiction shall identify Strategic Ridgelines, if any, to reduce fire risk and improve fire protection through an assessment of the following factors:

(1) Topography;

(2) Vegetation;

(3) Proximity to any existing or proposed residential, commercial, or industrial land uses;

(4) Construction where mass grading may significantly alter the topography resulting in the elimination of Ridgeline fire risks;

(5) Ability to support effective fire suppression; and

(6) Other factors, if any, deemed relevant by the Local Jurisdiction.

(b) Preservation of Undeveloped Ridgelines identified as strategically important shall be required pursuant to this section.

(c) New Buildings on Undeveloped Ridgelines identified as strategically important are prohibited, as described in subsections (c)(1), (c)(2), and (c)(3).

(1) New Residential Units are prohibited within or at the top of drainages or other

topographic features common to Ridgelines that act as chimneys to funnel convective heat from Wildfires.

(2) Nothing in this subsection shall be construed to alter the extent to which utility infrastructure, including but not limited to wireless telecommunications facilities, as defined in Government Code section 65850.6, subdivision (d)(2), or Storage Group S or Utility and Miscellaneous Group U Structures, may be constructed on Undeveloped Ridgelines.

(3) Local Jurisdictions may approve Buildings on Strategic Ridgelines where Development activities such as mass grading will significantly alter the topography that results in the elimination of Ridgeline fire risks.

(d) The Local Jurisdiction may implement further specific requirements to preserve Undeveloped Ridgelines.

Notes

Cal. Code Regs. Tit. 14, § 1276.02
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
3. Amendment of section heading and section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
3. Amendment of section heading and section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1276.03 - Fuel Breaks

(a) When Building construction meets the following criteria, the Local Jurisdiction shall determine the need and location for Fuel Breaks in consultation with the Fire Authority:

(1) the permitting or approval of three (3) or more new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d); or

(2) an application for a change of zoning increasing zoning intensity or density; or

(3) an application for a change in use permit increasing use intensity or density.

(b) Fuel Breaks required by the Local Jurisdiction, in consultation with the Fire Authority, shall be located, designed, and maintained in a condition that reduces the potential of damaging radiant and convective heat or ember exposure to Access routes, Buildings, or infrastructure within the Development.

(c) Fuel Breaks shall have, at a minimum, one point of entry for fire fighters and any Fire Apparatus. The specific number of entry points and entry requirements shall

be determined by the Local Jurisdiction, in consultation with the Fire Authority.

(d) Fuel Breaks may be required at locations such as, but not limited to:

(1) Directly adjacent to defensible space as defined by 14 CCR § 1299.02 to reduce radiant and convective heat exposure, ember impacts, or support fire suppression tactics;

(2) Directly adjacent to Roads to manage radiant and convective heat exposure or ember impacts, increase evacuation safety, or support fire suppression tactics;

(3) Directly adjacent to a Hazardous Land Use to limit the spread of fire from such uses, reduce radiant and convective heat exposure, or support fire suppression tactics;

(4) Strategically located along Ridgelines, in Greenbelts, or other locations to reduce radiant and convective heat exposure, ember impacts, or support community level fire suppression tactics.

(e) Fuel Breaks shall be completed prior to the commencement of any permitted construction.

(f) Fuel Breaks shall be constructed using the most ecologically and site appropriate treatment option, such as, but not limited to, prescribed burning, manual treatment, mechanical treatment, prescribed herbivory, and targeted ground application of herbicides.

(g) Where a Local Jurisdiction requires Fuel Breaks, maintenance mechanisms shall be established to ensure the fire behavior objectives and thresholds are maintained over time.

(h) The mechanisms required shall be binding upon the property for which the Fuel Break is established, shall ensure adequate maintenance levels, and may include written legal agreements; permanent fees, taxes, or assessments; assessments through a homeowners' association; or other funding mechanisms.

Notes

Cal. Code Regs. Tit. 14, § 1276.03
1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d) (Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1-1-2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1-1-2020

(Register 2019, No. 36).
4. Repealer and new section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 5-30-91; operative 5-30-91 pursuant to Government Code section 11346.2(d)(Register 91, No. 27).
2. Amendment filed 4-27-2015; operative 1/1/2016 (Register 2015, No. 18).
3. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
4. Repealer and new section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Cal. Code Regs. Tit. 14, § 1276.04 - Greenbelts, Greenways, Open Spaces and Parks

(a) Where a Greenbelt, Greenway, open space, park, landscaped or natural area, or portions thereof, is intended to serve as a Fuel Break, the space or relevant portion thereof shall conform with the requirements in § 1276.03 (Fuel Breaks).

Notes

Cal. Code Regs. Tit. 14, § 1276.04
1. New section filed 9-6-2019; operative 1-1-2020 (Register 2019, No. 36).
2. Repealer and new section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. Amendment of section heading and section filed 9-6-2019; operative 1/1/2020 (Register 2019, No. 36).
2. Repealer and new section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-71-20.

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Cal. Code Regs. Tit. 14, § 1276.05 - Disposal of Flammable Vegetation and Fuels

The disposal, including burning or removal to a site approved by the Local Jurisdiction, in consultation with the Fire Authority, of flammable vegetation and fuels caused by site construction, Road, and Driveway construction shall be in accordance with all applicable laws and regulations.

Notes

Cal. Code Regs. Tit. 14, § 1276.05
1. New section filed 1-31-2023; operative 4-1-2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.
Note: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1. New section filed 1-31-2023; operative 4/1/2023 (Register 2023, No. 5). Transmission deadline specified in Government Code section 11346.4(b) extended 60 calendar days

pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20. Filing deadline specified in Government Code section 11349.3(a) extended 60 calendar days pursuant to Executive Order N-40-20 and an additional 60 calendar days pursuant to Executive Order N-71-20.

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Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 10

May 5, 2026 Letter – Footnote 39.1

SEC. 57.4908. FIRE SAFE DEVELOPMENT REGULATIONS.

Section 4908 of the CFC is hereby adopted in its entirety.

Channel Law Group, LLP

May 13, 2026

Appeal Justifications Referenced Documents – 4230 N. Saltillo Street;
Case Nos. ZA-2023-1206-ZAD-DRB-SPP-MSP-HCA;
ENV-2023-1207-CE-1A; Council File 26-0412 ("Project")

EXHIBIT 11

May 5, 2026 Letter – Footnote 39.2

Chapter 49 Requirements for Wildland-Urban Interface Fire Areas: California Fire Code 2022 | UpCodes

Section 4908 Fire Safe Development Regulations

4908.1 General

Pursuant to PRC 4290 all residential, commercial and industrial building construction within state responsibility areas approved after January 1, 1991, and within lands classified and designated as an LRA Very High Fire Hazard Severity Zone, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021, shall comply with the SRA Fire Safe Development Regulations as specified in Title 14, Division 1.5, Chapter 7, Subchapter 2.

4908.2 Subdivision Map Findings

Pursuant to Government Code (GC), Section 66474.02, before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in an SRA or an LRA Very High Fire Hazard Severity Zone, as both are defined in GC Section 51177, a legislative body of a county, except as provided in GC Subsection 66474.02(c), shall make findings regarding compliance with the SRA Fire Safe Regulations and the availability of structural fire protection and suppression services. These findings and accompanying map shall be transmitted to the Board of Forestry and Fire Protection and comply with the requirements in Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 1.

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