08-0504 BPW 005-08

APPENDICES **PART ONE**
VENICE PUMPING PLANT
DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

City of Los Angeles
Bureau of Engineering
Department of Public Works
1149 South Broadway, Suite 600
Los Angeles, California 90015

Contact: Mr. Jim Doty; (213) 485-5759

December 2007

URS

2020 East First Street, Suite 400
Santa Ana, California 92705

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APPENDIX **A**
NOTICE OF PREPARATION
VENICE PUMPING PLANT
DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Sean Walsh
Director

Notice of Preparation

May 2, 2005

To: Reviewing Agencies

Re: Venice Pumping Plant Dual Force Main
SCH# 2003031001

Attached for your review and comment is the Notice of Preparation (NOP) for the Venice Pumping Plant Dual Force Main draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

James E. Doty
Los Angeles Bureau of Engineering
650 S. Spring Street, Room 574
Los Angeles, CA 90014

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

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Document Details Report
State Clearinghouse Data Base

SCH# 2003031001
Project Title Venice Pumping Plant Dual Force Main
Lead Agency Los Angeles, City of

Type NOP Notice of Preparation

Description The proposed project includes the construction and installation of a new 54-inch diameter force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey.

Lead Agency Contact

Name James E. Doty
Agency Los Angeles Bureau of Engineering
Phone (213) 847-8694 **Fax**
email
Address 650 S. Spring Street, Room 574
City Los Angeles **State** CA **Zip** 90014

Project Location

County Los Angeles
City
Region
Cross Streets Pacific Avenue / Hurricane Avenue
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways
Airports LAX
Railways
Waterways Marina Del Rey Channel
Schools
Land Use Public Right-of-Way

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Biological Resources; Geologic/Seismic; Noise; Public Services; Sewer Capacity

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 4; Department of Parks and Recreation; Native American Heritage Commission; Department of Health Services; Department of Fish and Game, Region 5; California Energy Commission; Department of Water Resources; Caltrans, District 7; Caltrans, Division of Aeronautics; State Water Resources Control Board, Division of Loans and Grants; California Coastal Commission; Department of Fish and Game, Marine Region; State Lands Commission

Date Received 05/02/2005 **Start of Review** 05/02/2005 **End of Review** 06/10/2005

Note: Blanks in data fields result from insufficient information provided by lead agency.

sources Agency

Resources Agency
Nadell Gayou

Dept. of Boating & Waterways
David Johnson

California Coastal Commission
Elizabeth A. Fuchs

Colorado River Board
Gerald R. Zimmerman

Dept. of Conservation
Roseanne Taylor

California Energy Commission
Environmental Office

Dept. of Forestry & Fire Protection
Allen Robertson

Office of Historic Preservation
Wayne Donaldson

Dept of Parks & Recreation
B. Noah Tilghman
Environmental Stewardship Section

Reclamation Board
DeeDee Jones

Santa Monica Mountains Conservancy
Paul Edelman

S.F. Bay Conservation & Dev't. Comm.
Steve McAdam

Dept. of Water Resources
Resources Agency
Nadell Gayou

h and Game

Depart. of Fish & Game
Scott Flint
Environmental Services Division

Fish & Game Region 1
Donald Koch

Fish & Game Region 2
Banky Curtis

Fish & Game Region 3
Robert Floerke

Fish & Game Region 4
William Laudermilk

Fish & Game Region 5
Don Chadwick
Habitat Conservation Program

Fish & Game Region 6
Gabrina Gatchel
Habitat Conservation Program

Fish & Game Region 6 I/M
Tammy Allen
Inyo/Mono, Habitat Conservation Program

Dept. of Fish & Game M
George Isaac
Marine Region

Other Departments

Food & Agriculture
Steve Shaffer
Dept. of Food and Agriculture

Depart. of General Services
Public School Construction

Dept. of General Services
Robert Sleppy
Environmental Services Section

Dept. of Health Services
Veronica Ramerlz
Dept. of Health/Drinking Water

Independent Commissions,Boards

Coachella Valley Mountains Conservancy

Delta Protection Commission
Debby Eddy

Office of Emergency Services
Dennis Castrillo

Governor's Office of Planning & Research
State Clearinghouse

Native American Heritage Comm.
Debbie Treadway

Public Utilities Commission
Ken Lewis

San Gabriel & Lower LA Rivers

San Joaquin River Conservancy

State Lands Commission
Jean Sarino

Tahoe Regional Planning Agency (TRPA)
Cherry Jacques

Business, Trans & Housing

Caltrans - Division of Aeronautics
Sandy Hesnard

Caltrans - Planning
Terri Pencovic

California Highway Patrol
John Olejnik
Office of Special Projects

Housing & Community Development
Lisa Nichols
Housing Policy Division

Dept. of Transportation

Caltrans, District 1
Mike Eagan

Caltrans, District 2
Don Anderson

Caltrans, District 3
Jeff Pulverman

Caltrans, District 4
Tim Sable

Caltrans, District 5
David Murray

Caltrans, District 6
Marc Birnbaum

Caltrans, District 7
Cheryl J. Powell

Caltrans, District 8
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Caltrans, District 9
Gayle Rosander

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Tom Dumas

Caltrans, District 11
Mario Orso

Caltrans, District 12
Bob Joseph

Cal EPA

Air Resources Board

Airport Projects
Jim Lerner

Transportation Projects
Kurt Karperos

Industrial Projects
Mike Tollstrup

California Integrated Waste Management Board
Sue O'Leary

State Water Resources Control Board
Jim Hockenberry
Division of Financial Assistance

State Water Resources Control Board
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality

State Water Resouces Control Board
Steven Herrera
Division of Water Rights

Dept. of Toxic Substances Control
CEQA Tracking Center

Department of Pesticide Regulation

Regional Water Quality Control Board (RWQCB)

RWQCB 1
Cathleen Hudson
North Coast Region (1)

RWQCB 2
Environmental Document Coordinator
San Francisco Bay Region (2)

RWQCB 3
Central Coast Region (3)

RWQCB 4
Jonathan Bishop
Los Angeles Region (4)

RWQCB 5S
Central Valley Region (5)

RWQCB 5F
Central Valley Region (5)
Fresno Branch Office

RWQCB 5R
Central Valley Region (5)
Redding Branch Office

RWQCB 6
Lahontan Region (6)

RWQCB 6V
Lahontan Region (6)
Victorville Branch Office

RWQCB 7
Colorado River Basin Region (7)

RWQCB 8
Santa Ana Region (8)

RWQCB 9
San Diego Region (9)

Other _____

_____

_____

Last Updated on 3/11/05

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650 SOUTH SPRING ST., SUITE 200
LOS ANGELES, CA 90014-1911
213-847-8766

http://eng.lacity.org

NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT

Date: May 2, 2005

To: Interested Persons

The City of Los Angeles (City) will be the Lead Agency and will prepare an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act for the Venice Pumping Plant Dual Force Main Project (proposed project). The proposed project is located in the Venice and Westchester/Playa Del Rey community planning areas of the City of Los Angeles within Council District 11 (refer to project location map).

The proposed project includes the construction and installation of a new 54-inch diameter force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles.

The project's intent is to construct a second force main to be used in tandem with the existing force main for the purpose of fulfilling two key objectives:

(1) To expand the capacity of the Coastal Interceptor Sewer's force main segment from the Venice Pumping Plant to a connection in Playa Del Rey in the vicinity of Waterview Street, such that all project wet weather flows can be safely conveyed without future threats of spilling onto City streets and adjacent surface waters; and,

(2) To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

Proposed Alternatives:

Marquesas Way/Via Marina. From the Pumping Plant on Hurricane Street, the alignment would proceed east under the Grand Canal and along Marquesas Way, then southeasterly on Via Marina to the Marina Del Rey entrance channel. It would then cross under the Marina Del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long. This is the staff's preferred alignment.

Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed westerly to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina Del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is the shortest route – about 10,000 feet.

Dockweiler Beach to Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

Dockweiler Beach Alignment. From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south along the Dockweiler Beachfront to a point west of the junction structure in Vista Del Mar near Waterview Street. From this point the line runs east to the junction structure in Vista Del Mar near Waterview Street. This alignment is about 11,000 feet long.

Construction Methods: The alignments under consideration cross the Marina entrance channel and Ballona Creek channel, requiring about 1,800 feet of micro-tunneling under the two channels. Elsewhere along each alignment, two alternative construction methods are under consideration: open trench and micro-tunneling. While open trench construction costs less, micro-tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels and can facilitate mitigation of other impacts such as noise.

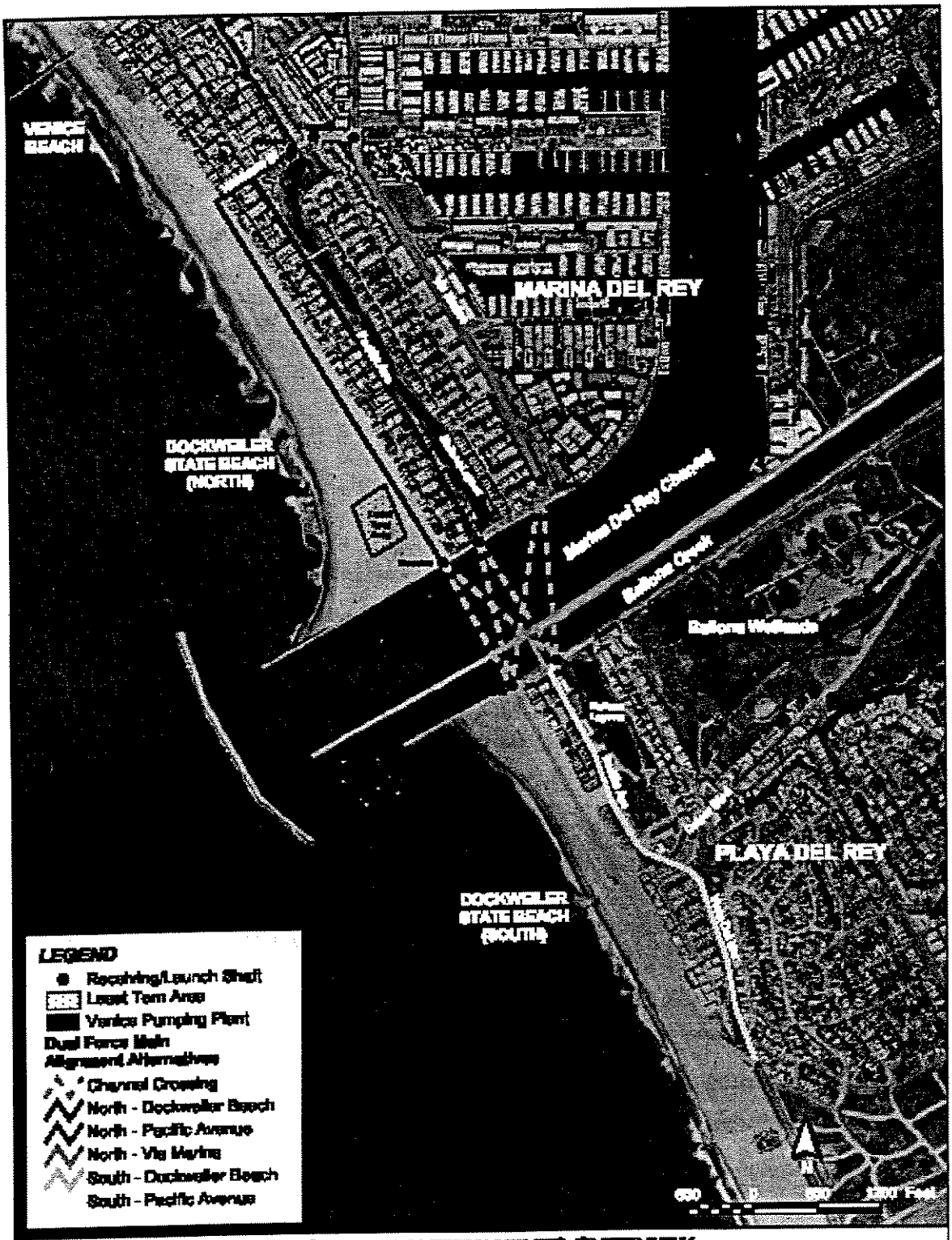
We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. We also need to know the views and concerns of interested organizations and persons in order to properly analyze the environmental impacts of the proposed project. Potential environmental impacts that may occur as a result of the proposed project include aesthetics, air quality, biological resources, cultural resources, geology/soils, hazards/hazardous materials, hydrology, land use/planning, noise, public services, and transportation/circulation impacts. An analysis of these potential environmental impacts and other potential impacts that could be

mitigated to a less-than-significant-level is provided in an Initial Study Checklist, which is attached or can be reviewed at the following: Venice-Abbot Kinney Memorial Library, 501 South Venice Boulevard, Venice, CA 90291; Westchester-Loyola Village Library, 7114 West Manchester Avenue, Los Angeles, CA 90045; or online at http://eng.lacity.org/techdocs/emg/Environmental_Review_Documents.htm

Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to:

James E. Doty
City of Los Angeles
Public Works, Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014



ALIGNMENT ALTERNATIVES OVERVIEW

URS | Project No.: 29870322 | Project: VENICE PUMPING PLANT DUAL FORCE MAIN | FIGURE 1

ADDENDUM TO THE
NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT
FOR THE VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT

Date: May 18, 2005

To: Interested Persons

Although shown in Figure 1, a description of the "Dockweiler Beach Alignment" (described below) was inadvertently omitted from the text. Please add the following:

Dockweiler Beach Alignment – From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south along the Dockweiler Beachfront to a point west of the junction structure in Vista Del Mar near Waterview Street. From this point the line runs east to the junction structure in Vista Del Mar near Waterview Street. This alignment is about 11,000 feet long.

CITY OF LOS ANGELES

INITIAL STUDY

(Article 1 – City CEQA Guidelines)

Date: **May 2, 2005**

Project Title: Venice Pumping Plant Dual Force Main

Lead Agency: City of Los Angeles
Department of Public Works
Bureau of Engineering

Contact Person: James E. Doty, Environmental Supervisor II
Environmental Management Group
650 Spring Street, Room 574
Los Angeles, CA 90014
(213) 847-8694

Project Location: The proposed Venice Pumping Plant Dual Force Main is located in the Venice and Westchester/Playa del Rey community planning areas of the City of Los Angeles (Figure 1: Project Location Map).

Project Sponsor: City of Los Angeles
Department of Public Works
Bureau of Engineering

General Zoning: General land use designations in the proposed project area are residential with corresponding residential and commercial zoning. Ballona Lagoon, Del Rey Lagoon, and Dockweiler Beach are lands designated as conservation and open space.

Council District: 11

Project Description:

The City of Los Angeles is proposing to construct and install a new force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a

Construction Methods: The alignments under consideration cross the Marina entrance channel and Ballona Creek channel, requiring about 1,800 feet of micro-tunneling under the two channels. Elsewhere along each alignment, two alternative construction methods are under consideration: open trench and micro-tunneling. While open trench construction costs less, micro-tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels and can facilitate mitigation of other impacts such as noise.

Unless otherwise stated, it is assumed that the project will be designed, constructed and operated following all applicable laws, regulations, ordinances and other formally adopted City standards (e.g., *Los Angels Municipal Code* and Bureau of Engineering *Standard Plans*). Also, this analysis assumes that construction will follow the uniform practices established by the Southern California Chapter of the American Public Works Association (e.g., *Standard Specifications for Public Works Construction* and the *Work Area Traffic Control Handbook*) as specifically adapted by the City of Los Angeles (e.g., The City of Los Angeles Department of Public Works *Additions and Amendments to the Standard Specifications For Public Works Construction* ("The Brown Book," formerly Standard Plan S-1610).

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services, and activities.

Environmental Setting

The proposed project is located on the immediate coastline and inland adjacent to the coastline in the southern portion of the community of Venice and in the community of Playa Del Rey (Figure 1: Project Location Map). The primary land uses in these areas are medium to high density residential with some light commercial designations, particularly in the Playa Del Rey and Marina Del Rey areas. Two Environmentally Sensitive Habitat Areas (ESHA's) are located in close proximity to most of the potential alignments; the Grand Canal/Ballona Lagoon in the Venice and Marina Del Rey area, and the Del Rey Lagoon situated in Playa Del Rey. A large protected breeding ground of the Least Tern exists on Venice Beach just north of the Marina Del Rey entrance channel and adjacent to one of the proposed alignments – this species is both a state and federally listed endangered species. The birds use the area between the months of March and September to raise their young. The colony is one of the most successful and important California Least Tern colonies on the west coast.

Previous CEQA Documentation:

In January 2001, the City completed a Consistency Assessment, which analyzed a proposed sewer main installation along Pacific Avenue and found it to be consistent with the City's Programmatic Environmental Impact Report certified in 1994 for the Wastewater Collection System Improvement Program. On February 10, 2001, City staff made a presentation to citizens and the Marina Peninsula Neighborhood Association. During the public review of the Consistency Assessment, citizens expressed concern about the potential impacts of the Pacific Avenue Alignment. Concerns over potential

ENVIRONMENTAL CHECKLIST

Introduction

The following is the environmental checklist form presented in Appendix G of the CEQA Guidelines, as updated to reflect the Resource Agency's September 7, 2004 amendment of the State CEQA Guidelines, including Section 15065, Mandatory Findings of Significance. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist that describes the potential impacts related to the Proposed Project. For potentially significant impacts, project-specific mitigation measures are recommended that will reduce the adversity of these impacts.

For this checklist, the following designations are used:

- **Potentially Significant Impact:** An impact that could be significant and for which no adequate mitigation measure has been identified. Significant impacts that cannot be mitigated will require the preparation of an EIR.
- **Potentially Significant Unless Mitigation Incorporated:** An impact that requires mitigation to reduce the impact to a less-than-significant level.
- **Less-Than-Significant Impact:** Any impact that would not be considered significant under CEQA relative to existing standards.
- **No Impact:** The project would not have any adverse impact.

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
1. **AESTHETICS** *Would the project:*				
a. Have a substantial adverse effect on a scenic vista? Reference: 16, 20	X			
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway? Reference: 16, 20, and Caltrans web site:	X			

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
2. 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 farmland. Would the project:*				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? Reference: 5,16, 21				X
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? Reference: 5,16, 21				X
c. Involve other changes in the existing environment, which, due to their location or nature, could result in loss of Farmland, to non-agricultural use? Reference: 5,16,21				X

Discussion

a-c. All proposed improvements are located on City of Los Angeles and/or County of Los Angeles-owned land, and no existing agricultural operations would be displaced through this project. The Farmland Mapping and Monitoring Program does not

Discussion

a. The South Coast Air Quality Management District (AQMD) is the air pollution control district with jurisdiction over the South Coast Air Basin, which includes the proposed project site. The South Coast AQMD is responsible for the Air Quality Management Plan (AQMP) for the Basin, which is a comprehensive air pollution control program for attaining the state and federal ambient air quality standards. The proposed project is therefore subject to the AQMP. The City has an adopted Air Quality Element that is part of the General Plan. The Air Quality Element contains policies and goals for attaining state and federal air quality standards, while simultaneously facilitating local economic growth, and it includes implementation strategies for local programs contained in the AQMP. A significant impact would occur if the proposed project was inconsistent with the AQMP or the Air Quality Element of the City's General Plan.

   The Venice Community Plan, one of the City's 35 community plan areas of the General Plan, recognizes the need for enhancing public services and infrastructure. Since the proposed project would serve the existing and intended future demand of the regional population, the project would be consistent with the community plan's objectives. Furthermore, the proposed project would not induce regional employment or population growth which might serve to exacerbate local concentrations of air pollutants. The project would not require an amendment to the Community or General Plan and would therefore be consistent with the Air Quality Element. The project will result in a ***Less-Than-Significant Impact.***

b. The City of Los Angeles is in the jurisdiction of the South Coast Air Quality Management District (AQMD). The South Coast AQMD is a non- attainment area for ozone, carbon monoxide, and fine particulate matter. In determining attainment and maintenance of air quality standards, the South Coast AQMD has established thresholds of significance for these and other criteria pollutants. A significant impact would occur if the project resulted in substantial emissions during construction or operation which would exceed the established thresholds.

   Potential adverse air quality impacts could occur during the course of construction. Construction related air quality impacts may include emissions from heavy duty equipment and off-road mobile sources (construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, materials transport, etc). Operation related impacts due to equipment may potentially exceed South Coast AQMD thresholds for emissions due to the estimated construction schedule. Other air quality impacts could result from airborne dust. Under these circumstances, there could be ***Potentially Significant Impacts.***

c. A significant impact would occur if the project's incremental air quality effects are viewed in connection with the effects of past, present, and future projects. As indicated in 3(b) above, the proposed project is located within the South Coast Air Basin which is a non-attainment area for ozone, fine particulate matter, and carbon monoxide. The potential for the project to exceed South Coast Air Quality Management District (AQMD) thresholds during some stages of construction may occur and is specific to conditions during construction as well as location. High levels of emissions may be released from construction related equipment over an

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? Reference: 22				
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites? Reference: 14, 20	X			
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? Reference: 16, 20		X		
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan? Reference: 16, 20		X		

Discussion

a - d. The project resides in an area of significant biodiversity due to the physical characteristics of the land. The Venice Pumping Plant is located adjacent to Grand Canal and Ballona Lagoon. A portion of one of the alternative pipeline alignments runs easterly under Grand Canal. Impacts associated with construction noise and possible channel intrusion would be significant during the course of construction. Both the east and west banks of the Ballona Lagoon, as well as portions of lands along Pacific Avenue are within the bounds of the sixteen acre Ballona Lagoon Marine Preserve. The west bank has been regularly disturbed by human activity and contains vacant lots purchased by the City for habitat protection, and open space. Site vegetation includes a mixture of predominantly exotic vascular plant species, including a number of invasive weedy species. Ruderal plant species are prominent in this area. The east bank has been restored and re-vegetated with native California plant species.

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
remains, including those interred outside of formal cemeteries. Reference: 1, 14				

Discussion

a. Impacts to potential historic sites within the alternatives project areas could result from extensive exposure to vibration during construction and would be specific to location and the existing condition of an exposed building and its proximity to the construction activity. Since structural impacts are possible under certain conditions, impacts could be ***Potentially Significant Unless Mitigation Is Incorporated.***

b-d. Although no archaeological or paleontological resources are anticipated within the project areas, it is possible that they may be unearthed during excavation of the project. Therefore, the construction of the proposed project could have a ***Potentially Significant Impact Unless Mitigation Is Incorporated***.

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
Reference: 6, 14, 17				
d. Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? Reference: 3, 14, 17				X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? Reference: 17				X

Discussion

a. & c. The proposed project sewer alignments are located approximately 3.5 miles from the Palos Verdes Fault Zone. A movement magnitude of 7.1 (M) and peak ground acceleration of 0.4g were used as seismic parameters in a year 2000 liquefaction analysis conducted for the City Bureau of Engineering by Dames and Moore to identify seismic conditions. Studies indicated that the Pacific Avenue area contains a liquefaction zone, which could result in settlement and lateral spread. Groundwater is likely to be encountered at invert depths associated with placement of the sewer main depending on which alignment is chosen for the project. The significance of impacts associated with construction activities to the geologic integrity of the soils is specific to the alignment chosen for placement of the sewer main. Although the overall results of the geotechnical investigation concluded that it is feasible to construct within the area provided recommendations presented in the report are incorporated into the sewer design and are implemented during construction, the project may be ***Potentially Significant in certain areas and means should be taken to insure geotechnical stability prior to the installation of the chosen alignment.***

b. Impacts associated with soil erosion would be specific to the chosen alignment for the sewer main, however with proper construction Best Management Practices (BMPs), impacts would be ***Potentially Significant Unless Mitigation Is Incorporated.***

d. During construction, construction workers could potentially be exposed to seismic hazards in open trenches and access shafts and tunnels. Standard shoring and support practices as well as compliance with Cal-OSHA requirements would reduce

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
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? Reference: 16		X		
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? Reference: 16				X
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? Reference: 20		X		
h. Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? Reference: 14				X

Discussion

a, b, c, & d. The project's channel alignment is located mostly within the administrative bounds of the Playa del Rey oil field. There are numerous plugged and abandoned wells within the project's boundaries, particularly in the Northern portions of the project. Potential adverse impacts to public safety or the environment could occur from the exposure or damaging of plugged and abandoned oil wells during project excavation and/or micro-tunneling, therefore impacts would be ***Potentially Significant Unless Mitigation Is Incorporated.***

e. The proposed project is within two miles of the Los Angeles International Airport. The EIR will further address this issue in detail.

f. The project is not within the vicinity of a private airstrip.

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
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? Reference; 1, 20				
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems to control? Reference: 20			X	
f. Otherwise substantially degrade water quality? Reference: 1, 20			X	
g. Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? Reference: 15, 20				X
h. Place within a 100-year floodplain structures which would impede or redirect flood flows? Reference: 15, 20				X
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? Reference: 15, 20				X
j. Inundation by seiche, tsunami, or mudflow? Reference: 14, 20				X

Discussion

a. Water quality standards are set based on the beneficial uses of the receiving water in which the City's treated effluent is discharged and the water quality objectives or criteria that are associated with protecting the particular beneficial uses designated

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
9. LAND USE AND PLANNING *Would the project:*				
a. Physically divide an established community? Reference: 16				X
b. Conflict with any applicable land use plans, policies, or regulations 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? Reference: 16, 20		X		
c. Conflict with any applicable habitat conservation plan or natural communities conservation plan? Reference: 16, 20		X		

Discussion

a. Construction activities could temporarily alter the physical layout of streets in the project area, but the project will not cause a permanent division or disruption within the community.

b. See comment in 4 (f), above.

c. See comment in 4 (f), above.

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
11. 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? Reference: 1, 10, 16	X			
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? Reference: 16	X			
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? Reference: 20				X
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? Reference: 20	X			
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?				X

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Is Incorporated	Less-Than-Significant Impact	No Impact
12. POPULATION AND HOUSING *Would the project:*				
a. Induce substantial 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)? Reference: 16, 20				X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? Reference: 16, 20				X
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? Reference: 16, 20				X

Discussion

a.-c. The Venice Community Plan, one of the City's 35 community plan areas of the General Plan, recognizes the need for enhancing public services and infrastructure. Since the proposed project would serve the existing and intended future demand of the regional population, the project would be consistent with the community plan's objectives. Furthermore, the proposed project would not induce regional employment or population growth which might serve to exacerbate local concentrations of air pollutants. The project would not require an amendment to the Community or General Plan and would therefore be consistent with the Air Quality Element. ***No impact***

traffic could occur on upland alignment areas, therefore could cause ***Potentially Significant Impacts.***

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
14. 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 facility would occur or be accelerated? Reference: 20				X
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? Reference: 20				X

Discussion

a. Since the project will not include residential uses, there will be no increase in the use of existing neighborhood and regional parks or the requirement for the construction or expansion of recreational facilities Therefore, the proposed project would have ***No Impact.***

b. Since the project will not include residential facilities, there will be no requirement for the construction or expansion of recreational facilities, therefore the proposed project would have ***No Impact.***

Discussion

a,b,f. The proposed project would result in a slight increase in traffic levels due to construction. Although impacts will be temporary in nature, the duration of construction is estimated to take eighteen to twenty-four months. The project may impose a change on traffic circulation specific to the chosen alignment. Adequate parking would be significantly impacted at and near proposed construction equipment lay-down areas both north and south of the channel. Parking available to Dockweiler beach south of the Ballona Creek would be adversely effected during construction. Traffic in the upland areas may cause congestion in and around the construction area and is specific to the chosen alignment therefore, the project would result in ***Potentially Significant Impacts.***

c. Change in air traffic patterns, including either an increase in traffic levels or a change in location that could result in substantial safety risks do not apply to this project. ***No Impact***

d. The project will not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses. ***No Impact***

e. Impact resulting in inadequate emergency access would occur without proper coordination prior to construction and are specific to the chosen alignment therefore, impacts are ***Potentially Significant Unless Mitigation Is Incorporated.***

g. The project would not conflict with adopted policies supporting alternative transportation such as bus turnouts, bicycle racks, etc. ***No Impact.***

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? Reference: 20				
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? Reference: 20				X
g. Comply with federal, state, and local statutes and regulations related to solid waste? Reference: 20				X

Discussion

a. The proposed project is an upgrade to an existing major interceptor sewer that outlets at Hyperion Treatment Plant. It is not expected to alter or exceed the wastewater treatment requirements currently in place.

b. No water or wastewater facilities would be required in addition to the proposed project. ***No Impact.***

c. The proposed project will not alter storm water infiltration or runoff. Any impact would be limited to dewatering. If dewatering is necessary, discharges would be regulated by a National Pollution Discharge Elimination System permit. Therefore, impacts would be ***Less Than Significant.***

d. The operation of the expanded sewer main would require no increase in water usage. Therefore, ***No Impact*** is anticipated.

e. The project itself involves the expansion of the existing capacity of the sewer system to handle the peak overflows and is in accordance with the City's General Plan. Therefore, ***No Impact*** has been identified.

f. Construction of the proposed project may require the net export of soil from open trench and/or tunneling. Excavated soil is typically taken to landfills which use the soil as waste-cell covering, or is sold to brokers to be used as fill. ***No Impacts*** *have been identified.*

Issues	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less-Than-Significant Impact	No Impact
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? Reference: 20		X		

Discussion

a. The proposed project has the potential to significantly degrade the environment or result in impacts to aesthetics, air quality, biological resources, cultural resources, geology/soils, hazards/hazardous materials, hydrology, land use/planning, noise, public services, and transportation/circulation.

b. The project has the potential to result in cumulative air quality, biological resources, cultural resources, noise, and traffic impacts during construction when taken together with future planned projects in the area. The EIR will evaluate temporary and short-term impacts related to construction in the surrounding area. The EIR will also identify feasible mitigation measures to reduce impacts to a level of insignificance.

c. Surrounding land uses in the immediate vicinity would be affected by short-term air quality, noise, and traffic impacts during construction. The EIR would evaluate these impacts and will identify feasible mitigation measures to reduce impacts to a level of insignificance.

DETERMINATION OF SIGNIFICANCE:

On the basis of this initial evaluation, I find that the Proposed Project MAY have a significant effect on the environment, and an Environmental Impact Report is required.

Reviewed By: _____ _____
James E. Doty Date
Environmental Supervisor II

Approved By: _____ _____
Ara J. Kasparian, Ph. D., Manager Date
Environmental Management Group

Maps. Community Panel number 060137 00__ C. MAPLA internet version at http://www.cityofla.org/

16. General Plan. City of Los Angeles, Dept. of City Planning. General Plan. Including community plans and technical elements.

17. Geologic Map. California Dept. of Conservation, Div. of Mines and Geology. Geologic Map of California: Los Angeles Sheet.

18. Groundwater Map. Upper Los Angeles River Area Watermaster, Spring 1990. Upper Los Angeles River Area Groundwater Contour Map.

19. SCAQMD. South Coast Air Quality Management District, 1993. CEQA Air Quality Handbook.

20. Thresholds. City of Los Angeles, Dept. of Environmental Affairs. L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles. 1998 Draft.

21. U.S.G.S. Topo. U.S. Dept. Interior Geological Survey. 7.5-minute Map Series (Topographic).

22. Wetlands Inventory. U.S. Dept. Interior Fish & Wildlife Service. National Wetlands Inventory. Overlays for U.S. Dept. Interior Geological Survey. 7.5-minute Map Series (Topographic).

VENICE PUMPING PLANT DUAL FORCE MAIN DRAFT EIR NOTICE OF PREPARATION – PUBLIC AGENCY LIST

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Grassroots Venice Neighborhood Council
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President
Villa Del Rey Homeowners Association
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Ms. Marcia Hanscom
Executive Director
Wetlands Action Network
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Malibu, CA 90265

Venice Pumping Plant Dual Force Main EIR
NOP Comment Letters Log
June 10, 2005

1. State Clearinghouse
   1400 Tenth Street
   P.O. Box 3044
   Sacramento, CA 95812-3044
   Attn: Scott Morgan, Project Analyst
   (916)445-0613 Phone
   (916)323-3018 Fax
   May 2, 2005

2. South Coast Air Quality Management District
   21865 Copley Drive
   Diamond Bar, CA 91765-4182
   Attn: Steve Smith, Ph.D., Program Supervisor, CEQA Section
   (909) 396-2000
   May 10, 2005

3. Metropolitan Transportation Authority
   One Gateway Plaza
   Los Angeles, CA 90012-2952
   Attn: Susan Chapman, Program Manager, Long Range Planning
   (213) 922-2000
   May 16, 2005

4. Metro South Bay
   680 Knox Street, Suite 150
   Torrance, CA 90502
   Attn: Scott Greene, Planning Manager
   (310) 225-6022
   GreeneS@metro.net
   May 20, 2005

5. Mark Van Gessel
   VanGesselM@metro.net
   May 25, 2005

6. Richard Nickey
   110 Rees Street
   Playa del Rey, CA 90293
   richard_nickey@hotmail.com
   May 27, 2005

Venice Pumping Plant Dual Force Main EIR
NOP Comment Letters Log
June 10, 2005

7. City of Los Angeles
Department of City Planning
200 North Spring Street, Room 621, Mail Stop No. 395
Los Angeles, CA 90012
Attn: Helene Bibas, City Planner, Coastal Planning Unit
June 1, 2005

8. Hannes Vilhjalmsson
6535 Vista Del Mar #A
Playa Del Rey, CA 90293
June 1, 2005

9. State of California
Department of Fish and Game
4949 Viewridge Avenue
San Diego, CA 92123
Attn: Morgan Wehtje
(626) 797-3170
June 1, 2005

10. Carol Becker Kapp, Member of the Board of Directors West Beach Playa del Rey Property Owners Association
127 Rees Street, Playa Del Rey, CA 90293
3516 Merrimac Avenue, San Diego, CA 92117
June 1, 2005

11. County of Los Angeles
Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331
(626) 458-5100
Attn: Manuel Del Real, Asst. Dep. Dir., Waterworks & Sewer Maintenance Div.
June 10, 2005

12. County of Los Angeles
Beaches and Harbors
13837 Fiji Way
Marina del Rey, CA 90292
Attn: Joseph Chesler, AICP, Chief of Planning
(310) 305-9503
June 9, 2005

COMMUNITY RESPONSES

127 Rees Street
Playa del Rey, Ca 90293
June 1, 2005

3516 Merrimac Ave.
San Diego, Ca. 92117

Dear James Doty, Public Works

Re: Venice Pumping Plant Dual Force Main Project

As the EIR is prepared for the above named project, I respectfully make the following observations and suggestions. It is difficult to make suggestions for items to be included in an EIR for a project that has 5 possible routes. Each route has its own set of environmental issues that need to be addressed in the EIR.

I recommend that the EIR be constructed after The City and The Community get together and consult with each other using information that was not available on May 24, 2005. We need to know how much each plan would cost and then we can make a case for one route. Is there an "Initial Study" available for the public to study?

Since we were told that we must submit responses by June 10, 2005, I want to go on record as supporting The Dockweiler Alignment. There is an existing pipe already in place on the beach. It would be most efficient to open trench or tunnel. I suggest that the City archives be checked to see what the issues were when the original pipe was laid.

This would , when finished, leave the "old" pipe to use in an emergency if there is a problem in the future with the"2007" pipe. I am suggesting that old one should be connected with new upgraded connectors. The old pipe should be lined with plastic or ceramic liners so that it could be used either in emergency or to accommodate larger demand in the next 30 years!!!! Think ahead and dig once, save money!! This would double the volume without another project.

The Dockweiler Alignment is efficient . It has far more benefits as far as the human beings are concerned who live in the area affected. There are no Gas Mains to be severed on the beach. Traffic disruption would be of a minimum given that there are no cars on the beach!! The Dockweiler Alignment would eliminate traffic and parking impacts.

Items to be considered in the EIR and in the Building Plan

Playa del Rey and Venice should be considered High Density residential. Parking is at a premium as a result of this High Density.

The total beach route would eliminate disruption of traffic, parking, gas mains, and ingress and egress to living units as well as businesses.

Night work is not an option. This project should be treated as if it were to pass by the Mayor's home.We deserve the same respect as elected officials.

Air Quality
By going only along the beach alignment; dust and dirt could be contained by putting easy ups with skirts to control dust and somewhat the noise factor. This method will impact the least amount of people .

Geological
The beach route would be further away from the bluffs along Vista del Mar. Vibrations from equipment could trigger land slides. The hill properties as well as those in The Jungle appear on City Earthquake maps as being areas of liquification. The project could potentially result in on or off site land slides, lateral spreading, liquification of collapse. Good planning and engineering can not predict a landslide. Early 2005 saw the ruination of the bluff area of La Conchita in Ventura. Today, June 1, 2005 The Blue Bird Canyon area of LaGuna Beach lost nine houses and twenty-one were seriously damaged. There is no report available of how much other damage was done. This is an example of what can happen on the bluffs given the amount of rain that we had this past winter. Planning is the key. Does the City have enough Liability insurance to cover similar happenings that could be triggered by vibrations of equipment as described in the routes that would proceed open trench in the streets?
The project could be a year (or more) of seismic that would ultimately yield significant impact toward unknown locations on either side of

Vista del Mar. The use of open trench or tunneling on the beach would eliminate disasters.

Hazards and Materials
The beach route would reduce the amount of exposure to Hazardous waste issues. The City can use a large machine, such as the one shown at the scopiing meeting, to clean the sand and materials and return them to the original place.

Water--No matter which location is chosen, the project needs a"Weather Eye". What plans and protections are in place in case of a storm? There should be diligent attention to Moon, Tide, and Winds and Rain. Significant storms in 1983 and 1998 and 2005 would have wreaked havoc if this project were under way without plans. It is not enough to say that the crew does not work on rainy days!!! There must be a plan with emergency pumps and other contingencies. Public Works must have a written plan that will be shared at a Community meeting in which LAPD, LAFD, LA Beaches and Harbors and The Coast Guard will be present to present a Coordinated Response Plan for water and other emergencies that may arise.
There is limited access to both The Lagoon and The Jungle. Access for safety vehicles must be part of the Safety Plan. The community should have a copy of the plan.

Noise
The least exposure to noise will be via the Beach Alignment!!! Let us go back in history---The Thompson Pumping Plant was so loud and long ranged that The City actually paid for people to live and work elsewhere.

Parking
Parking is always an ongoing need in Venice and Playa del Rey.In the Jungle, the Parking strip that runs adjacent Vista del Mar to the west and southerly from Montreal to Surf Alley---is PARKING for beach goers in the day and for locals at night. This parking provides Public Access to the Beach. The parking should not be disrupted. It must be preserved no matter what is being improved.

Esthetics
140 Hurricane---City Pump Plant needs to be esthetically improved!!! The Thompson Pumping Plant was totally improved on the facade and the landscaping. This project should be treated in the same manner. Presently, the Plant is a blight and an embarrassment to the Neighbors.

The Bike Path Must be respected. No equipment should be operated on or stored on the cement. LA City owns LAX--store supplies there. Rent space on the unused Dockweiler Parking lots from LA County. The Jungle strip is not to be used!!!

I support The North and South Dockweiler Alignment as the most benign . No matter which route is taken, Alternate Plans must be developed prior to the Problem. It is unacceptable to have a repeat of THE THOMPSON PUMPING PLANT FIASCO. The City owes this community a well planned project with no glitches.

Carol Kapp

Property Owner, Resident, Member of The Board of Directors
West Beach Playa del Rey Property Owners Association

Carol Becker Kapp
127 Rees St.
Playa del Rey, CA
90293-7661

From: Helene Bibas
To: Irene Paul
Date: 6/1/2005 5:58:12 PM
Subject: venice pumping plant eir

Hi Irene,
I was informed about the yesterday's meeting only today. It was held up at the exec. office since May 5!
In the future, please forward correspondance or copies or any other notification concerning Venice to me if possible
H. Bibas, City Planner
Room 621, City Hall
MS 395
The other concern I have is compliance with the Venice Coastal Commission Certified Land Use Plan (2001)- That also should be addressed in the EIR.
Thanks Helene

From: Environment User
To: richard nickey
Date: 5/27/2005 12:20:48 PM
Subject: Re: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT

Thank you for your comments. We will address your concerns in the Draft EIR.

>>> "richard nickey" <richard_nickey@hotmail.com> 5/27/2005 12:16:32 PM >>>
Thank you for the informative and congenial presentation related to the subject project as it might impact my Playa del Rey neighborhood.
I am a thirty five year resident of "The Jungle" neighborhood adjacent to Vista del Mar.
I feel that the beach alternative is the best solution for the project.
It would not disrupt to any major degree traffic in the area.
I understand that open trenches will be covered sequentially as the new pipes are installed.
Considerations must be given to the bike path, volley ball activities, public access and uTse of the beach, protected bird locations, etc.
The Vista del Mar alternative has some potentially serious draw backs.Morning and evening traffic congestion and grid lock. A relatively small project providing drive way access to/from Vista del Mar and the condominiums located at the southern edge of our neighborhood resulted in traffic grid lock for miles on Vista del Mar and Culver Boulevard during the construction period.
The neighborhood parking area adjacent to Vista del Mar would likely be impacted.This would have a negative effect on day time beach goers access to the beach and evening resident parking----parking now is a limited resource.
Thank you for your time and interest!Richard Nickey, 110 Rees Street, Playa del Rey 90293

From: "Van Gessel, Mark" <VanGesselM@metro.net>
To: "'environment@eng.lacity.org'" <environment@eng.lacity.org>
Date: 5/25/2005 2:40:22 PM
Subject: Last evenings meeting on Sewer Project

Andrea:

That was a very productive meeting last evening and I was happy to see a project team that appears to really want to evaluate the project proposed alignments.

The presentation that was made was also very interesting.

Is it possible to get a copy of the PowerPoint presentation?

Thanks

Mark Van Gessel

AGENCY RESPONSES

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Code	Salutation	First Name	Last Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-mail	Website	Comments
ENV	Mr.	Bruce	Robertson		Ballona Valley Preservation League	12228 Venice Blvd. Box 500	Los Angeles	CA	90066	(310) 398-5511		Bruce@BallonaWetlands.org	nawetlands.org/	
ENV	Ms.	Jina	Jani		Ballona West Bluffs Conservancy	8117 W. Manchester Ave. # 345	Playa del Rey	CA	90293	(310) 301-6663		jina@westbluffs.com		
ENV	Ms.	Rosemary	Sostarich		Ballona Wetlands Foundation	LMU, North Hall, 1 LMU Dr, MS 8160	Los Angeles	CA	90045	(310) 342-0100	(310) 342-0053	bwf@ballona-wetlands.org	na-wetlands.org/	
GOV	Ms.	Teresa	Henry	District Manager	California Coastal Commission - South Coast District Office	200 Oceangate, 10th Floor	Long Beach	CA	90802	(562) 590-5071	(562) 590-5084			
GOV					California Department of Conservation	801 K Street, MS 24-01	Sacramento	CA	95814	(916) 322-1080	(916) 445-0732			
GOV					California Department of Fish and Game	1416 Ninth Street	Sacramento	CA	95814					
GOV		Tom	Tanner	Superintendent	California Department of Parks and Recreation - Angeles District	1416 9th Street	Sacramento	CA	95814	(213) 620-6182				
GOV	The Honorable	Mike	Gordon	Assemblyman	California State Assembly-53rd District	1700 E Walnut Ave, Suite 601	El Segundo	CA	90245	(310) 615-3515		mbly.ca.gov	assembly.ca.go	
GOV	The Honorable	Sheila	Kuehl	State Senator	California State Senate, District 23	10951 W Pico Blvd. #202	Los Angeles	CA	90064	(310) 441-9084	(310) 441-0724	Sheila.Kuehl@sen.ca.gov	sen.ca.gov/sen	
GOV	The Honorable	Deborah	Bowen	State Senator	California State Senate, District 28	2512 Artesia Blvd., #200	Redondo Beach	CA	90278	(310) 318-6994	(310) 318-6733	senator.bowen@sen.ca.gov	sen.ca.gov/sen	
GOV				IGR/CEQA Branch	Caltrans District 7	100 S Main St	Los Angeles	CA	90012	(213) 897-3656				
GOV	The Honorable	Richard	Bloom	Mayor	City of Santa Monica	1685 Main Street, #200	Santa Monica	CA	90401	(310) 458-8201	(310) 458-1621	richard@bloomlaw.net	a-	
HOA				President	Cross Creek Village Homeowners Association	8650 Gulana Ave	Playa del Rey	CA	90293	(310) 821-7979				
NC	Mr.	Steve	Knight	Interim President	Del Rey Neighborhood Council	12820 Short Ave	Los Angeles	CA	90066	(310) 822-6115	(310) 822-8276	ET	borhoodlink.com	Thursday of
GOV					DTC - Los Angeles Hazardous Materials Laboratory	1449 W Temple St	Los Angeles	CA	90026	(213) 580-5796				
ENV	Ms.	Ruth	Lansford		Friends of Ballona Wetlands	7740 West Manchester Avenue, Suite 205	Playa del Rey	CA	90293	(310) 306-5994	(310) 574-9434	fbw@ballona.org	nafriends.org/	
NC	Ms.	Suzanne	Thompson	President	Grassroots Venice Neighborhood Council	P.O. Box 2224	Venice	CA	90294	(310) 821-6030		president@grvnc.org	http://grvnc.org/	
GOV	Mr.	Tom	Martin	Field Deputy	LA County 4th District Supervisor, Don Knabe	825 Maple Ave., Room 150	Torrance	CA	90503	(310) 222-3015	(310) 320-4058		/index.html	
LIB	Ms.	Claudia	Fishler	Community Library Manager	Lloyd Taber-Marina del Rey Library	4533 Admiralty Way	Marina del Rey	CA	90292	(310) 821-3415			ublib.org/libs/ma	
GOV				Division Manager	Los Angeles Bureau of Sanitation - Environmental Monitoring Division	12000 Vista Del Mar	Playa del Rey	CA	90293	(310) 648-5610				
GOV	The Honorable	Cindy	Miscikowski	Councilwoman	Los Angeles City Council, District 11	200 N. Main St., Room 407	Los Angeles	CA	90012	(213) 485-3811		miscikow@c11.ci.la.ca.us	.org/council/cd1	
GOV					Los Angeles City Fire Department-Bureau of Fire Prevention and Public Safety Hydrants and Access Unit	200 N Main St	Los Angeles	CA	90012	(213) 485-5971				
NAM	Mr.	Ron	Andrade	Director	Los Angeles City/County Native American Indian Committee	3175 W. 6th Street, Room 403	Los Angeles	CA	90020	(213) 351-5308	(213) 386-3995			
HIS	Ms.	Linda	Dishman	Executive Director	Los Angeles Conservancy	523 W. Sixth St., Suite 826	Los Angeles	CA	90014	(213) 623-2489	(213) 623-3909	ldishman@laconservancy.org	servancy.org	
GOV	The Honorable	Don	Knabe	Supervisor, Fourth District	Los Angeles County Board of Supervisors, Fourth District	822 Kenneth Hahn Hall of Administration, 500 W. Temple St.	Los Angeles	CA	90012	(213) 974-4444	(213) 626-6941	don@bos.co.la.ca.us	/index.html	
GOV	The Honorable	Zev	Yaroslavsky	Supervisor, Third District	Los Angeles County Board of Supervisors, Third District	821 Kenneth Hahn Hall of Administration-500 W. Temple St.	Los Angeles	CA	90012	(213) 974-3333	(213) 625-7360	zev@bos.co.la.ca.us		
GOV	Mr.	Stan	Wisniewski	Director	Los Angeles County Department of Beaches and Harbors	13837 Fiji Way	Marina del Rey	CA	90292	(310) 305-9522	(310) 821-6345	beaches@dbh.co.la.ca.us	o.la.ca.us/	
GOV				Division Head	Los Angeles County Department of Public Works, Flood Maintenance Division	P.O. Box 1460	Alhambra	CA	91802					
GOV				Transportation Planning Manager	Los Angeles County Metropolitan Transportation Authority	One Gateway Plaza	Los Angeles	CA	90012	(213) 922-1200				
GOV	Mr.	Harold	Helsley	Regional Planning Commissioner	Los Angeles County Regional Planning Commission-Supervisorial District 3	Hall of Records (13th Floor), 320 W Temple St	Los Angeles	CA	90012					
GOV	Mr.	Wayne	Rew	Chair	Los Angeles County Regional Planning Commission-Supervisorial District 4	Hall of Records (13th Floor), 320 W Temple St	Los Angeles	CA	90012	(213) 974-6411	(213) 626-0434			
GOV				Planning Director	Los Angeles Department of City Planning	200 N Spring St	Los Angeles	CA	90021					
GOV	Mr.	David	Attaway		Los Angeles Department of Parks and Recreation	1200 W 7th St, Suite 700	Los Angeles	CA	90017	(888) LA PARKS				
GOV				Area Commanding Officer	Los Angeles Police Department - Pacific Community Police Station	12312 Culver Blvd	Los Angeles	CA	90066	(310) 202-4501				
GOV					Los Angeles Regional Water Quality Control Board (Region 4)	320 West 4th Street, Suite 200	Los Angeles	CA	90013					
EDU				Superintendent	Los Angeles Unified School District 3	3000 S Robertson Blvd	Los Angeles	CA	90034					
HOA	Ms.	Cassandra	Parker		Marina City Club Homeowners Association	4333 Admiralty Way	Marina Del Rey	CA	90292	(310) 822-0611				
HOA	Mr.	Tim	Riley	Executive Director	Marina del Rey Lessee's Association	8537 Wakefield Ave.	Panorama City	CA	91402	(818) 891-0495		timriley7@adelphia.net		
HOA	Mr.	Bill	Farhood	Director	Marina Peninsula Neighborhood Association	520 Washington Blvd. #102	Marina del Rey	CA	90292			info@marinapeninsula.org	apeninsula.org/	
GOV	Mr.	Rodney	Mc Innis	Regional Administrator	National Marine Fisheries Service (NMFS) - Southwest Regional Office	501 W Ocean Blvd, Suite 4200	Long Beach	CA	90802	(562) 980-4005				
GOV	Ms.	Sandy	Kievman	Senior Field Deputy	Office of Councilwoman Cindy Miscikowski, District 11, West LA District Office	1645 Corinth Avenue, Room 201	West Los Angeles	CA	90025	(310) 575-8461	(310) 575-8305	skievman@council.lacity.org	.org/council/cd1	
GOV	Mr.	Michael	Bai	West LA Director	Office of Mayor James K. Hahn	7166 West Manchester Avenue	Westchester	CA	90045	(310) 410-1749	(213) 473-2079	mbai@mayor.lacity.org		
HOA				President	Playa Pacifica Townhomes Owners Association	7600 W Manchester Ave	Playa del Rey	CA	90293	(310) 649-1054				
HOA				Head, Coastal & Environmental Affairs	Playa Vista Properties	5510 Lincoln Boulevard, Suite 100	Playa Vista	CA	90094	(310) 448-4676				
HOA	Mr.	Harris	Levey	President	President's Row Neighborhood Association	911 Victoria	Venice	CA	90291	(310) 822-9067		pma@venicebeach.com		
GOV	Mr.	Jim	Clouet	Regional Contact	South Coast Air Quality Management District	21865 Copley Dr	Diamond Bar	CA	91765	(909) 396-3208		jclouet@aqmd.gov		
GOV					Southern California Gas Company	1701 Stewart St	Santa Monica	CA	90401	(310) 605-4181				
ENV	Mr.	Tom	Francis	Executive Director	The Ballona Wetlands Land Trust	P.O. Box 5623	Playa del Rey	CA	90296	(310) 264-9468	(310) 264-9412	landtrust@ballona.org	na.org/	
GOV					US Army Corps of Engineers	P.O. Box 532711	Los Angeles	CA	90053	(213) 452-3908				
LIB	Ms.	Lucille	Cappas	Senior Librarian	Venice – Abbot Kinney Memorial Branch Library	501 S. Venice Boulevard	Venice	CA	90291	(310) 821-1769	(310) 306-9124			
HOA	Ms.	Nadine	Parkos	President	Venice Canals Association	PO Box 893	Venice	CA	90294	(310) 827-6939				
HIS	Ms.	Mary Jane	Weil	President	Venice Historical Society	P.O. Box 12844	Venice	CA	90295	(310) 967-5170			eofamerica.org/	
HOA				President	Villa Del Rey Homeowners Association	8130 W Manchester Ave	Playa del Rey	CA	90293	(310) 823-2231				
HOA	Mr.	Darryl	Dufay		Voice of the Canals	P.O. Box 1692	Venice	CA	90294	(310) 822-9194		darryldu@aol.com		
NC	Ms.	Gwen	Vuchsas	Chair	Westchester/Playa del Rey Neighborhood Council	8726 S. Sepulveda Blvd. PMB A191	Los Angeles	CA	90045	(213) 473-7023		gvuchsas@ncwpdr.org	dr.org/	1st Tuesday of
ENV	Ms.	Marcia	Hanscom	Executive Director	Wetlands Action Network	PO Box 1145	Malibu	CA	90265	(310) 456-5612	(310) 456-5604	wetlandact@earthlink.net		
GOV	Mr.	James M.	Okazaki	Asst. Gen'l Mgr, Programs & Developmer	Los Angeles City Dept Transportation	221 S. Figueroa Street, Suite 600	Los Angeles	CA	90012					Mail Stop 725
GOV				Envir Health & Safety	L A Unified School District	355 S Grand Ave 6th Fl	Los Angeles	CA	90071	(213) 633-8430	(213) 633-7100			
GOV	Mr.	Peter M.	Douglas	Executive Director	California Coastal Commission	45 Fremont St, Suite 2000	San Francisco	CA	94105-	(415) 904-5200	(415) 904-5400			
GOV	Ms.	Deborah	Ruddock		California Coastal Conservancy	1330 Broadway, 11th floor	Oakland	CA	94612	(510) 286-4168	(510) 286-0470	druddock@scc.ca.gov		
GOV	Mr.	Dwight E.	Sanders	Division Chief Environmental Planning	California State Lands Commission	100 Howe Ave Suite 100 South	Sacramento	CA	95825-	(916) 574-1890		sanderd@slc.ca.gov		

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

June 1, 2005

Mr. James E. Doty
City of Los Angeles Bureau of Engineering
650 South Spring Street
Los Angles, CA 90014

Notice of Preparation for an Environmental Impact Report for
Venice Pumping Plant Dual Force Main
SCH # 2003031001, Los Angeles County

Dear Mr. Doty:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. The proposed project involves the construction and installation of a 52 inch diameter force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey, City of Los Angeles. Alignment alternatives to be considered in the DEIR propose to micro-tunnel beneath the Marina Del Rey Channel and Ballona Creek. One alternative passes within 100 feet east of the California least t nb em Venice Beach Colony. Installation on land will consists of open trenching and/or micro tunneling.

To enable Department staff to adequately review and comment on the proposed project we recommend the following information, where applicable, be included in the Draft Environmental Impact Report:

1. A complete, recent assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

   a. A thorough recent assessment of rare plants and rare natural communities, following the Department's Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

   b. A complete, recent assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Recent, focused, species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and U.S. Fish and Wildlife Service.

a. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380).

Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Compensation for unavoidable impacts through acquisition and protection of high quality habitat elsewhere should be addressed.

b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA (such as California least tern), either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent, ephemeral, or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic habitat values and maintain their value to on-site and off-site wildlife populations.

a. The Department requires a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant prior to any direct or indirect impact to a lake or stream bed, bank or channel or associated riparian resources. The Department's issuance of a SAA may be a project that is subject to CEQA. To facilitate our issuance of the Agreement when CEQA applies, the Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

ATTACHMENT 1

State of California
THE RESOURCES AGENCY
Department of Fish and Game
May 4, 1984

GUIDELINES FOR ASSESSING THE EFFECTS OF PROPOSED DEVELOPMENTS ON RARE AND ENDANGERED PLANTS AND PLANT COMMUNITIES

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how field surveys should be conducted and what information should be contained in the survey report.

I. Botanical surveys that are conducted to determine the environmental effects of a proposed development should be directed to all rare and endangered plants and plant communities. Rare and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare and/or endangered under the following definitions.

A species, subspecies or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy form one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition or disease. 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.

Rare plant communities are those communities that are of highly limited distribution. These communities may or may not contain rare or endangered species. The most current version of the California Natural Diversity Data Base's Outline of Terrestrial Communities in California may be used as a guide to the names of communities.

It is appropriate to conduct a botanical field survey to determine if, or the extent that, rare plants will be affected by a proposed project when:

a. Based on an initial biological assessment, it appears that the project may damage potential rare plant habitat;

b. Rare plants have historically been identified on the project site, but adequate information of impact assessment is lacking; or

c. No initial biological assessment has been conducted and it is unknown whether or not rare plants or their habitat exist on the site.

Botanical consultants should be selected on the basis of possession of the following qualifications (in order of importance):

a. Experience as a botanical field investigator with experience in field sampling design and field methods;

b. Taxonomic experience and a knowledge of plant ecology;

c. Familiarity with the plants of the area, including rare species; and

d. Familiarity with the appropriate state and federal statutes related to rare plants and plant collecting.

Field surveys should be conducted in a manner that will locate any rare or endangered species that may be present. Specifically, rare or endangered plant surveys should be:

a. Conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys should be scheduled (1) to coincide with known flowering periods, and/or (2) during periods of

ATTACHMENT 2

Sensitivity of Top Priority Rare Natural Communities in Southern California*

Sensitivity rankings are determined by the Department of Fish and Game, fornia Natural Diversity Data Base and based on either number of known rences (locations) and/or amount of habitat remaining (acreage). The rankings used for these top priority rare natural communities are as ows:

Less than 6 known locations and/or on less than 2,000 acres of habitat remaining

Occurs in 6-20 known locations and/or 2,000-10,000 acres of habitat remaining

Occurs in 21-100 known locations and/or 10,000-50,000 acres of habitat remaining

The number to the right of the decimal point after the ranking refers to legree of threat posed to that natural community regardless of the ranking. example:

S1.1 = very threatened
S2.2 = threatened
S3.3 = no current threats known

Sensitivity Rankings (February 1992)

Community Name

Mojave Riparian Forest
Sonoran Cottonwood Willow Riparian
Mesquite Bosque
Elephant Tree Woodland
Crucifixion Thorn Woodland
Allthorn Woodland
Arizonan Woodland
Southern California Walnut Forest
Mainland Cherry Forest
Southern Bishop Pine Forest
Torrey Pine Forest
Desert Mountain White Fir Forest
Southern Dune Scrub
Southern Coastal Bluff Scrub
Maritime Succulent Scrub
Riversidean Alluvial Fan Sage Scrub
Southern Maritime Chaparral
Valley Needlegrass Grassland
Great Basin Grassland
Mojave Desert Grassland
Pebble Plains
Southern Sedge Bog
Cismontane Alkali Marsh

Los Angeles County
Caring for Your Coast
Beaches & Harbors

To enrich lives through effective and caring service

Stan Wisniewski
Director

Kerry Gottlieb
Chief Deputy

June 9, 2005

Mr. James E. Doty
City of Los Angeles
Department of Public Works
Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT -- VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT

Dear Mr. Doty:

The Department of Beaches & Harbors has reviewed the Notice of Preparation (NOP) of the Draft EIR for the Venice Pumping Dual Force Main Project. The document identifies three possible alignments for the proposed project – two of the three lie within the County's operational jurisdiction and would result in considerable disruption to beach resources or to Marina del Rey (MDR) operations. Therefore, we propose that the City select the **Pacific Avenue Alignment** option.

The **Marquesas Way/Via Marina Alignment** would be problematic given the timeframe of the project and the expected MDR leasehold development along Via Marina. In addition, problems that would occur with the operation of a sewer main along Via Marina would significantly impact traffic and residential properties in this area. The NOP indicates that the Marina Peninsula Neighborhood Association (MPNA) has expressed concern about the potential impact of the Pacific Avenue Alignment within the City of Los Angeles. Be assured that the Marina del Rey Lessees Association and various MDR tenant groups would also have an opinion about the selection of the Marquesas Way/Via Marina Alignment, as it would have similar issues as those raised by the MPNA. As examples of potential disruption to Marina projects, construction is underway or approvals have been received for several MDR leasehold improvements, including Esprit Marina on Parcel 12 (Marquesas Way) and Parcel 15 (Via Marina & Panay Way), several Goldrich & Kest projects on Panay Way, Marina Harbor on Parcels 111/112 (Bora Bora Way), Del Rey Shores on Parcels 100/101 (entitlement process) and Parcels 9/10/FF (entitlement process).

The **Dockweiler Beach to Pacific Avenue Alignment** would also be undesirable. While this alignment would appear to be less disruptive to human activity, the construction activity would be disruptive to the established California Least Tern colony, to long-established beach volleyball activities and to our beach cleaning operations. It is true that the City and State own the beach where the alignment would run, but we believe that the temporary street disruption caused by selecting the parallel Pacific Avenue Alignment would avoid significant environmental impacts to

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

May 10, 2005

Mr. James E. Doty
City of Los Angeles
Public Works, Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

Dear Mr. Doty:

Notice of Preparation of a Draft Environmental Impact Report for
Venice Pumping Plant Dual Force Main Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion.

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the CARB Website at: www.arb.ca.gov.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not

Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012-2952
213.922.2000 Tel
metro.net

Metro

May 16, 2005

Mr. James E. Doty
City of Los Angeles
Public Works, Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

Dear Mr. Doty:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the Venice Pumping Plant Dual Force Main Project. This letter conveys recommendations from the Los Angeles County Metropolitan Transportation Authority (LACMTA) concerning issues that are germane to our agency's statutory responsibilities in relation to the proposed project.

A Traffic Impact Analysis (TIA), with both highway and freeway, and transit components, is required under the State of California Congestion Management Program (CMP) statute. The CMP TIA Guidelines are published in the "2002 Congestion Management Program for Los Angeles County", Appendix D. The geographic area examined in the TIA must include the following, at a minimum:

1. All CMP arterial monitoring intersections, including monitored freeway on/off-ramp intersections, where the proposed project will add 50 or more trips during either the a.m. or p.m. weekday peak hour (of adjacent street traffic); and
2. Mainline freeway-monitoring locations where the project will add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hour.

Among the required steps for the analysis of development-related impacts to transit are:

1. Evidence that, in addition to Metro, all affected municipal transit operators received the NOP for the Draft EIR;
2. A summary of the existing transit services in the area;
3. Estimated project trip generation and mode assignment for both morning and evening peak periods;
4. Documentation on the assumptions/analyses used to determine the number of percentage of trips assigned to transit;

5. Information on facilities and/or programs that will be incorporated in to the development plan that will encourage public transit usage and transportation demand management (TDM) policies and programs; and
6. An analysis of the expected project impacts on current and future transit services along with proposed project mitigation.

The MTA looks forward to reviewing the Draft EIR. If you have any questions regarding this response, please call me at 213-922-6908 or email at chapmans@metro.net. Please send the Draft EIR to the following address:

Metro CEQA Review Coordination
One Gateway Plaza MS 99-23-2
Los Angeles, CA 90012-2952
Attn: Susan Chapman

Sincerely,

Susan Chapman
Program Manager, Long Range Planning

From: "Greene, Scott" <GreeneS@metro.net>
To: "'environment@eng.lacity.org'" <environment@eng.lacity.org>
Date: 5/20/2005 3:53:04 PM
Subject: Venice Pumping Plant Dual Force Main Project

Regarding this project, we would like the EIR to address the impacts on public transportation in the Marina del Rey and Playa del Rey communities. Metro South Bay provides public transportation 7 days a week to these two communities. Turnaround loops in these communities are vital to our operations and if some of the streets are closed or partially closed during construction, we will need to find alternate turnaround loops and layover zones. We will also need advance notice of street closures so we can prepare notifications to our affected passengers.

Westbound Metro Line 108 operates on Pacific Av. and Via Marina in the peninsula area west of the Marina. If these streets are closed to our buses we will need an alternate route or detour that can accommodate a 40' bus without adding significant running time (more than two minutes) to the schedule. After the loop the westbound route ends at the layover zone on eastbound Washington Street nearside of Palawan Way. Eastbound Line 108 buses depart from this location.

Westbound Metro Line 115 operates on Pacific Av. in Playa del Rey between Convoy St. and Culver Bl. This is an essential segment of the turnaround loop so the bus can arrive at the layover zone on eastbound Culver opposite Esplanade. Due to narrow streets and tight turns, it may be difficult to find an alternate turnaround in Playa del Rey if Pacific Av. is closed.

Please contact us if you have questions. Thanks for considering our comments.

Scott Greene
Planning Manager
Metro South Bay
680 Knox St., Suite 150
Torrance, CA 90502
(310) 225-6022
greenes@metro.net

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08-0504

BPW 005-08

APPENDIX **B**
PUBLIC INVOLVEMENT PROCESS
VENICE PUMPING PLANT
DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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Venice Pumping Plant Public Scoping Meeting

The Department of Public Works for the City of Los Angeles is beginning the environmental review process for the Venice Pumping Plant dual force main project.

BUREAU OF ENGINEERING

Tuesday, May 24, 2005

6 p.m. to 8 p.m.

Westchester Municipal Building
Community Room
7166 W. Manchester Ave.
Westchester, CA 90045

6-6:30 p.m. - **Viewing of displays**

6:30 p.m. - **Presentation**

What is the purpose of a scoping meeting?

- *A scoping meeting is an opportunity to suggest environmental issues that should be addressed in the Environmental Impact Report (EIR).*
- *At this meeting, you can learn about the project alignment alternatives and other components of the proposed project.*

The City of Los Angeles is beginning the environmental review process for the extension of the Venice Pumping Plant force main, a pipe that transports sewage from the Venice Pumping Plant at 140 Hurricane Avenue in Venice.

The City proposes to build an additional force main to support and reinforce the local sewage system, which is in serious need of repair.

Why do we need an additional force main?

- *The existing force main is at maximum capacity and at risk of spilling sewage onto your city streets and nearby surface waters.*
- *A new force main will help prevent human and environmental health risks.*

To view a copy of the Notice of Preparation (NOP), please visit our project website at http://eng.lacity.org/projects/vpp. Copies are also available at the Venice Branch Library, 501 S. Venice Blvd., Venice, CA 90291. For questions regarding the project, please call the project hotline at (213) 629-0992.

BUREAU OF ENGINEERING

• VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT •

The City of Los Angeles Department of Public Works has initiated an environmental review process for the proposed Venice Pumping Plant Dual Force Main project. The project includes a proposal to construct and install a new force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice, to the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey.

A New Force Main is Needed Because:

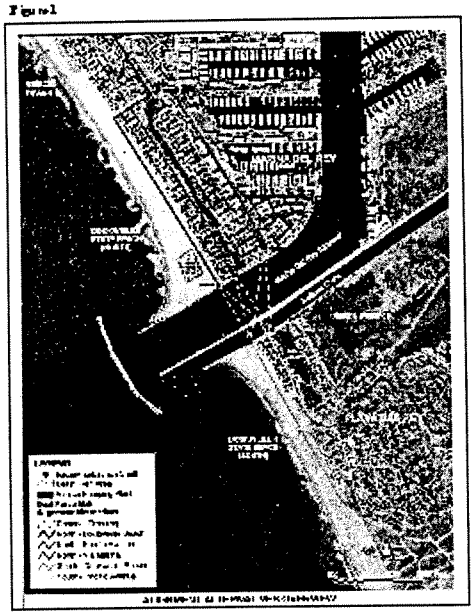
- During severe wet weather, peak flows to the Venice Pumping Plant have exceeded the capacity of the existing force main, which carries wastewater away from the plant.
- Currently, all of the wastewater from the Venice Pumping Plant is carried in one sewer. As a result, that sewer cannot be shut down for maintenance.

A New Force Main, In Conjunction With the Existing Main, Will:

- Expand capacity to ensure the continuous, safe flow during projected wet weather
- Help prevent sewer spillage onto city streets and adjacent surface waters
- Allow for much needed maintenance, rehabilitation and cleaning of the existing force main during dry weather

Site Map

Figure 1



Project Alignment Alternatives

As a result of numerous technical studies, four proposed alignment alternatives are under consideration and will be evaluated in an Environmental Impact Report (EIR).

Marquesas Way/Via Marina Alignment – From the pumping plant on Hurricane Street, the alignment would proceed east under the Grand Canal and along Marquesas Way, then southeasterly on Via Marina to the Marina Del Rey entrance channel. It would then cross under the Marina del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview Street.

Pacific Avenue Alignment – From the pumping plant on Hurricane Street, the alignment would proceed westerly to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina Del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview Street.

Dockweiler Beach to Pacific Avenue Alignment – From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south of the channels within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview Street.

Dockweiler Beach Alignment – From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south along the Dockweiler Beachfront to a point west of the junction structure in Vista Del Mar near Waterview Street. From this point the line runs east to the junction structure in Vista Del Mar near Waterview Street. This alignment is about 11,000 feet long.

Construction Options

The four alignments under consideration cross the Marina entrance channel and Ballona Creek channel, requiring about 1,800 feet of tunneling under the two channels. Elsewhere along each alignment, two alternative construction methods are under consideration: ***open trench*** and ***tunneling***.

While the open trench method is less expensive, tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels, and can facilitate mitigation of other impacts such as noise.

Opportunities for Public Involvement

The City of Los Angeles Department of Public Works is sensitive to the needs of the community and wants to utilize an alignment and a construction method that minimizes impacts to surrounding neighborhoods.

We welcome your feedback. Mail your comments to:

James E. Doty
City of Los Angeles
Public Works, Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

ADA STATEMENT

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VENICE PUMPING PLANT DUAL FORCE MAIN SCOPING REPORT

This report includes comments received in response to the Notice of Preparation available for review from May 2, 2005 to June 10, 2005, 5:00pm PST, and comments received at a public meeting held at the Westchester Municipal Building in the City of Manchester on May 24, 2005.

The State Clearing House circulated Notices of the Proposed Action to the following Agencies:

California Coastal Commission
California Energy Commission
Department of Parks and Recreation
Department of Water Resources
Region 5 Fish and Game Department
State Water Resource Control Board
Department of Health Services
Native American Heritage
State Lands Commission
Caltrans Aeronautics Division
Caltrans District 7
RWQCB 4

Table 1 below, represents agency and citizen responses by category:

Table 1

Affected Resource	Metro South Bay	Metropolitan Transportation Authority	SCAQMD	Los Angeles County	City of Los Angeles	SDFG	Citizens
Aesthetics							X
Transportation	X	X	X				X
Parks and Recreation							X
Land Use					X		
Water Quality							X
Air Quality			X				
Resource Areas							X
Health and Human Safety							X
Fish and Wildlife						X	X
Geology/ Hydrology							X
Existing Facilities				X			X
Economic Justice							X
Noise							X

The key purpose for public participation is to solicit and receive comments regarding issues of concern that may be impacted as the result of the proposed project and that should be addressed in the Environmental Impact Report (EIR).

Table 2 on the following page identifies specific areas of concern made by agencies and citizens during the public scoping process and describes issues which should be addressed in the EIR:

Table 2

Affected Resource	Agency/Citizen	Comment	Location
Transportation	Metro South Bay	1.) Address coordination of construction related street closures with daily operational routes to the extent that services are not interrupted or delayed. 2.) Require alternative bus routes for all construction related street closures. 3.) Require alternative turn-around loops suitable to meet bus size.	Westbound Metro line 108 on Pacific Ave. and Via Marina in Peninsula west of the marina. Eastbound Washington St. nearside of Palawan Way and Eastbound 108. Westbound Metro line 115 on Pacific Ave. in Playa Del Rey between Convoy St. and Culver Blvd Is essential turnaround loop for layover zone.
	Los Angeles Metropolitan Transportation Authority	Require Traffic Impact Analysis (TIA) to include Highway, Freeway and transit components in accordance with California Congestion Management Program (CMP) in accordance with Appendix D of 2002 CMP TIA for LA County.	Entire project area.
	SCAQMD	It is recommended that Lead agencies for projects generating or attracting construction related air quality impacts from vehicular trips, especially heavy-duty diesel fueled vehicles should perform a mobile source health risk assessment.	Entire project area.

Transportation	Citizen	1.) Construction related obstruction of driveway access to and from condominiums in morning hours and evenings need to be addressed. 2.) Alternatives to construction related impacts to the neighborhood parking area adjacent to Vista Del Mar needs to be addressed. 3.) An alternative traffic plan for emergency services should be developed and distributed to local residents prior to construction of the project.	Vista Del Mar area Entire project.
	Citizen	This is key parking for beachgoers in the daytime and locals at night. Alternatives to parking in this area needs to be addressed if it is going to be impacted by the project.	Jungle area adjacent to Vista Del Mar to the west and southerly from Montreal to Surf Alley
Parks and Recreation	Citizen	Use or obstruction of the bike path must be avoided. No staging and/or operation of equipment should be allowed on cemented area. Address construction related impacts to the "Jungle Area".	Vista Del Mar
	Citizen	Access to the bridge across Ballona Creek should be considered.	
	Citizen	Avoiding obstructions to the bike path and volleyball areas on Dockweiler beach should be addressed.	Vista Del Mar
	Citizen	1. Recreational activities such as local tournaments held on the area by Loyola Marymount University and surrounding high schools need to be addressed in the EIR. 2. Activities at Towe's Beach and Trolly Way also need to be addressed in the EIR.	

Aesthetics	Citizen	The City Pumping Plant needs to be aesthetically improved as a part of this project.	140 Hurricane
Land Use	City of Los Angeles	The EIR should address the 2001 Venice Coastal Commission Certified Land Use Plan in accordance with CEQA. The Project should adhere to the LUP.	Entire project.
	Citizen	Playa Del Rey and Venice should be considered as high density residential.	Playa Del Rey
Water Quality	Citizen	Construction related impacts to water quality in the channel area should be addressed in the EIR.	Ballona Lagoon
	SDFG	The Department requires a Streambed Alteration Agreement (SAA) pursuant to Section 1600 et. Seq. of the Fish and Game Code, with applicant prior to any direct or indirect impact to a lake, streambed or channel or associated riparian resources.	Channel and Lagoon areas.

Air Quality	SCAQMD	1.) The project Air Quality analysis should be prepared in accordance with the 1993 CEQA Air Quality Hand Book. Alternatively, the lead agency may wish to consider using the CAB approved URBEMIS 2002 Model for analysis. 2.) It is recommended that Lead agencies for projects generating or attracting construction related air quality impacts from vehicular trips, especially heavy-duty diesel fueled vehicles should perform a mobile source health risk assessment. 3.) In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during construction and operation to minimize or eliminate significant adverse impacts. 4.) Rule 403 applies to this project. SCAQMD's Fugitive Dust, and the Implementation Handbook contain numerous measures for construction related emissions that should be considered under CEQA. 5.) Pursuant to CEQA Guidelines § 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.	Entire project.
Resource Areas	SDFG	The Department's California Natural Diversity Data Base in Sacramento should be contacted to obtain current information on any previously reported sensitive species or habitats and Natural Areas identified under Chapter 12 of the Fish and Game Code.	
	Citizen / Vista Del Mar Neighborhood Assn.	The Least Terns should be addressed in the EIR. Construction should not be allowed to occur during breeding season.	Dockweiler Beach.
	Citizen	Two of the alignments are close to the 700 foot dune space on Dockweiler Beach in the Towe's Beach area. This should be addressed In the EIR.	Dockweiler Beach / Towe's Beach area.

	Citizen	There is a wildlife preserve in Ballona Creek that needs to be addressed in the EIR	
Health and Human Safety	Citizen	Impacts to human health and safety as the result of eating fish from the channel which may be impacted by construction activities should be addressed.	Ballona Creek

Fish and Wildlife	SDFG	1.) The EIR should include a complete recent assessment of fauna and flora within adjacent project area. 2.)The project shall meet all requirements pursuant to CEQA Guidelines Section 15380 by addressing all rare, threatened and endangered species. 3.) The EIR should include a complete recent assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project should also be addressed. 4.) The EIR should include a thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources with specific measures to offset such impacts. This discussion should focus on maximizing avoidance and minimizing impacts. 5.) The Department's California Natural Diversity Data Base in Sacramento should be contacted to obtain current information on any previously reported sensitive species or habitats and Natural Areas identified under Chapter 12 of the Fish and Game Code. 6.) The project shall comply with CEQA Guidelines, Section 15125(a) by indicating full knowledge of the regional setting with special emphasis on resources that are rare or unique t the region. 7.) A cumulative effects analysis should be developed in accordance with CEQA Guidelines Section 15130. 8.) Impacts to all Habitats from City or County required Fuel Modification Zones (FMZ) Areas slated as mitigation for loss of habitat shall not occur within the FMZ. 9.) The EIR should address the effects of proposed project activities and the breeding bird season, (February 1 – September 15) to avoid take (including disturbances which would cause abandonment of active nests containing eggs or young.	

Fish and Wildlife		10.) Impacts to migratory wildlife should be evaluated and addressed in the EIR. (see June 1. 2005 comment letter for further details)	Entire project.
Geology/ Hydrology	SDFG	The department opposes the elimination of water courses and/or their channelization or conversion to subsurface drains.	Entire project.
	Citizen	1.) Impacts to homes and property resulting from vibration from equipment should be addressed in the EIR. A year or more of cumulative vibration from the project could potentially trigger landslides. 2.) Earthquake maps identify project areas as liquification zones. Potential liquification resulting from construction should be addressed in the EIR.	Hillside properties and "Jungle Area". All alternative areas
	Citizen	Land in this area is unstable. A geologic study of this area should be addressed in the EIR	Marquesas Way / Via Marina
	Citizen	There is a high hill on the east side of Vista Del Mar south of Culver where landslides could occur as the result of project construction.	East side of Vista Del Mar south of Culver.
Existing Facilities	Los Angeles County Department of Public Works	This project will have no significant impact on the local sewer lines maintained by the Marina Sewer Maintenance District of this Department.	**Entire Project**
	Citizen	Existing condition of the pumping plant should be addressed in the EIR.	Venice

Economic Justice	Citizen	The city should address where flows to and from the sewer come from and what the economic structure is for paying for the proposed expansion.	Entire project
Noise	Citizen	Construction related noise impacts in the pumping plant area are a concern. The pumping plant makes noise at 1:30 am.	Hurricane St.
	Citizen	Noise in the Jungle area is intensified. This area should be considered in the analysis for the project.	
Alignment Alternatives	Citizen	The EIR should address construction duration and scheduling to help citizens with alternatives decision making.	Entire project
	Citizen	The city should rate the alignments based on what their primary consideration would be following the studies and responses from the agencies, especially the Coastal Commission.	Entire project
	Citizen	The Dockweiler alignment has far more benefits for people living in the project area. There are no gas mains, traffic disruption or parking impacts.	Dockweiler North and South.
Construction Alternatives	Citizen	The EIR should address alternative construction methods to be used in the event of an unanticipated construction emergency.	Entire Project
	Citizen	The city should provide a cost analysis to the public for each alignment to help with the decision making process.	Entire project
	Citizen	Night work is not an option.	Entire project

Scoping Meeting and Comments Received

Welcome...

The purpose of tonight's scoping meeting is to gather public comments on what environmental issues should be addressed in the Environmental Impact Report (EIR).

Please keep in mind that we are still in the early stages of the process. This is the first of several official opportunities to review the proposed project and provide feedback to the project team.

Many of the final decisions and details will not be decided until after the Environmental Impact Report (EIR) is completed. At this stage of the process, we are simply looking to hear what you have to say. Your comments tonight will help shape the scope of the Draft EIR.

Tonight's Agenda

- **6:00 p.m. - Sign-In and Viewing of Displays**
- **6:30 p.m. - Project Presentation**
- **7:00 p.m. - Comment Period**

If you would like to make a comment or ask a question at the conclusion of the presentation, we ask that you fill out a speaker card and hand it to a staff member.

You must submit written comments for your feedback to be included in the official document. Comment sheets are available at the Comments station. You may hand completed forms to any staff member, deposit them in the comment box, or mail them to the address below by **June 10, 2005**, to have them included in the official record.

To Submit Official Comments, Mail To:

James E. Doty
City of Los Angeles Public Works,
Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

For More Information, Contact:

Andrea Campbell
Hotline (213) 629-0992
E-mail: environment@eng.lacity.org

Thank you for coming.

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SCOPING MEETING FOR PUBLIC AGENCIES
on the
PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT

Date: Tuesday, May 31st, 2005
Time: 10:00 a.m. until 12:00 p.m.
Location: 650 S. Spring St., 6th Floor Conference Room
Los Angeles, CA 90014
Contact: Irene Paul, Environmental Supervisor I, (213) 485-0998

The City of Los Angeles will be the CEQA Lead Agency on the proposed project and will prepare an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act. The proposed project is located in the Venice and Westchester/Playa Del Rey community planning areas of the City of Los Angeles within Council District 11. The meeting is an opportunity for public agencies to provide initial feedback on the proposed project.

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Scoping Meeting
May 24, 2005

ENGINEERING

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GENERAL PUBLIC

SIGN – IN

NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
Richard Hickey	WBPdRPOA	110 Rees, Pdr	90293	310 821-876	310 821-2301	—
MARK VanGessel	—	100 Driftwood st #7 Venice, CA 90292	90292	310-822-5515	—	VanGessele Comcast.NET
Rachel TIDAL	—	3815 VIA DOLCE MDR 90292	90292	-	310/ 576-2396	RTIDAL@ COMCAST.NET
JoAnn Hudgeth		7017-T Rally Way	90293	310-820-8134	—	—
HANNES Vilhjelmsson	Renter	6535 Vista del Mar #A	90293	310-827-3688		
Elaine Gross		3933 Esplanade #2 MDR 9029	90292	310 823-6469	(310) 823-2787	

Scoping Meeting
May 24, 2005

ENGINEERING — Past, Present: Designing for the Future

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GENERAL PUBLIC

SIGN – IN

NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
Carol Kappe	Self WK San Diego	127 Rees 3516 Merrimac SD 92117	90293	310 710-7104 858 274 4265	0	0
John McKnight	Self	121 Rees	90293	310 710-7104	0	0
RJ Chew	Self	8112 2 Tola Terrace	90293	310 823 4158		
D. Downing	SELF	110 REES ST	90293	310 821-8761	—	—
Julie Inouye	Vista del Mar Neighbors Assoc.	650B VDM	90293	310 306 1487		JulieInouye@WeCAHRE.org

Scoping Meeting
May 24, 2005

ENGINEERING

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GENERAL PUBLIC

SIGN – IN

NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
Jeanne Moody	Homeowner	7023 Trolley Way PDR	90293	310 823-0315	Same	—
John Crosse	"	6353 Esplanade	90293	310-301-6339	Same	jocrosse@comcast.net
Dan Sharkey	ALIENS of URANUS	102 MONTREAL	90293	310 822 7352		
DAVID Siedeken	" "	7051 Trolley Way	90293	3102664150	310 4481219	djsiedeken@hotmail.com
Aaron Gross	Councilman-elect Bill Rosendahl's office	515 24th Place Hermosa Beach, CA	90254	(310) 391-4890		aaron_gross@yahoo.com
LEELA IYENGAR	RENTER	6585 VISTA DEL MAR #A PLAYA DEL REY, CA	90293	310-827-3188		

Scoping Meeting
May 24, 2005

ENGINEERING — Past Present: Designing for the Future

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SIGN – IN

NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
Debbie & Barry Krutchik	Lighthouse Home-Properties Owners	117 Rana Ct	90292	310-823-1823	310-823-0102	DebbieSutz@Hotmail.com
Janice Whiffen		136 Convoy St. PDR	90293	310-306-4781		jwhiffen@Comcast.net

Scoping Meeting
May 24, 2005

ENGINEERING
Respecting the Present; Designing for the Future

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NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
Cindy Hardin	Audubon/FBN	21 Ironsides MDR	90292	310 301 0050	ø	ø
Drexel Ecko		118 Convoy St.	90293	310 577 8789		

Scoping Meeting
May 24, 2005

ENGINEERING

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SIGN – IN

NAME	ORGANIZATION	ADDRESS	ZIP CODE	PHONE	FAX	E-MAIL
J. BOLLER		2814 CLUNE AV	90291	310 821 8232		

Speaker Card

Scoping Mtg. 5/24/05

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Speakers may not exceed three minutes. Time is tied to the speaker and may not be given to another speaker. Please print clearly.

First Name DEEPA Last Name IYENGAR

Organization/Company

Address 6535 VISTA DEL MAR #A

City PLAYA DEL REY State CA Zip Code 90293

Phone 310-827-8188 E-mail

Speaker Card

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Each speaker may not exceed three minutes. Time may not be allocated to another speaker. Please print clearly.

First Name ELAINE [redacted] Last Name GANS

Organization/Company property owner

Address 3933 Esplanade W #2

City MDR State CA Zip Code 90292

Phone (310) 823-6409 E-mail

Speaker Card

Scoping Mtg. 5/24/05

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Speakers may not exceed three minutes. Time is tied to the speaker and may not be given to another speaker. Please print clearly.

First Name MARK Van Gessel Last Name

Organization/Company —

Address 100 Driftwood St #7

City Venice State CA Zip Code 90291

Phone E-mail VanGessel@Comcast.Net

Scoping Mtg. 5/24/05

Speaker Card

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Each speaker may not exceed three minutes. Time may not be allocated to another speaker. Please print clearly.

First Name Julie Last Name Inouye

Organization/Company Vista del Mar Neighbors Assoc. & PDR Network

Address 6508 Vista del Mar

City Playa del Rey State _____ Zip Code 90293

Phone 310.306.1487 E-mail Julie.Inouye@WeCAHRE.org

Scoping Mtg. 5/24/05

Speaker Card

Venice Pumping Plant Dual Force Main Project

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First Name Debbie Last Name Sutz

Organization/Company Lighthouse Properties / Homeowner

Address 117 Roma Ct

City Marina del Rey State CA Zip Code 90292

Phone 310-823-1823 x101 E-mail Debbie.sutz@hotmail.

Scoping Mtg. 5/24/05

Speaker Card

Venice Pumping Plant Dual Force Main Project

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First Name RAPHAEL ~~FISDALE~~ Last Name TISDALE

Organization/Company _____

Address 3815 VIA DOLCE

MDR State CA Zip Code 90292

Speaker Card

Scoping Mtg. 5/24/05

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Speakers may not exceed three minutes. Time is tied to the speaker and may not be given to another speaker. Please print clearly.

First Name David Last Name Swedeker

Organization/Company

Address 7051 Trolleyway

City PDR State CA Zip Code

Phone E-mail

Speaker Card

Scoping Mtg. 5/24/05

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Each speaker may not exceed three minutes. Time may not be allocated to another speaker. Please print clearly.

First Name DON Last Name SHARKEY

Organization/Company

Address

City State Zip Code

Phone E-mail

Speaker Card

Scoping Mtg. 5/24/05

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Each speaker may not exceed three minutes. Time may not be allocated to another speaker. Please print clearly.

First Name R Last Name Chew

Organization/Company 2 Tals Terrace Home owners

Address 8112 2 Tals Terrace

City PDR State CA Zip Code 90293

Phone 310 823 4158 E-mail

Speaker Card

Venice Pumping Plant Dual Force Main Project

If you would like to make a comment at tonight's meeting, please complete this speaker card and hand it to a staff member. Each speaker may not exceed three minutes. Time may not be allocated to another speaker. Please print clearly.

First Name Carol Last Name Kapp

Organization/Company own/live - 127 Rees

Work Address 3516 Merrimac

City San Diego State Ca Zip Code 92117

Phone 310-710-9104 E-mail

— 858-274 4265

ENGINEERING

City of Los Angeles,
Department of Public Works

Venice Pumping Plant Dual Force Main Project

COMMENTS

Please use this page to submit your comments regarding the scope of the Venice Pumping Plant Dual Force Main project Draft Environmental Impact Report (EIR). You may answer the question below or discuss any aspect of the project in which you are interested. Your comments are an important part of creating a comprehensive Draft EIR. Your input will become part of the public record and will be included in the Draft EIR, if submitted by **June 10, 2005** (the end of the public comment period).

1. What environmental issue(s) do you feel should be considered in the Draft EIR for the proposed Venice Pumping Plant Dual Force Main project?

When making your comments, please be as specific as possible:

FAMILIES, POSSIBLY LOW INCOME, USE THE BRIDGE ACROSS THE BALLONA CREEK (ON THE BIKE PATH) FOR FISHING. WHILE I AM SURE THE FISH THERE TODAY IS NOT THE FITTEST FOR HUMAN CONSUMPTION BECAUSE OF CURRENT POLLUTION LEVELS, THESE FAMILIES SEEM UNHARMED.
WILL THE CONSTRUCTION BRING POLLUTION TO A LEVEL WHERE THESE FAMILIES WILL INDEED RISK THEIR HEALTH BY FISHING THERE?
WILL ADEQUATE WARNINGS BE PLACED ON THAT BRIDGE?

(If necessary, please use the reverse side of the paper.)

Please complete the information below and print clearly to ensure that your comments are addressed in the Draft EIR.

Name: HANNES VILHJALMSSON Phone: 310 827 3188

Organization (if any): _____

Address: 6535 VISTA DEL MAR #A

City: PLAYA DEL REY State: CA Zip: 90293

You may drop your comments in the comment box at the Comments station or mail them to the following address, no later than **June 10, 2005.**

James E. Doty
City of Los Angeles,
Department of Public Works, Bureau of Engineering
Environmental Management Group
650 South Spring Street, Room 574
Mail Stop No. 939
Los Angeles, CA 90014

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Venice Pumping Plant Dual Force Main Project
Meeting Notes

Meeting With:	**General Public**	**Meeting Date:**	**May 24, 2005**
Team Members in Attendance:		**Location:**	**Westchester Municipal Building, Community Room**
	Jim Doty, BOE **Irene Paul, BOE** **Jon Delkhaste, BOE** **Keith Hanks, BOE** **Cora Jackson-Fossett, DPW** **Frank Wein, URS** **Kay Pratt, URS** **Julia Brown, CPG** **Sylvia Novoa, CPG** **Andrea Campbell, CPG**	**Notes By:**	**Julia Brown**

Introduction:
A public scoping meeting regarding the Venice Pumping Plant Dual Force Main Project was held on Tuesday, May 24, 2005 from 6:00 p.m. to 8:00 p.m. at the Westchester Municipal Building, Community Room (7166 W. Manchester Ave.) in Westchester, CA. Approximately 21 members of the public were in attendance. Sandy Kievman (Office of Councilwoman Cindy Miscikowski) and Aaron Gross (Office of Councilman-Elect Bill Rosendahl) were also in attendance. The purpose of the scoping meeting was to gather public comments on the environmental issues to be addressed in the Draft Environmental Impact Report (EIR).

Format:
An open house took place from 6:00 p.m. to 6:30 p.m. and provided the public with the opportunity to view project displays, meet project team members, and ask questions on a one-on-one basis. At the start of the formal meeting, Cora Jackson-Fossett (DPW) welcomed those in attendance and discussed the purpose of the scoping meeting.

Frank Wein (URS) then gave an overview of the California Environmental Quality Act (CEQA) process, followed by Keith Hanks (BOE), who presented the project objectives and purpose and need. Frank Wein (URS) discussed the purpose of the Initial Study and then turned the meeting over to Sylvia Novoa (CPG) to facilitate the public comment period.

Questions/Answers/Comments:
Q: What is at the site now? What is wrong with the existing force main pipe? Have there been problems in the past?
A: There were some problems in the past, but the pipe is operating now.

Q: Did the pipe almost overflow with the heavy winter rains of 2004/2005?

C: There is a wildlife preserve in Ballona Creek that needs to be addressed in the Draft EIR. (Eliane Gans)

C: Recreational activities, such as local tournaments held in the area by Loyola Marymount University and surrounding high schools, need to be addressed in the Draft EIR. Short-term impacts also need to be identified for local bike paths, Towe's Beach, and Trolley Way. You also need to identify the streets where pipes will enter and exit. (Dan Sharkey)

Q: Is this project absolutely necessary? If so, you need to consider recreation in your environmental analysis. What is the definition of short-term and what areas will be impacted and when? Are the alignments presented here today the best options available? (David Snedeker)

Q: I live on the Venice side of this project. You said you have upgraded the Venice Pumping Plant from four to five pumps. What is the physical capacity of the plant and the 48-inch pipe? You need to

address housing and population in the Draft EIR. What is the construction schedule for the project? Construction will impact homes near the blue alignment (as seen on one of the project alignments map) at the end of the peninsula. (Mark Van Gessel)

C: I live in the Jungles (Playa del Rey/Vista del Mar area). Residential high density should be addressed in the EIR because of the parking situation in the area. The City came to us in 2003 with this project. Some of our properties are within 25 to 50 feet of this project. There is also a high hillside on the east side of Vista del Mar, south of Culver, where landslides might occur due to the construction of this project. Many who live in Playa del Rey were exposed to the previous pumping plant fiasco that went over schedule. You need to have alternative plans and methods for construction. (Carol Kapp)

Q: I represent Vista del Mar and Playa del Rey (Vista del Mar Neighbors Association). Can you give us a timeline for how long it would take to construct each alignment? This will help us decide on an alignment option. We want to make a good decision here. There is a least tern nest in Playa del Rey that needs to be studied in the EIR. They inhabit the area from May through August, so construction should not be allowed to take place during this time. You should also provide the estimated cost of each alignment. (Julie Inouye)

Q: Would this project have to be disclosed to anyone purchasing a home in the area? We look at the Plant right now and it is atrocious. Venice Pumping Plant should not look like that. You need to improve the aesthetics at the plant. We have already spoken to the Council office about the use of matching funds for beautification projects. I heard that the Plant is planning to expand. Will they be expanding on to the next block? (Debbie Sutz)

Q: Is there an art component to this project? (Julie Inouye)

C: I live across the grand canal. There was an $18 million upgrade to the Plant a few years ago, but they did not paint or beautify it. Aesthetics are important. Noise is also an important issue. Venice Pumping Plant starts making noise around 1:30 a.m. The Marquesas/Via Marina route would be adjacent to my home. I have heard that this land is unstable. You need to conduct a geological survey. You should also compare the costs of tunneling versus open trench for all of the alignments. (Raphael Tisdale)

Q: The Thompson Pumping Plant had money to re-do the façade, but decided to use hideous colors. Is there a law regarding public art? (Carol Kapp)

C: Parking is an ongoing problem in the area. This parking strip runs from Montreal to Serpa Alley and serves beachgoers during the day, and residents in the evening. This land should not be used as a staging area or to run a pipe underneath. (Carol Kapp)

Q: Why do we need this project now? Is it due to a population increase or are the pipes corroding? (Deepa Iyengar)
A: This project will provide more pressure in the pipe as flows increase. A larger pipe would cause problems when there are lower flows. Putting in a parallel pipe will better serve our needs. This will mean less pressure loss. Both pipes will operate during higher flows. It costs less to rehabilitate the existing pipe than to construct a new one. (Keith Hanks)

Q: Why is there a dramatic increase in the flow in the first place?

Q: Is the County going to use our LA sewer system? Is Marina del Rey going to use it? Is this increased flow from the City or the County and the City? (J. Boller)
A: Just because an alignment is running through Marina del Rey does not mean its residents will be using it. (Jon Delkhaste)

Q: Is the County going to help the City pay for this? I want an answer to this question. (J. Boller)
A: The Hyperion Treatment Plant also serves some non-area agencies. I do not know if Marina del

Rey will be served by this area. (Jim Doty)

Q: I have heard the County (Marina del Rey) is planning on expanding. Will the sewer system be able to handle this increase?

C: We need the City to rank these alignments, so the community does not spend time focusing on those the City will not consider anyway. If the Draft EIR comes out and the community feels it is incorrect, there will be problems. We have heard that the only reason the beach alignment would not be chosen is because the Coastal Commission will not allow it to move forward. You need to weigh all of the alignments equally. (Mark Van Gessel)

Q: Look at the potential impacts of each of these alignments equally. Will this project have to be approved by the Coastal Commission? (Eliane Gans)

C: At least two alignments come close to the 700-foot dune space on Dockweiler Beach, in the Towe's Beach area. This should be studied in the Draft EIR.

C: Consider the impacts to fishing on the creek and any potential health concerns. You should also address water quality and impacts to marine life in the area.

Q: Where does the pipe end at today?
A: It goes to the Hyperion Treatment Plant and then to the ocean, about five miles out to sea.

C: Noise impacts need to be addressed in the EIR. The noise at Thompson Pumping Plant was horrible. I am a landlord and the noise caused tenants to begin moving out of the area. (Carol Kapp)

C: You will need to provide notice to residents regarding any noise impacts. Some construction at the existing plant has taken place at night. You need to address noise during and after construction of the project. (Raphael Tisdale)

C: There is only one main street to use near the Bluffs. Noise amplifies in the Jungle. This is a very confined and sensitive area. (Dan Sharkey)

C: Noise will impact people who work out of their homes.

Q: How realistic is the beach alignment? Is this a viable option for the Coastal Commission? If the Coastal Commission opposes an alignment, will it be thrown out?
A: There will always be an alignment that someone will not like. Any project that costs over $120,000 is subject to review by the Coastal Commission and they will have jurisdiction over the project. They are very concerned about development on the sandy beach. Our intention is to thoroughly study all of the alignments and select the best one. (Jim Doty)

Q: In theory, can the opinion of the Coastal Commission overrule all others?
A: We will not reject an alignment just because they are opposed to it. (Jim Doty)

Q: Do you have a letter from the Coastal Commission from the previous environmental review process for this project?

Q: Where is the existing pipe located now? Was this built using the open trench or the tunneling method?

C: Open trench was previously considered to be the best method, but maybe that is not the case today.

Q: If the Coastal Commission will not authorize this alignment, then what is the point of spending this money?
A: We do not yet know what the Coastal Commission will do. (Jim Doty)

08-0504

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APPENDIX C

AIR QUALITY ANALYSIS

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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DRAFT REPORT

PROPOSED VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT PLAN – CITY OF LOS ANGELES

AIR QUALITY ANALYSIS

Prepared for

City of Los Angeles
650 South Spring Street, Suite 200
Los Angeles, California 90014-1911

October 20, 2005

URS

2020 East First Street, Suite 400
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LIST OF ACRONYMS

AQA	Air Quality Analysis
AQMP	Air Quality Management Plan
BACMs	Best Available Control Measures
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CO	carbon monoxide
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
FY	fiscal year
LACDPW	Los Angeles County Department of Public Works
LOS	level of service
$\mu g/m^3$	micrograms per cubic meter
mph	miles per hour
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NCDC	National Climatic Data Center
NDIR	Non-Dispersive Infrared Photometry
NOA	naturally occurring asbestos
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
O_3	ozone
Pb	lead
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
ppm	parts per million
ROC	Reactive Organic Compounds
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SO_2	sulfur dioxide
TBM	Tunnel Boring Machine
TCM	Transportation Control Measures
VPP	Venice Pumping Plant

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EXECUTIVE SUMMARY

URS Corporation (URS) was retained by the City of Los Angeles (City) to conduct an Air Quality Analysis (AQA) for the Venice Pumping Plant Dual Force Main Project (proposed project). The proposed project is located in the Venice and Westchester/Playa Del Rey community planning areas of the City of Los Angeles within Council District 11.

The proposed project includes the construction, installation and operation of a new 54-inch diameter force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure located on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles.

The proposed project's intent is to construct a second force main to be used in tandem with the existing force main for the purpose of fulfilling two key objectives:

- To expand the capacity of the Coastal Interceptor Sewer's force main segment from the Venice Pumping Plant to a connection in Playa Del Rey in the vicinity of Waterview Street, such that all project wet weather flows can be safely conveyed without future threats of spilling onto City streets and adjacent surface waters; and
- To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

The proposed project is located in the South Coast Air Basin (SCAB) with South Coast Air Quality Management District (SCAQMD) monitoring and regulating air quality within the SCAB.

The AQA provides a general discussion of the project, the physical setting of the project area, and the regulatory framework for air quality. In addition, the AQA evaluates potential air quality impacts associated with the implementation of the proposed project. Air quality impacts from short-term construction and long-term operation associated with the implementation of the proposed project were evaluated based on preliminary project data. The analysis shows that NO_x (oxides of nitrogen) emissions from construction of the proposed project exceeds the SCAQMD construction emissions threshold, therefore, is considered to have a significant impact on air quality. Should NO_x emissions become a priority concern, mitigation measures recommended in Section 5.1, Construction Impacts, should be evaluated for feasibility and implemented. However, if the mitigation measures are deemed not feasible, then a more detailed analysis of the large mined tunneling method should be conducted to evaluate its feasibility as an alternative construction method. Moreover, compliance with the SCAQMD's rules and regulations as well as implementation of feasible control measures during construction would reduce cumulative air quality impacts.

Because the equipment used in the operation of the proposed project is expected to remain the same, there would be no change in daily emissions and at worst-case considered negligible. Therefore, the operation of the proposed project is not considered to have significant impact on air quality.

This AQA was prepared in conformance with appropriate standards, using procedures and methodologies prescribed in the SCAQMD' *California Environmental Quality Act (CEQA) Air Quality Handbook*, April 1993.

1.0 PROJECT DESCRIPTION

URS Corporation (URS) was retained by the City of Los Angeles (City) to conduct an Air Quality Analysis (AQA) for the Venice Pumping Plant Dual Force Main Project (proposed project). The proposed project is located in the Venice and Westchester/Playa Del Rey community planning areas of the City of Los Angeles within Council District 11.

The proposed project includes the construction and installation of a new 54-inch diameter force main sewer extending from the Venice Pumping Plant (VPP) at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles.

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- To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

The City first identified the need for additional sewer capacity during the heavy storms of 1995 when sewage and infiltrated storm-water in the sewage system exceeded the capacity of the existing 48-inch line creating a potentially serious human and environmental health risk. Although VPP had all five pumps running during peak rainfall, the existing downstream sewer force main that runs along the beach could only handle approximately sixty percent of the flows that would otherwise run through the pumps - serving as an unfortunate bottleneck. The amount of sewage and infiltrated storm-water in the sewage system exceeded its capacity forcing the concrete wet well in VPP to begin to rise up out of the ground. In an effort to prevent potential sewage spillage as a result of an overload situation, the City proposes to install an additional 54-inch pipeline conveyance.

The existing 48-inch pipeline has been in continuous operation for over 30 years. As such, installation of the proposed 54-inch force main will provide bypassing capability allowing for repair and maintenance of the existing pipeline, which is currently not possible. In addition, the 54-inch force main would be used in tandem with the existing force main. The two force mains would provide the necessary capacity to meet current and future peak wet weather flow demands.

Several alignment alternatives for the proposed project are described in the following subsections.

1.1 MARQUESAS WAY/VIA MARINA

From the Pumping Plant on Hurricane Street, the alignment would proceed east under the Grand Canal and along Marquesas Way, then southeasterly on Via Marina to the Marina Del Rey entrance channel. It would then cross under the Marina Del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long. The new 54-inch line would be constructed through the open trench method except for the approximately 1,800 feet to cross the Marina channel and Ballona Creek.

1.2 PACIFIC AVENUE ALIGNMENT

From the pumping plant on Hurricane Street, the alignment would proceed westerly to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina Del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alternative assumes a cut-and-cover construction method except for the approximately 1,800 feet of tunneling to cross the Ballona Creek and Marina channel. This alignment is the shortest route – about 10,000 feet.

1.3 LAGOON ALIGNMENT

This alternative alignment assumes the construction of the proposed 54-inch force main entirely by tunneling from the VPP to Vista Del Mar. The alignment would follow the Grand Canal southerly to the Marina channel and Ballona Creek and continue via tunneling to the Pacific Avenue alignment southerly to the Vista Del Mar terminus

1.4 DOCKWEILER BEACH TO PACIFIC AVENUE ALIGNMENT

From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

1.5 DOCKWEILER BEACH ALIGNMENT

From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south along the Dockweiler Beachfront to a point west of the junction structure in Vista Del Mar near Waterview Street. From this point the line runs easterly to the junction structure under Vista Del Mar near Waterview Street.

1.6 OPTIONS FOR CONSTRUCTING ALTERNATIVE ALIGNMENTS

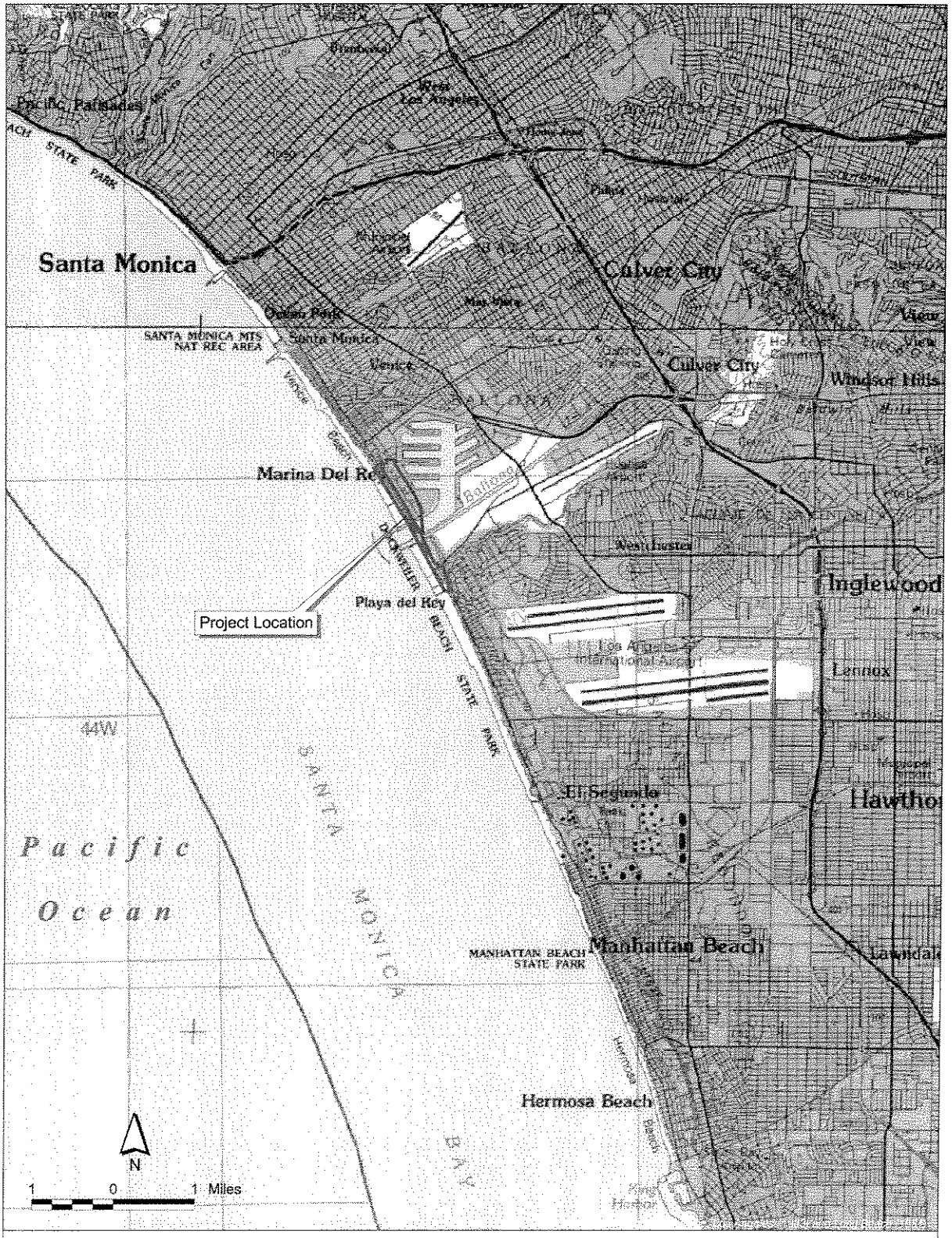
There are two main options for constructing the alternative alignments:

- The first option involves a combination of mainly open-trench and micro-tunneling construction (for the portion crossing the Marina channel and Ballona Creek).
- The second construction option assumes tunneling for the entire route (from the VPP to the terminus in Vista Del Mar).

The alignments under consideration cross the Marina entrance channel and Ballona Creek channel, requiring about 1,800 feet of micro-tunneling under the two channels. Elsewhere along each alignment, both open trench and micro-tunneling alternative construction methods are under consideration. While open trench construction costs less, micro-tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels and can facilitate mitigation of other impacts such as noise.

The proposed project is located in the South Coast Air Basin (SCAB) with South Coast Air Quality Management District (SCAQMD) monitoring and regulating air quality within the SCAB. Figure 1 shows the regional location of the proposed project.

Figure 1-1. General Project Location Map



REGIONAL LOCATION MAP

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	FIGURE 1

2.0 AIR QUALITY SETTINGS

2.1 REGIONAL AIR QUALITY

The air quality in the SCAB is influenced by its climate, which is in turn determined by its terrain and geographical location. The SCAB is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the SCAB.

The SCAB is ensconced in the semi-permanent, high-pressure zone of the eastern Pacific, thus its climate is mild, tempered by cool ocean breezes. The SCAB's salubrious climatological pattern is interrupted by rare periods of extremely hot weather or winter storms. Annual average temperature fluctuates minimally throughout the SCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). Due to more pronounced oceanic influence, coastal areas have less variability in annual minimum and maximum temperatures than inland areas. Precipitation in the SCAB occurs mainly between November and March. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the SCAB along the coastal side of the mountains (see subsequent section for local precipitation data).

Because of the terrains surrounding the SCAB and temperature inversions, pollutants are trapped within the region creating less than desirable ambient air concentrations. A temperature inversion (increasing temperature with increasing altitude) persists over much of the SCAB as a result of the strength and position of the sub-tropical high-pressure cell over the Pacific Ocean. This inversion limits the vertical dispersion of air contaminants, thereby trapping the pollutants and increasing their ground level concentrations. With solar heating of the ground and the lower air layer, the temperature of the air at lower elevations approaches the temperature of the base of the inversion (upper) layer until the inversion layer is eroded, enabling vertical mixing within the planetary boundary layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by mid-morning. During the fall and winter months, Santa Ana winds – strong, dry north or northeasterly winds – disperse air contaminants for several consecutive days at a time (see subsequent section for local wind data).

Coupling stagnant wind conditions and low inversions yield the greatest air pollutant concentrations. Ambient air pollutant concentrations are generally lowest on days of no inversion or high wind speeds. The greatest pollution problems in winter are carbon monoxide (CO) and oxides of nitrogen (NO_x) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the more intense sunshine and longer daylight hours cause hydrocarbons and NO_x to react and form photochemical smog.

The California Legislature created the SCAQMD in 1977 by merging the air pollution control districts of the four counties sharing the SCAB. The SCAB covers an area of 6,745 square miles with a population of approximately 14.6 million, and SCAQMD jurisdiction encompasses an area of 10,743 square miles and a population of approximately 15 million. The SCAB includes portions of Los Angeles, Riverside and San Bernardino counties and all of Orange County {1}.

The area regulated by SCAQMD is classified by the United States Environmental Protection Agency (EPA) as a non-attainment area for ozone (O_3), carbon monoxide (CO), and fine suspended particulate matter less than 10 microns (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$)[1] and in attainment for the other criteria pollutants, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). To maintain the attainment status and reduce emissions for the non-attainment pollutants, the SCAQMD has established daily emission thresholds for all criteria pollutants to determine the significance of air quality impact from proposed projects. A significant impact would occur if the project resulted in substantial emissions during construction or operation that would exceed the established thresholds.

2.2 LOCAL AIR QUALITY

Annual rainfall in the vicinity of the project site can be characterized by historical average total precipitation data from Santa Monica Pier – National Climatic Data Center (NCDC) Cooperative station number 047953. NCDC data indicates that the bulk of annual precipitation occurs between November (1.46 inches) and March (1.94 inches), peaking in February (3.04 inches). Summer rainfall is minimal and the average total precipitation undergoes a seasonal reduction from 0.79 inches (April) to 0.02 inches (July).

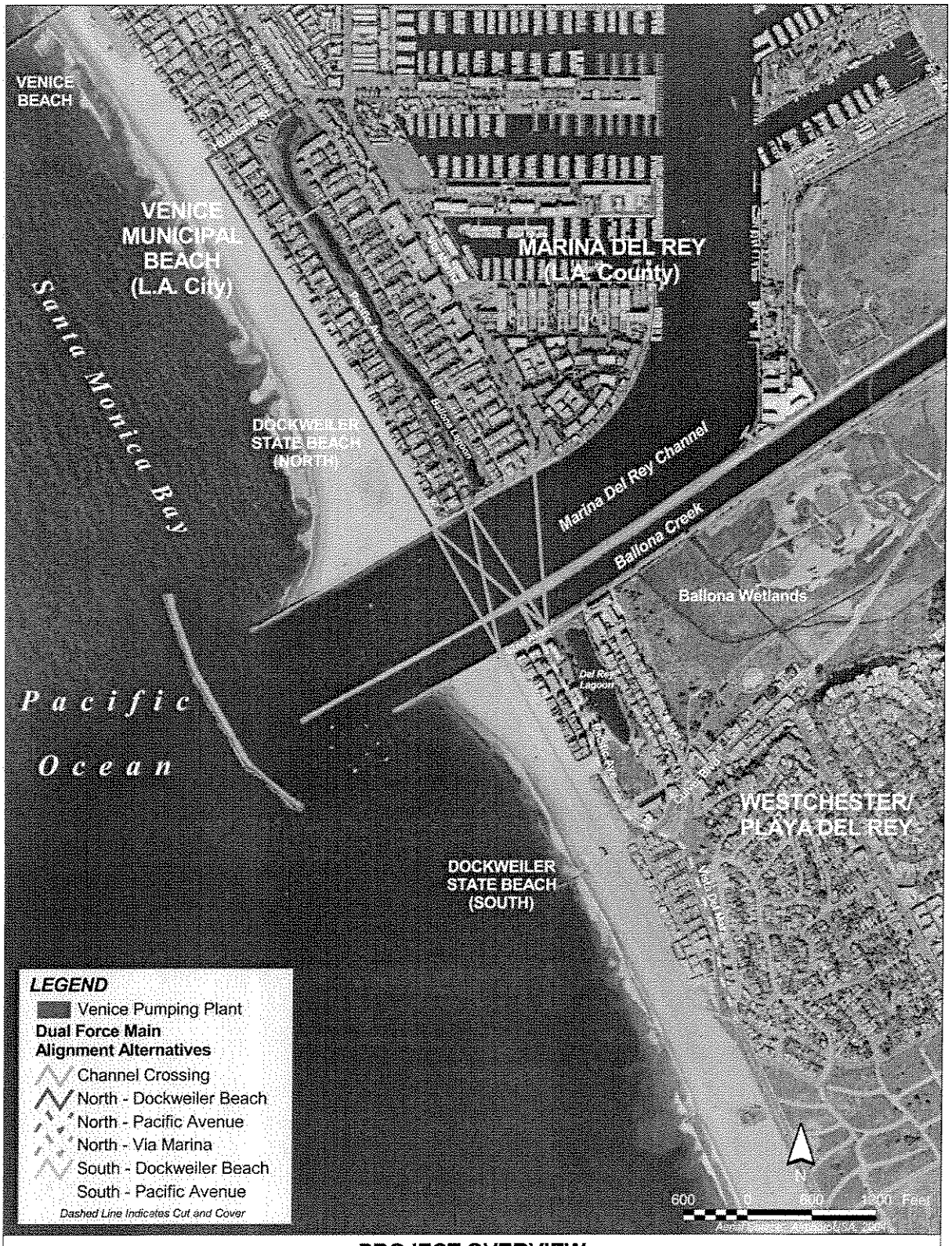
Southwesterly winds dominate in the vicinity of the project site as evidenced by historical meteorological data records from Santa Monica Airport. Annual average wind speed was 7.4 mph with the highest winds occurring from April (8.5 mph) to May (8.4 mph) and the slowest winds in January (6.2 mph).

The project overview is shown on Figure 2-1. The SCAQMD maintains ambient air quality monitoring stations throughout the Basin and the air quality monitoring stations nearest to the project site are the Lynwood (11220 Long Beach Boulevard, Lynwood) and Hawthorne (5234 West 120th Street, Hawthorne) monitoring stations located approximately 19 and 13 miles respectively from VPP. While the Hawthorne station is closer to the project site, use of air quality data from the less proximate Lynwood site is necessary because the Hawthorne station lacked $PM_{2.5}$ monitoring data. Table 1 shows the criteria pollutants monitored at the Hawthorne and Lynwood stations, which include CO, O_3, NO_2, PM_{10}, and $PM_{2.5}$. SO_2 and Pb are not listed because there have been no exceedances of the federal or state standards in the past 10 years.

The ambient air quality data in Table 2-1 show that CO and NO_2 levels are below the relevant state and federal standards at the Hawthorne site for the past five years. Hawthorne one-hour and eight-hour O_3 and PM_{10} levels are below the federal standards but have exceeded the state standards within the past five years. The $PM_{2.5}$ concentration monitored at the Lynwood station has not exceeded the federal standard in recent years, but was exceeded in 2001.

[1] U.S. Environmental Protection Agency web page - http://www.epa.gov/air/data/monvals.html

Figure 2-1. Vicinity of Project Site



PROJECT OVERVIEW

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	FIGURE 2

Table 2-1. Ambient Air Quality at Air Monitoring Stations Close to the Project Site

	Carbon Monoxide (CO)				Ozone (O_3)				Respirable Particulate Matter (PM_{10})		Fine Particulate Matter[1] ($PM_{2.5}$)		Nitrogen Dioxide (NO_2)	
	Max 1-hour Conc. (ppm)	Number of Days Exceeded	Max 8-hour Conc. (ppm)	Number of Days Exceeded	Max 1-hour Conc. (ppm)	Number of Days Exceeded	Max 8-hour Conc. (ppm)	Number of Days Exceeded	Max 24-hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max 24-hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max 1-hour Conc. (ppm)	Number of Days Exceeded
State Standards	> 20 ppm/ 1 hour		> = 9 ppm/ 8 hour		> 0.09 ppm/ 1 hour		> 0.070 ppm/ 8 hour[2]		> 50 $\mu g/m^3$/ 24 hour		> 65 $\mu g/m^3$/ 24 hour		> 0.25 ppm/ 1 hour	
2004	5.8	0	4.43	0	0.069	0	ND[3]	ND[2]	52.0	2	55.8	0	0.084	0
2003	6.5	0	5.04	0	0.110	2	0.077	NA[3]	58.0	3	54.8	0	0.120	0
2002	6.8	0	6.00	0	0.087	0	0.072	NA[3]	121.0	12	64.0	0	0.099	0
2001	7.3	0	5.21	0	0.098	1	0.079	NA[3]	75.0	8	73.1	3	0.110	0
2000	8.7	0	7.14	0	0.095	1	0.075	NA[3]	74.0	9	82.1	2	0.128	0
Maximum	8.7	0	7.14	0	0.110	2	0.079	NA[3]	121.0	12	82.1	3	0.128	0
Federal Standards	> 35 ppm/ 1 hour		> = 9 ppm/ 8 hour		> 0.12 ppm/ 1 hour		> 0.08 ppm/8 hour		> 150 $\mu g/m^3$/ 24 hour		> 65 $\mu g/m^3$/ 24 hour		Annual Average > 0.053 ppm/ annual avg	
2004	7.2	0	4.43	0	0.069	0	ND[2]	ND[2]	52.0	0	55.8	0	0.030	0
2003	10.4	0	5.04	0	0.110	0	0.077	0	58.0	0	54.8	0	0.024	0
2002	12.2	0	6.00	0	0.087	0	0.072	0	121.0	0	64.0	0	0.023	0
2001	15.8	0	5.21	0	0.098	0	0.079	0	75.0	0	73.1	3	0.024	0
2000	11.7	0	7.14	0	0.095	0	0.075	0	74.0	0	82.1	2	0.027	0
Maximum	15.8	0	7.14	0	0.110	0	0.079	0	121.0	0	82.1	3	0.030	0

Note:
[1] Fine particulate matter data is obtained from the Lynwood air monitoring station, all other tabulated data is from the Hawthorne air monitoring station.
[2] NA – This standard was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.
[3] ND – Insufficient data from the California Air Resources Board on Hawthorne air monitoring station to determine this value.
ppm – parts per million
$\mu g/m^3$ – micrograms per cubic meter
CO and annual average NO_2 data obtained from US EPA website http://www.epa.gov/air/data All other ambient air quality data is from the California Air Resources Board website http://www.arb.ca.gov/

3.0 REGULATORY BACKGROUND

3.1 FEDERAL REGULATIONS/STANDARDS

The federal Clean Air Act (CAA), which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for six principal pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and state governments have established ambient air quality standards for outdoor concentrations in order to protect public health. The NAAQS are two tiered: primary, to protect public health; and secondary, to prevent degradation of the environment (e.g., impairment of visibility, damage to vegetation and property, etc.).

The primary standards for the six criteria pollutants – O_3, CO, PM_{10}, NO_2, SO_2, and Pb – are shown in Table 3-1. The health effects from exposure to the criteria pollutants are described at the end of this section. The EPA adopted a new NAAQS for $PM_{2.5}$ and 8-hour ozone in July 1997, and shown in Table 3-1. Ambient air data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "non-attainment" depending on whether the regions met the requirements stated in the primary NAAQS. Non-attainment areas are imposed with additional restrictions as required by the EPA.

Title I of the CAA Amendments (CAAA, 1990) has identified the SCAB as being in "extreme" non-attainment for O_3, requiring attainment with the federal O_3 standard by year 2010; "serious" for CO, requiring attainment of federal CO standards by year 2000; and "serious" for PM_{10} requiring attainment with federal standards by year 2006. SCAB is in non-attainment for $PM_{2.5}$. The Basin is technically in attainment for CO because there was only one occurrence of exceeding the CO standard in year 2002. In March 2005, the Governing Board at the SCAQMD announced that the Basin has met the federal CO standards requirement and will be requesting EPA to redesignate the Basin as an attainment area.

The CAAA requires states to develop a State Implementation Plan (SIP) which, when implemented, is designed to ensure the achievement and maintenance of the NAAQS. The SIP has to be approved by the EPA and serves as the state's commitment to actions that will reduce or eliminate air quality problems. An important aspect of the SIP is to designate a metropolitan planning organization (MPO) that will analyze growth, transportation needs, and implement planning strategies to reduce regional emissions and achieve the NAAQS. The EPA has designated the Southern California Association of Governments (SCAG) as the MPO responsible for ensuring compliance with the requirements of the CAA.

3.2 STATE REGULATIONS/STANDARDS

The Federal CAA requires the U.S. EPA to set outdoor air quality standards for the nation. It also permits states to adopt additional or more protective ambient air quality standards if needed. The California standards (CAAQS) are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are listed in Table 3-1. Table 3-2 presents the summary of the State and federal attainment/non-attainment designations of criteria pollutants for the SCAB.

Table 3-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	0.12 ppm (235 $\mu g/m^3$)[8]	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 $\mu g/m^3$)*		0.08 ppm 157 $\mu g/m^3$)[8]		
Respirable Particulate Matter (PM_{10})	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation*	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Geometric Mean	20 $\mu g/m^3$		50 $\mu g/m^3$		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	15 $\mu g/m^3$		
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	--
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	--	Gas Phase Chemiluminescence	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 $\mu g/m^3$)		--		
Lead[9]	30 days average	1.5 $\mu g/m^3$	Atomic Absorption	--	--	--
	Calendar Quarter	--		1.5 $\mu g/m^3$	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	Ultraviolet Fluorescence	0.30 ppm (80 $\mu g/m^3$)	--	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (365 $\mu g/m^3$)	--	
	3 Hour	--		--	0.5 ppm (1300 $\mu g/m^3$)	
	1 Hour	0.25 ppm (655 $\mu g/m^3$)		--	--	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer – visibility of 10 miles of more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		NO FEDERAL STANDARDS		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chromatography			
Vinyl Chloride[9]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			

* - This concentration was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.

Table 3-1 Notes:

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m3$ is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the California Air Resources Board (CARB) to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18,1997. Contact U.S. EPA for further clarification and current federal policies.
9. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: California Air Resources Board (7/9/03)

Table 3-2. State and Federal Attainment/Non-attainment Designations for South Coast Air Basin

Criteria Pollutant	County	State	Federal	
CO	Los Angeles County (P)	A	N	Serious
	Orange County	A	N	Serious
	Riverside County (P)	A	N	Serious
	San Bernardino County (P)	A	N	Serious
NO_x		A	M/A	M/A
SO_x		A	A	A
PM_{10}		N	N	Serious
$PM_{2.5}$		N	N	
Ozone (1-hour)		N	N	Extreme
Ozone (8-hour)		N	N	Severe 17
Lead		A		

Notes:

A Attainment
M Maintenance
N Non-attainment
NT Non-attainment-Transitional
U Unclassified
P Portion of this county is in the Nonattainment area.

Source: www. arb.ca.gov

The California Clean Air Act (CCAA) of 1988 required non-attainment areas in the state to prepare air quality attainment plans. The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of non-attainment pollutants unless all feasible measures have been implemented. The attainment plans are discussed in Section 3.3.1, Air Quality Management Plans.

The following paragraphs briefly describe the adverse health effects of the six criteria pollutants monitored in the Basin.

Ozone

O_3 is formed by photochemical reactions between NO_x and reactive organic gases, rather than being directly emitted. O_3 is a pungent, colorless gas typical of southern California photochemical smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, elderly, and young children. O_3 levels peak during the summer and early fall months.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. CO passes through the lungs into the bloodstream, where it interferes with the transfer of oxygen to body tissues.

Oxides of Nitrogen

NO_x contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2, a reddish-brown gas, and nitric oxide, a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as NO_x. NO_x is a primary component of the photochemical smog reaction. NO_2 decreases lung function and may reduce resistance to infection.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in the Basin. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Reactive Organic Compounds

Reactive Organic Compounds (ROC) are formed from combustion of fuels and evaporation of organic solvents. ROC is a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (larger than 2.5 micron, or PM_{10}) come from a variety of sources, including windblown dust and grinding operations. Fine particles (less than 2.5 microns, or $PM_{2.5}$) often come from fuel combustion, power plants, and diesel buses and trucks. Fine particles can also be formed in the atmosphere through chemical reactions.

Coarse particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that fine particles ($PM_{2.5}$) at concentrations that extend well below those allowed by the current PM_{10} standards, which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies. These health effects include premature death, increased hospital admissions, and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms.

3.3 REGIONAL AIR QUALITY PLANNING FRAMEWORK

The 1976 Lewis Air Quality Management Act created air pollution control districts (APCDs) and air quality management districts (AQMDs) (e.g., SCAQMD) throughout the state. The federal CAAA of 1977 required that each state adopt a SIP outlining pollution control measures to attain the federal standards in non-attainment areas of the state.

The California Air Resources Board (CARB) coordinates and oversees both state and federal air pollution control programs in California. The CARB divided the state into 15 air basins with 35 APCDs and AQMDs responsible for air quality in these basins. The CARB also maintains air quality monitoring stations throughout the state in conjunction with local air districts. Data collected at these stations are used by the CARB to classify the different regions as "attainment" or "non-attainment" with respect to each pollutant and to monitor progress in attaining air quality standards. The APCDs and AQMDs have the authority to regulate stationary source emissions and indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution (e.g., the motor vehicles at an intersection, a mall, and highways). APCDs and AQMDs are responsible for developing local air quality attainment plans (AQMPs) for the non-attainment areas under their jurisdiction. The CARB is responsible for incorporating all the AQMPs into a SIP for approval by the EPA. The CARB regulates motor vehicles and fuels.

3.3.1 Air Quality Management Plan

The SCAQMD and SCAG are responsible for formulating and implementing the AQMP for the Basin. Every three years, the AQMP is updated to reflect the overall plan for improving air quality in the region.

The 2003 AQMP was prepared pursuant to federal and state clean air legislation, and addresses 1990 CAA requirements with respect to particulate matter standards. Under the CAA, the AQMP must demonstrate attainment of PM_{10} standards by 2006 for both 24-hour and annual average ambient air quality standards. The 1997 AQMP responds to this requirement, relying mostly on the control measures outlined in the 1994 AQMP.

To ensure continued progress toward clean air and comply with state and federal requirements, the SCAQMD, in conjunction with the CARB, the SCAG, and the EPA, prepared and adopted the 2003 AQMP on August 1, 2003. The 2003 AQMP updates the demonstration of attainment with the federal standards for O_3 and PM_{10}, replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future, and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992. The 2003 AQMP also incorporates a revised emissions inventory, the latest modeling techniques, and updated control measures remaining from the 1997/1999 SIP as well as new control measures. As of March 4, 2005, SCAQMD determined that the region has satisfied the federal CO standards requirements and will request the EPA to redesignate the region as attainment for CO standards. The EPA will have 18 months to process the request.
More specially, the 2003 AQMP is designed to satisfy the CCAA tri-annual update requirements and fulfills the SCAQMD's commitment to update transportation emission budgets based on the latest approved motor vehicle emissions model and planning assumptions. The SCAQMD forwarded the Final 2003 AQMP to the CARB on October 15, 2003 and in turn the CARB submitted the 2003 AQMP to the U.S. EPA for approval on January 9, 2004.

4.0 METHODOLOGY

Typically, assessment of air quality impact from a proposed project requires evaluating emissions from construction and operational activities and comparing these emissions with pollutant thresholds, established by the local APCD or AQMD, to determine whether air quality impact is significant. Since this project is located within SCAQMD jurisdiction, SCAQMD pollutant thresholds are used to determine the significance of air quality impact.

Air quality impacts are determined by the level of significance. The AQA for the proposed project involves estimating emissions based on planning data for construction and operational activities. Construction emissions are considered short-term because of the time duration. Construction emissions were quantified using emission factors provided in the SCAQMD *CEQA Air Quality Handbook* (1993) {2}, hours of operations from City Ordinance, and construction equipment data from Kaku Draft Traffic Report, September 1, 2005. Operational emissions were not quantified because preliminary data shows that there is no change in equipment, therefore, operational emissions are expected to remain the same or at worst-case have negligible increase. Thus, air quality impacts from operation of the proposed project are considered to be less than significant and will not be discussed any further in this AQA.

4.1 THRESHOLD OF SIGNIFICANCE

4.1.1 Threshold for Construction Emissions

The following significance thresholds for construction emissions have been established by the SCAQMD:

- 75 pounds per day of ROC;
- 100 pounds per day of NO_X;
- 550 pounds per day of CO;
- 150 pounds per day of PM_{10}; and
- 150 pounds per day of SO_X.

Projects in the Basin with construction-related emissions that exceed any of the emission thresholds listed above are considered significant by the SCAQMD.

Project PM_{10} emissions are considered to be significant if the project increases PM_{10} 24-hour average by 10.4 $\mu g/m^3$ for construction and 2.5 $\mu g/m^3$ for operation, or annual (geometric) average concentrations by 1 $\mu g/m^3$.

5.0 IMPACTS

Air pollutant emissions associated with the project would occur over the short- and the long-term. Short-term emissions are from construction activities such as fugitive dust from site preparation, soil excavation, and emissions from construction equipment exhaust. Long-term emissions are from equipment used for the proposed project such as maintenance vehicle traveling to and from the VPP to service the equipment or take readings.

5.1 CONSTRUCTION IMPACTS

5.1.1 Equipment Exhausts and Related Activities

Construction activities produce combustion emissions from various sources such as site grading equipment, generators, worker's vehicles, on-site heavy-duty construction vehicles, and trucks hauling materials to and from the site. Exhaust and fugitive dust emissions from construction activities on site would vary daily as construction activity levels change. Emissions from construction equipment generated from site grading activities were calculated using emission factors provided in the SCAQMD' *CEQA Air Quality Handbook* {2}. Since the tunnel boring machine (TBM) is electrically driven {3}, micro-tunneling is anticipated to produce minimal emissions if the TBM can be powered directly from the City's electrical grid.

Preliminary plans assume that two construction teams will be involved and using two different construction techniques. One team would be responsible for tunneling the 1,800-foot section that crosses underneath the Marina and Ballona Creek Channel and the other team will perform the open trench techniques elsewhere along each alignment (approximately 8,200 to 8,600 feet in length). The following assumptions were made to estimate emissions from construction activities:

- The construction activities will operate 6.5 hours per day (as per the Mayoral Directive restricting on-street construction work hours) {4};
- The construction zones have a total area of approximately 0.5 acre each; and
- The TBM and some of its associated paraphernalia (slurry settling tank, slurry pump and control trailer) emit negligible quantities of criteria pollutants because they are electrically driven.

Tables 3 and 4, provided in Appendix A, list the construction equipment and associated exhaust emissions from open trench and micro-tunneling methods, respectively.

Total daily construction emissions from open trenching and micro-tunneling are summarized in Table 4 and compared with the SCAQMD daily construction significance thresholds. As shown in Table 4, the estimated construction emissions are under the SCAQMD significance thresholds for all criteria pollutants with the exception of NO_x emission. Thus, the construction of the proposed project is expected to have a significant impact on air quality, unless mitigation measures for NO_x are implemented. To mitigate NO_x emissions, there are several alternatives such as:

- Strategize and plan ahead to minimize the transporting of construction equipment and excessive material to and from work area;
- Optimizing construction crew size and proper selection of equipment to reduce any unnecessary emissions such as to eliminate redundancy or similarity in equipment capable of doing similar work in the same construction zone, e.g., excavator vs. backhoe,
- Adjusting the electronic timing on the construction equipment to reduce NO_x emissions;
- Use newer construction equipment such as equipment meeting Tier 2 emission standards;
- Minimize idling emissions from construction equipment and haul trucks by turning it off when not in use or long delays (i.e., over 5 minutes);
- Optimize the muck removal schedule to reduce emissions from haul trucks; and
- Use of alternative fuel such as biodiesel, liquid natural gas, and propane.

Another option for further investigation should NO_x emissions become a primary concern is the large (mined) tunneling method for the entire length of the proposed project.

5.1.2 Fugitive Dust

Fugitive dust emissions are generally associated with demolition, land clearing, exposure, and cut and fill operations. Dust generated during construction would vary substantially, depending on the level of activity, the specific operations, and weather conditions. Nearby sensitive receptors and on-site workers may be exposed to blowing dust, depending upon prevailing wind conditions. Table 5-1 presents the best available control measures (BACMs) for high wind conditions. Fugitive dust would also be generated during open trenching operation, but can be minimized by applying water or surfactants to the excavated soil. The fugitive PM_{10} emissions rate used in the AQA, 0.42 tons per acre-month (30 days), is for road construction, which is most applicable to this project since the sewer line is placed under the existing road. Approximately 28.0 pounds per day is generated per day during construction of the proposed project. To minimize fugitive dust, control measures are provided in Table 5-2.

The combination of the PM_{10} fugitive dust and PM_{10} exhaust emissions from construction equipment are added together and compared to the SCAQMD daily threshold for PM_{10} to determine whether the project has a significant impact on air quality. Total PM_{10} emissions, 22.6 lb/day, from both construction operations is significantly lower than the SCAQMD daily threshold for PM_{10}.

5.2 Operational Impacts

The proposed project is anticipated to emit minimal odors with no discharges of any substances to the streets or storm drain systems since the pumps are electrically driven. Once operational, the proposed project will operate with minimal need for on-site maintenance under normal conditions. The total amounts of emissions from worker vehicle exhaust are considered negligible and should not exceed SCAQMD daily operational emissions thresholds or have a significant impact on air quality.

Based on the above operational characteristics, the proposed project is not likely to impede the progress of the SCAB in complying with federal or State AAQS, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors.

5.3 CUMULATIVE IMPACTS

5.3.1 Construction Emissions

The implementation of the proposed project and other development projects in the general vicinity of the project area may be simultaneously under construction. Depending on construction schedules of all the projects in the area, fugitive dust and pollutant emissions generated during construction may result in substantial short-term increases in air pollutants, which would contribute to short-term cumulative air quality impacts. Traffic analysis conducted by Kaku Associates in July 2005 {4} has indicated that of the nine study intersections in the vicinity of the proposed project, six of study intersections currently operate at "acceptable" levels of service (LOS D or better) during the morning and afternoon peak traffic periods. LOS D may be defined as imposing delays that may be substantial during portions of the rush hours, but having enough lower volume periods to permit clearing of developing lines, thereby preventing excessive backups. Of these six intersections, four are operating at LOS B or better, i.e., reasonably unimpeded operations with slightly restricted maneuverability and stopped delays that are considered acceptable LOS.

5.3.2 Project Emissions

Currently, the Basin is in non-attainment for O_3, CO (technically), PM_{10}, and $PM_{2.5}$. Preliminary data indicates that the maintenance schedule and equipment would remain the same, therefore, the operation of the proposed project should have essentially negligible impact on the existing air quality status.

5.3.3 Unavoidable Adverse Project Impacts

Although the short-term construction emissions will contribute to the existing non-attainment status, the operation and construction of the proposed project is not expected to exacerbate long-term air quality. Best Available Control Measures (BACMs) and other feasible control measures are suggested to reduce fugitive dust and other emissions from the construction zones.

5.4 FUGITIVE DUST CONTROL MEASURES

The project will be required to comply with regional rules, which would assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best available control measures (BACMs) so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 402 prohibits dust from creating a nuisance off site. These dust suppression techniques are summarized below. Implementation of these dust suppression techniques, as required by the SCAQMD, can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 to 75 percent. Compliance with the following BACMs would reduce impacts on nearby sensitive receptors.

Table 5-1. Best 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 four times per day; OR (3B) Take the actions specified in Table 5-2, 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 per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice 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 5-1 may be used.

Table 5-2. Dust Control Actions

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.

Table 5-2 (Continued)

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
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.
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 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c) (2d)	Apply chemical stabilizers within five working days of grading completion; OR Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a) (3b) (3c) (3d)	Apply water to at least 80 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 Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR Establish a vegetative ground cover within 21 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 Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

Table 5-2 (Continued)

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations ; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(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 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 5-2 may be used.

Table 5-3. Track-out Control Options

(1)	Pave or apply chemical stabilization at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.
(2)	Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that exiting vehicles do not travel on any unpaved road surface after passing through the track-out control device.
(3)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 5-3 may be used.

5.5 MITIGATION MEASURES

Mitigation measures are not required for the operation of the proposed project because there will not be a significant long-term impact upon air quality. NO_x emissions arising from short-term construction activities may be addressed by implementing various innovative emission control technologies, e.g., use of fuel additives, electronic timing and metering and use of alternative fuel {6}.

6.0 REFERENCES

1. South Coast Air Quality Management District web page, http://www.aqmd.gov.

2. South Coast Air Quality Management District (SCAQMD), *California Environmental Quality Act (CEQA) Air Quality Handbook of the SCAQMD*, April 1993.

3. Email correspondence with Walter Trisi, LOVAT, July 26, 2005.

4. Venice Pumping Plant Dual Main Force Project Draft Environmental Impact Report, Section 4.2.5, Circulation, Traffic and Transportation, Kaku Associates, September 2005.

5. US EPA Air Pollution Training Institute (APTI), *Preparation of Fine Particulate Emissions Inventories*, APTI course 419B, September 2004.

6. Joint Agency Report, *Reducing California's Petroleum Dependence*, California Energy Commission and California Air Resources Board, August 2003.

Appendix A

Table 3: Emissions from Open Trench Construction

Source [1]	Parameter 1 [1]	Parameter 2 [2]	Parameter 3 [1]	Parameter 4 [1]	CO [3] Emission Factor	CO [3] (lbs/day)	ROC [3] Emission Factor	ROC [3] (lbs/day)	NOx [3] Emission Factor	NOx [3] (lbs/day)	SOx [3] Emission Factor	SOx [3] (lbs/day)	PM10 [3] Emission Factor	PM10 [3] (lbs/day)
CONSTRUCTION EQUIPMENT:														
Concrete Saw	56 hp	0.73 load factor	6.5 hours/day	1 unit	0.020 lb/hp-hr	5.3	0.024 lb/hp-hr	6.4	0.002 lb/hp-hr	0.5	0.003 lb/hp-hr	0.8	0.001 lb/hp-hr	0.3
Pavement Breaker	100 hp	0.62 load factor	6.5 hours/day	1 unit	0.020 lb/hp-hr	8.1	0.003 lb/hp-hr	1.2	0.024 lb/hp-hr	9.7	0.002 lb/hp-hr	0.8	0.002 lb/hp-hr	0.6
Pile Driver	100 hp	0.62 load factor	6.5 hours/day	1 unit	0.020 lb/hp-hr	8.1	0.003 lb/hp-hr	1.2	0.024 lb/hp-hr	9.7	0.002 lb/hp-hr	0.8	0.002 lb/hp-hr	0.6
Crane	300 hp	0.43 load factor	6.5 hours/day	1 unit	0.009 lb/hp-hr	7.5	0.003 lb/hp-hr	2.5	0.023 lb/hp-hr	19.3	0.002 lb/hp-hr	1.7	0.002 lb/hp-hr	1.3
Backhoe Loader/ Compactor	100 hp	0.465 load factor	6.5 hours/day	1 unit	0.009 lb/hp-hr	2.7	0.003 lb/hp-hr	0.9	0.023 lb/hp-hr	7.0	0.002 lb/hp-hr	0.6	0.002 lb/hp-hr	0.5
Rubber Tire Loader	110 hp	0.54 load factor	6.5 hours/day	1 unit	0.011 lb/hp-hr	4.2	0.002 lb/hp-hr	0.8	0.023 lb/hp-hr	8.9	0.002 lb/hp-hr	0.8	0.002 lb/hp-hr	0.6
Excavator	360 hp	0.58 load factor	6.5 hours/day	1 unit	0.011 lb/hp-hr	14.9	0.001 lb/hp-hr	1.4	0.024 lb/hp-hr	32.6	0.002 lb/hp-hr	2.7	0.002 lb/hp-hr	2
Generator/ Compressor	45 hp	0.74 load factor	6.5 hours/day	1 unit	0.011 lb/hp-hr	2.4	0.002 lb/hp-hr	0.4	0.018 lb/hp-hr	3.9	0.002 lb/hp-hr	0.4	0.001 lb/hp-hr	0.2
Soil Compactor (Plate Compactor)	100 hp	0.43 load factor	6.5 hours/day	1 unit	0.007 lb/hp-hr	2.0	0.002 lb/hp-hr	0.6	0.020 lb/hp-hr	5.6	0.002 lb/hp-hr	0.6	0.001 lb/hp-hr	0.3
Asphalt Paver	102 hp	0.59 load factor	6.5 hours/day	1 unit	0.007 lb/hp-hr	2.7	0.001 lb/hp-hr	0.4	0.023 lb/hp-hr	9.0	0.002 lb/hp-hr	0.8	0.001 lb/hp-hr	0.4
Sweeper	97 hp	0.68 load factor	6.5 hours/day	1 unit	0.013 lb/hp-hr	5.6	0.003 lb/hp-hr	1.3	0.031 lb/hp-hr	13.3	0.002 lb/hp-hr	0.9	0.002 lb/hp-hr	0.6
Haul Trucks [4] (muck removal)	1 miles/roundtrip		10 trips/day	8 unit	0.019 lbs/mile	1.5	0.003 lbs/mile	0.2	0.027 lbs/mile	2.1	0.0002 lbs/mile	0.0	0.0005 lbs/mile	0.0386
Supply Truck [4]	1 miles/roundtrip		5 trips/day	1 unit	0.019 lbs/mile	0.1	0.003 lbs/mile	0.0	0.027 lbs/mile	0.1	0.0002 lbs/mile	0.0	0.0005 lbs/mile	0.0024
Water Truck			6.5 hours/day	1 unit	0.675 lb/hr	4.4	0.150 lb/hr	1.0	1.700 lb/hr	11.1	0.143 lb/hr	0.9	0.140 lb/hr	0.9
Worker's vehicles [4]			60 miles/day	45 employees	0.014 lbs/mile	37.6	0.001 lbs/mile	4.0	0.001 lbs/mile	4.0	0.00001 lbs/mile	0.024	0.0001 lbs/mile	0.21509
Fugitive Dust [5]			0.5 acres	30 days/month									0.11 tons/acre-month	3.667
Daily Total (lbs/day)						107.1		22.4		136.9		11.8		12.223
SCAQMD Daily Contruction Thresholds (pounds/day)						***550.00***		***75.0***		***100.0***		***150.00***		150
Exceed SCAQMD Significance Threshold (Y/N)?						**NO**		**NO**		**YES**		**NO**		NO

Notes:
[1] Power specifications for the construction equipment were based on the draft Venice Force Main EIR, section 4.2.5. The 1 mile round trip is based on an estimate of the average distance from the construction zone to the staging/ receiving area at Dockweiler State Beach.
[2] Load factors are from Table A9-8-D of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), .
[3] Emission factors for construction equipment are derived from SCAQMD, CEQA Air Quality Handbook, 1993, Table A-9-8-A and Table A-9-8-B.
[4] Passenger vehicle and delivery truck emission factors are derived from EMFAC2002 settings for scenario year 2006 - http://www.aqmd.gov/ceqa/handbook/onroad/onroadEF03_25.xls
[5] Fugitive dust emissions factor from was derived from the road construction estimates found in the EPA's Fine Particulate Manual - http://www.epa.gov/air/oaqps/eog/course419b/studentmanual/sm_chapter_7.pdf

Table 4: Emissions from Micro-Tunneling Construction

Source [1]	Parameter 1 [1]	Parameter 2 [2]	Parameter 3 [1]	Parameter 4 [1]	CO [3] Emission Factor	CO [3] (lbs/day)	ROC [3] Emission Factor	ROC [3] (lbs/day)	NOx [3] Emission Factor	NOx [3] (lbs/day)	SOx [3] Emission Factor	SOx [3] (lbs/day)	PM10 [3] Emission Factor	PM10 [3] (lbs/day)
CONSTRUCTION EQUIPMENT:														
Hydraulic Jack	90 hp	0.62 load factor	6.5 hours/day	1 unit	0.020 lb/hp-hr	7.3	0.003 lb/hp-hr	1.1	0.024 lb/hp-hr	8.7	0.002 lb/hp-hr	0.7	0.0015 lb/hp-hr	0.5
Crane	300 hp	0.43 load factor	6.5 hours/day	1 unit	0.009 lb/hp-hr	7.5	0.003 lb/hp-hr	2.5	0.023 lb/hp-hr	19.3	0.002 lb/hp-hr	1.7	0.0015 lb/hp-hr	1.3
Generator/ Compressor	45 hp	0.74 load factor	6.5 hours/day	5 unit	0.011 lb/hp-hr	11.9	0.002 lb/hp-hr	2.2	0.018 lb/hp-hr	19.5	0.002 lb/hp-hr	2.2	0.001 lb/hp-hr	1.1
Haul Trucks [4] (muck removal)	1 miles/roundtrip		6 trips/day	1 unit	0.019 lbs/mile	0.1	0.003 lbs/mile	0.0	0.027 lbs/mile	0.2	0.0002 lbs/mile	0.0	0.0005 lbs/mile	0.0029
Supply Truck [4]	1 miles/roundtrip		2 trips/day	1 unit	0.019 lbs/mile	0.0	0.003 lbs/mile	0.0	0.027 lbs/mile	0.1	0.0002 lbs/mile	0.0	0.0005 lbs/mile	0.00097
Worker's vehicles [4]			60 miles/day	17 employees	0.014 lbs/mile	14.2	0.001 lbs/mile	1.5	0.001 lbs/mile	1.5	0.00001 lbs/mile	0.009	0.0001 lbs/mile	0.08125
Fugitive Dust [5]			0.5 acres	30 days/month									0.11 tons/acre-month	3.667
Daily Total (lbs/day)						41.1		7.3		49.2		4.6		6.65
SCAQMD Daily Contruction Thresholds (pounds/day)						***550.00***		***75.0***		***100.0***		***150.00***		150
Exceed SCAQMD Significance Threshold (Y/N)?						NO		NO		NO		NO		NO

Table 4: Emissions from Micro-Tunneling Construction

Source [1]	Parameter 1 [1]	Parameter 2 [2]	Parameter 3 [1]	Parameter 4 [1]	CO [3] Emission Factor	CO [3] (lbs/day)	ROC [3] Emission Factor	ROC [3] (lbs/day)	NOx [3] Emission Factor	NOx [3] (lbs/day)	SOx [3] Emission Factor	SOx [3] (lbs/day)	PM10 [3] Emission Factor	PM10 [3] (lbs/day)
CONSTRUCTION EQUIPMENT:														
Hydraulic Jack	90 hp	0.62 load factor	6.5 hours/day	1 unit	0.020 lb/hp-hr	7.3	0.003 lb/hp-hr	1.1	0.024 lb/hp-hr	8.7	0.002 lb/hp-hr	0.7	0.0015 lb/hp-hr	0.5
Crane	300 hp	0.43 load factor	6.5 hours/day	1 unit	0.009 lb/hp-hr	7.5	0.003 lb/hp-hr	2.5	0.023 lb/hp-hr	19.3	0.002 lb/hp-hr	1.7	0.0015 lb/hp-hr	1.3
Generator/ Compressor	45 hp	0.74 load factor	6.5 hours/day	5 unit	0.011 lb/hp-hr	11.9	0.002 lb/hp-hr	2.2	0.018 lb/hp-hr	19.5	0.002 lb/hp-hr	2.2	0.001 lb/hp-hr	1.1
Haul Trucks [4] (muck removal)	1 miles/roundtrip		6 trips/day	1 unit	0.019 lbs/mile	0.1	0.003 lbs/mile	0.0	0.027 lbs/mile	0.2	0.0002 lbs/mile	0.0	0.001 lbs/mile	0.0053
Supply Truck [4]	1 miles/roundtrip		2 trips/day	1 unit	0.019 lbs/mile	0.0	0.003 lbs/mile	0.0	0.027 lbs/mile	0.1	0.0002 lbs/mile	0.0	0.001 lbs/mile	0.0018
Worker's vehicles [4]			60 miles/day	17 employees	0.014 lbs/mile	14.2	0.001 lbs/mile	1.5	0.001 lbs/mile	1.5	0.00001 lbs/mile	0.009	0.00011 lbs/mile	0.1163
Fugitive Dust [5]			0.5 acres	30 days/month									0.11 tons/acre-month	3.667
Daily Total (lbs/day)						41.1		7.3		49.2		4.6		6.69
SCAQMD Daily Contruction Thresholds (pounds/day)						***550.00***		***75.0***		***100.0***		***150.00***		150
Exceed SCAQMD Significance Threshold (Y/N)?						**NO**		**NO**		**NO**		**NO**		NO

	CO	ROC	NOx	SOx	PM10
Daily Total (lbs/day)	107.124	22.37812	136.8946	11.84538	12.34986
Daily Total (lbs/day)	41.05658	7.349172	49.23283	4.611164	6.690043
	148.1806	29.72729	186.1274	16.45654	19.0399
SCAQMD Daily Contru	550	75	100	150	150
	0.269419	0.396364	1.861274	0.10971	0.126933

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APPENDIX **D**

BIOLOGICAL RESOURCES

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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REPORT

VENICE PUMPING PLANT DUAL FORCE MAIN POTENTIAL PROJECT IMPACTS ON THE CALIFORNIA LEAST TERN TECHNICAL REPORT

Prepared for

City of Los Angeles
Department of Public Works
Bureau of Engineering

July 15, 2005

Keane Biological Consulting

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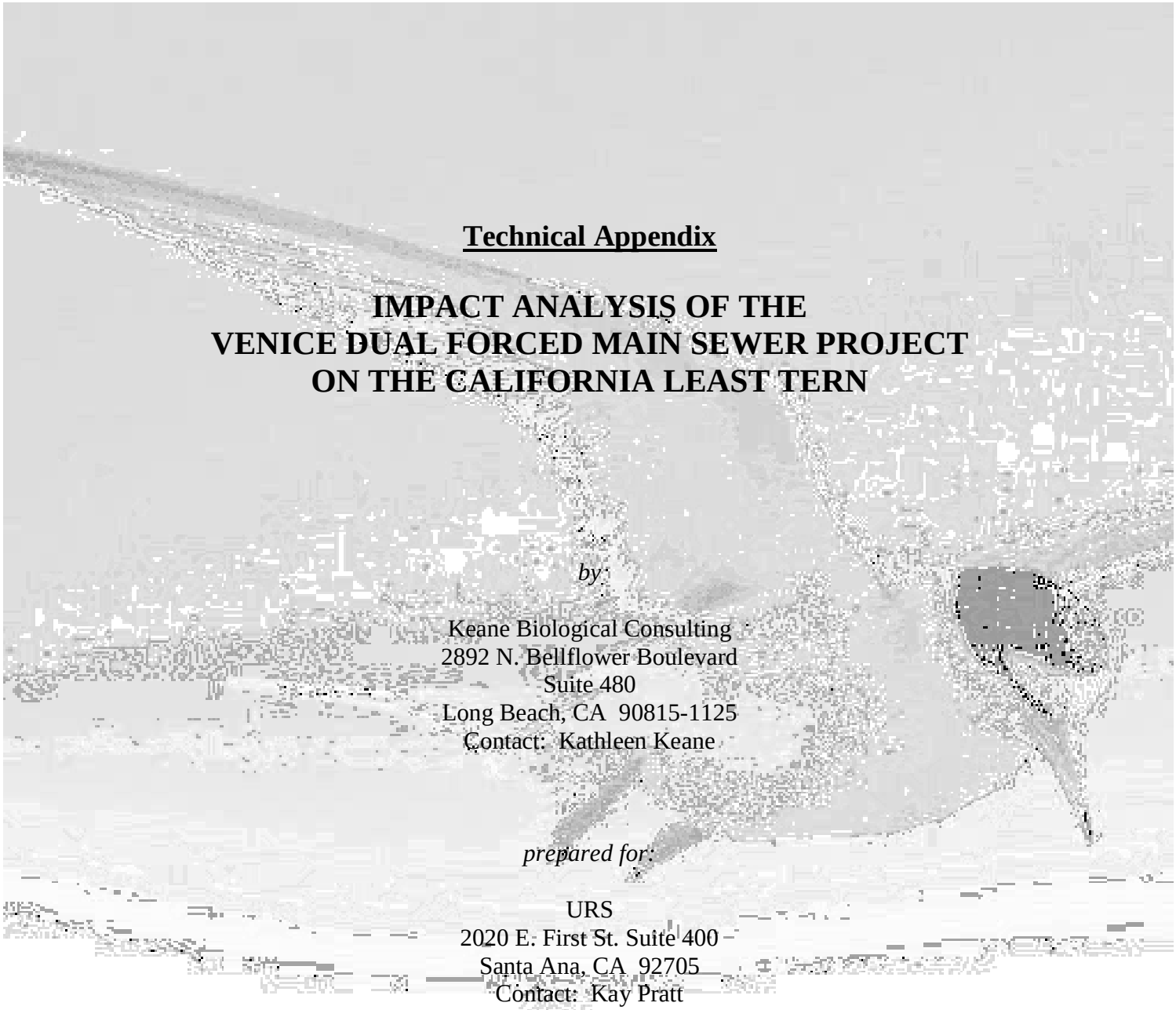

Technical Appendix

IMPACT ANALYSIS OF THE VENICE DUAL FORCED MAIN SEWER PROJECT ON THE CALIFORNIA LEAST TERN

by

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INTRODUCTION

This report serves as a technical appendix to environmental documentation prepared for the Venice Pumping Plant Dual Force Main Sewer project, proposed by the City of Los Angeles Department of Public Works, Bureau of Engineering. The purpose of this report is to present existing information regarding the California least tern (*Sterna antillarum browni*) and to discuss the potential project impacts that may occur on the this bird species, which is listed by both the federal and California Endangered Species Acts. A protected nesting area for the California least tern (hereafter "least tern") is located at Dockweiler State Beach within approximately 200 feet of one of the project alternatives. In addition, the least tern is known to forage in the Marina del Rey channel and Ballona Creek, which will be bisected by the proposed project (via underground tunneling) as well as at Ballona Lagoon and the Grand Canal, also in the project area.

This report was prepared by Kathy Keane of Keane Biological Consulting (KBC), who possesses over 20 years of experience conducting least tern research studies, nesting site monitoring, foraging studies, and impact analyses; and construction monitoring near least tern nesting sites.

Project Description

The City of Los Angeles is proposing to construct and install a new force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles. The project's intent is to construct a second force main to be used in tandem with the existing force main for the purpose of fulfilling two key objectives:

(1) To expand the capacity of the Coastal Interceptor Sewer's force main segment from the Venice Pumping Plant to a connection in Playa Del Rey in the vicinity of Waterview Street, such that all projected wet weather flows can be safely conveyed without future threats of spilling onto city streets and adjacent surface waters; and

(2) To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

Three alternative routes for the project are proposed:

Marquesas Way/Via Marina. From the Pumping Plant on Hurricane Street, the alignment would proceed east under the Grand Canal and along Marquesas Way, then southeasterly on Via Marina to the Marina Del Rey entrance channel. It would then cross under the Marina Del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed westerly to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina Del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is the shortest route—approximately 10,000 feet.

Dockweiler Beach Alignment. From the pumping plant on Hurricane Street, the alignment would proceed westerly to the existing 20-feet wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

The Dockweiler Beach alignment would be located within 200 feet of a protected and fenced nesting site for the least tern, called the Venice Beach nesting site and further described under Species Background.

Construction Methods

The alignments under consideration cross the Marina del Rey entrance channel and Ballona Creek channel, requiring about 1,800 feet of micro-tunneling[1] under the two channels; microtunneling will also occur under the Grand Canal for the Marquesas Way alignment. Elsewhere along each alignment, two alternative construction methods are under consideration: open trench and micro-tunneling. While open trench construction costs less, micro-tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels and can facilitate mitigation of other impacts such as noise.

The proposed project will be designed, constructed and operated in accordance with all applicable laws, regulations, and formally adopted City of Los Angeles standards and specifications (e.g., Los Angeles Municipal Code and Bureau of Engineering Standard Plans). Construction will adhere to uniform practices established within current engineering and construction standards specifically adopted by the City of Los Angeles.

Species Background

Listing Status and Range

The California least tern is one of three least tern subspecies breeding in North America. The subspecies was listed as endangered under the federal Endangered Species Act in 1970 and by the California Endangered Species Act in 1971. The interior race of least tern (*Sterna antillarum athalassos*), also federally listed as endangered, primarily occupies the Mississippi River valley and its tributaries. The eastern coast race (*Sterna antillarum antillarum*) nests from Massachusetts to Florida (Massey 1974). The current breeding range of the west coast race, the California least tern, extends in California from San Francisco Bay along the coast to the Tijuana River estuary, just north of the U.S.-Mexico border (Small 1994), and in Mexico along both the east and west coasts of Baja California. Least terns presumably winter in Central America or northern South America, although their wintering range remains unknown.

[1] Microtunneling uses a mud slurry to carry excavated material to the surface with generally no impact to the surface above the tunnel. However, the slurry separation plant will generate noise and vibration proportional to the size of the microtunneling pipe. The microtunneling area includes a small shaft at either end called the jacking pit (where the slurry separator and pipes are located) and the receiving pit (where the microtunneling machine will be removed). The jacking pit results in more noise because of loading trucks with the tunnel material. However, microtunneling generally results in less noise and other surface impacts than open cut excavation, and it is possible to minimize noise and vibration of the slurry separator, crane and generators at the jacking pit with sound walls (Justin Brown, pers. comm.).

Historical Nesting

Least terns historically nested in several small, scattered aggregations on sandy beaches and salt flats, although the progressive loss of undisturbed sandy beaches resulted in a severe reduction in both nesting sites and numbers of nesting pairs (Chambers 1908). According to A. McCormick, quoted in Bent (1921), the beaches of Los Angeles County in 1899 "from Santa Monica southward afford excellent breeding grounds for numberless birds of this species." By 1943, "breeding stations [are] few, owing to almost complete human use of suitable beaches" (Grinnell and Miller 1944). In recent years, Los Angeles County has supported only two protected least tern nesting sites, compared with six sites in Ventura County, four sites in Orange County, and over 20 sites in San Diego County. The two Los Angeles County sites are the Venice Beach nesting site at Dockweiler State Beach, and the Pier 400 nesting site in the Los Angeles Harbor.

Population

Following listing under the federal and state endangered species acts, the number of least tern nesting sites in California gradually increased from 23 in 1976, when statewide censuses were initiated, to approximately 37 in 2004. The estimated number of nesting pairs also escalated from approximately 664 in 1976 to 6,400 in 2004, despite a decline in 2002 to approximately 3,500 pairs due to apparent region-wide prey deficiencies. The number of nesting pairs in Los Angeles County increased from an estimated 238 in 1990 to 455 in 1997, and to 968 in 2004[2], but much of the increase has been at the Los Angeles Harbor nesting site[3] (KBC 2004a).

Conservation

Protection of nesting sites with fencing and signage has effectively limited human disturbance at most nesting sites. However, both native and non-native predators have been implicated in major losses of eggs, chicks, fledglings and occasionally adults at several sites and over several years. Although many native animals are currently, and have likely historically been, least tern predators (e.g., American kestrel [*Falco sparverius*], common raven [*Corvus corax*], coyote [*Canis latrans*]), the proximity of nesting sites to human-modified habitats has resulted in increased threats of predation. For example, feral cats and dogs, free-roaming house cats, introduced red foxes (*Vulpes vulpes*), and animals whose populations benefit from human presence (e.g., American crow [*Corvus brachyrhynchos*]) have exerted strong predation pressures at many nesting sites. In addition, many predators appear to benefit from the localized and abundant prey source provided by the few remaining nesting areas, while others such as the American kestrel have artificially increased populations near least tern nesting sites because of the abundance of non-native palm trees along California beaches and residential areas (kestrels nest in the cavities created by dead palm leaves). In addition, occasional summer storm systems (as in 1995), and recurrent human disturbance at some sites such as the Tijuana River, affect reproductive success. Finally, El Niño systems, or other weather patterns that influence water temperature or salinity, affect availability of least tern prey, which can result in chick mortality due to starvation. Thus, although the least tern population has increased substantially from its pre-listing status, continued monitoring and predator management at nesting sites is required to ensure reproductive success and long-term survival (Keane 1999).

[2] Data from unpublished annual least tern reports by the California Department of Fish and Game.

[3] In 2004, the Los Angeles Harbor Pier 400 nesting site supported the second-largest least tern colony in the state.

Least Tern Foraging

Least terns forage by flying over the water and diving/plunging for fish (Thompson et al. 1997). The least tern favors a diet of small fishes such as northern anchovy (*Engraulis mordax*), topsmelt (*Atherinops affinis*), jacksmelt (*A. californiensis*), killifish (*Fundulus parvipinnis*), shiner perch (*Cymatogaster aggregata*), and deep-body (*Anchoa compressa*) or slough (*A. delicatissima*) anchovies (Atwood and Kelly 1984).

Atwood and Minsky (1983) conducted foraging studies near three least tern nesting sites including the Venice Beach nesting site. Their study concluded that 75% of least tern foraging occurred within 0.75 mile of their nesting site, but foraging also occurred up to 1.86 miles from the nesting site. Historical information asserts that least terns prefer shallow-water habitats (less than 20 feet in depth) such as bays, lagoons, estuaries, tidal marshes, and lakes (Thompson et al. 1997). Least tern foraging surveys initiated in the Los Angeles Harbor in 1982 and continued for three years indicated that foraging activity was concentrated in shallow water, particularly adjacent to the least tern nesting site, with little activity in deeper, more distant water (Massey and Atwood 1984). However, some recent surveys (KBC 2001, 2003, and 2004b) show that a substantial amount of foraging occurs in offshore in deeper ocean waters. For example, during 2001, as part of a three-year study in the Los Angeles Harbor, over 25% of transit flights recorded at 28 survey stations were recorded over the breakwaters, indicating that least terns were foraging extensively in open ocean beyond the Los Angeles Harbor (data from KBC 2002). A history of least tern foraging studies through 1988 is presented in Keane (1988); foraging studies thereafter are discussed in KBC (2001, 2003 and 2004b).

STUDY METHODS

Literature Review

KBC reviewed the history of least tern nesting at the Venice Beach nesting site, located adjacent to the project area, provided in annual reports on statewide least tern productivity compiled by the California Department of Fish and Game (CDFG). We also reviewed the project description and project maps to assess the extent of potential project impacts on the least tern nesting site.

Nest Site Monitoring

Least tern monitoring studies at Venice Beach and other nesting sites have been conducted annually since 1973 to estimate numbers of nesting pairs and reproductive success. Biologists that monitor nesting sites are authorized to do so through 10(a)(1)(A) permits issued by the United States Fish and Wildlife Service (USFWS) and a Memorandum of Understanding issued by CDFG. Results of annual monitoring studies are summarized in annual reports compiled by the CDFG, as well as in reports for Venice Beach prepared by KBC (2003b, 2003c, 2004c).

Monitoring at most nesting sites, including the Venice Beach nesting site, is conducted by entry into the site by monitors to find, mark with a numbered stick and check the status of least tern nests. Although monitoring temporarily disturbs nesting terns, it allows for the collection of detailed data including the number of existing nests, the number of eggs and chicks in each nest, and calculation of incubation periods and hatching success. In addition, evidence of predation (e.g., mammal tracks, remains of chicks or eggs) can also be noted and subsequently addressed if warranted. Monitors must also estimate the fledgling numbers for their site.

EXISTING CONDITIONS

Venice Beach Nesting Site History

Least terns were known to have nested near Venice before 1919 (Edwards 1919). According to Bender (1974), a nesting colony of least terns existed in the Playa del Rey area during or before the late 1960's. In 1973, nesting least terns were discovered on an alkali flat in a degraded salt marsh just south of the Ballona Creek flood control channel. They were relatively productive most years from 1973 to 1979, with 10 to 30 breeding pairs each year. On May 8, 1977, an unseasonable rain storm flooded the salt flat, rendering it unsuitable for nesting. Two weeks later, three pairs of least terns were discovered nesting on the sand at Venice Beach just north of the Ballona Creek mouth. Emergency fencing was erected, and activities to protect nesting terns from disturbance were initiated. This was apparently the first known nesting at Venice Beach (Comrack 2001), and the site supported approximately 35 pairs during its first year (Table 1).

Nesting pairs increased to 158 in 1980, to 206 in 1990 and to 303 in 1998 (Table 1). The site also contributed over 10% of the fledglings for all nesting sites in the state from 1978 through 1994 (Table 1). However, American crows became major predators at the site in 1996, reducing productivity most years thereafter to below 0.5 fledglings per pair, and to zero in 1999, 2001, 2004 and 2005 (Table 1).

Venice Beach Nesting Site Characteristics

The Venice Beach nesting site is located on Dockweiler State Beach just north of the Marina del Rey channel mouth, between Yawl and Topsail streets. It is protected with permanent fencing and chick fence, which must be frequently maintained during the season to ensure that chick losses do not occur. It is currently 4.18 acres in size, surrounded by deteriorating and formerly eight-foot high chain-link fencing, with plastic mesh fencing approximately two feet high to confine least tern chicks within the nesting site. Lines of barbed wire cantilevered toward the outside to deter entry by cats is present at the top of the chain link fence but is also deteriorating.

Because the site is protected from regular beach sweeping, it supports a coastal dune vegetation community comprised of native and nonnative dune dominated by beach evening primrose *(Camissonia cheiranthifolia suffruticosa*), beach bur (*Ambrosia chamissonis bipinnatisecta*) and ice plant (*Carpobrotus* spp.) (Comrack 2001).

Protection of the nesting site at Venice Beach with fencing and monitoring has been provided annually since 1977. Temporary fencing was erected and removed seasonally by the County of Los Angeles from 1977 until 1980. A permanent chain-link fence was constructed prior to the start of the 1981 breeding season, and when it deteriorated, a replacement fence was erected prior to the 1988 season. Extensive fence repair and interpretive signs were funded by Environment Now, based in Santa Monica, in 1998. Thereafter, repairs of existing chick fencing, placement of new chick fencing as needed, minor repairs in chain link fencing and removal of sand buildup is conducted annually by CDFG and volunteers before least tern arrival.

TABLE 1.
Summary of Least Tern Nesting and Productivity at the Venice Beach nesting site, 1977 to 2005[a]

Year	Number of Pairs[b]	Percent of Statewide Pairs[c]	Number of Nests	Number of Fledglings	Fledglings Per Pair	Percent of Statewide Fledglings[c]
1976	Nesting site not yet available					
1977	35	4.1%	?	30	0.86	5.7%
1978	68	8.2%	?	75	1.1	17.9%
1979	88	8.8%	?	140	1.68	20.1%
1980	158	13.5%	?	240	1.52	31.2%
1981	150	15.4%	?	195	1.3	23.4%
1982	170	16.6%	?	60	0.35	11.7%
1983	145	12.1%	?	140	0.97	15.7%
1984	83	8.6%	?	94	1.13	18.1%
1985	96	9.4%	?	113	1.18	17.3%
1986	104	10.8%	?	113	1.09	12.8%
1987	109	11.7%	?	82	0.75	13.0%
1988	165	13.2%	?	192	1.16	17.0%
1989	137	11.0%	?	134	0.98	17.5%
1990	206	12.1%	?	279	1.35	17.3%
1991	198	10.8%	?	200	1.01	11.2%
1992	229	10.9%	275	245	1.07	17.4%
1993	246	10.6%	219	288	0.85	14.2%
1994	345	12.4%	345	224	0.65	12.4%
1995	310	11.9%	354	44	0.14	4.1%
1996	271	8.0%	361	92	0.33	4.6%
1997	375	9.4%	400	263	0.7	8.2%
1998	383	9.2%	387	200	0.52	7.3%
1999	43	1.2%	50	0	0	0.0%
2000	274	5.9%	308	150	0.55	3.9%
2001	331	6.9%	348	388	0.91	8.5%
2002	2	0.1%	2	0	0	0.0%
2003	348	5.1%	371	181	0.52	6.9%
2004	0	0.0%	24	0	0	0.0%
2005	120	Unknown[d]	90	0	0	Unknown[d]

[a] Data for this table were obtained from unpublished annual reports funded and compiled by the California Department of Fish and Game.

[b] Values are number of least tern nests minus estimated number of renesting pairs.

[c] Percent of statewide total of nesting pairs and fledglings, derived from means of ranges presented in annual reports prepared for the California Department of Fish and Game. The Venice Beach site is one of approximately 38 sites statewide.

[d] 2005 data for other nesting sites in the state was not available when this report was completed

Because of the current condition of site fencing, and because of a need for additional nesting space in Los Angeles County (and a lack of potential suitable locations for new sites), CDFG prepared plans to replace the fence as well as expand the site in 2002. However, the project has been delayed until the fall of 2005. The nesting site will be expanded from 4.18 to nine acres, and new gates to allow human and maintenance vehicle access will be installed. The project has been approved by the California Coastal Commission, permit number 5-87-847-A. One public beach volleyball court will be moved to accommodate the enlarged site and the protective fence enclosure will be replaced, along with new interpretive signs (Comrack 2001).

Venice Beach Recent Least Tern Nesting

In 2002, least tern activity was observed early May but nests were not initiated until the week of May 26, and eggs were soon depredated by American crow. No additional nests were discovered during the remainder of the season, and by the end of June, no least tern activity was recorded at the site. No chicks or fledglings were produced for the 2002 season. Disturbance and depredation by crows was likely the cause of early abandonment of the site. A minimum of four crows was observed at the site on each visit, and the crows would follow monitors around the perimeter of the nesting site. Crow deterrents, including placement of crow carcasses in the site, have worked in the past but were ineffective in 2002. However, least terns had a very poor reproductive year throughout the state in 2002, with an estimated statewide reproductive success of 0.16 fledglings per pair (KBC 2003b).

The 2003 nesting season at Venice Beach was successful compared to the 2002 nesting season. The terns faced some predation by crows early in the season and again late in the season when most of the terns had already left the site. Crow carcasses were placed once again in the nesting site to deter crows from entering the site. As the number of terns increased at the site, the number of crows decreased. The mobbing behavior of the terns seemed to be effective. The estimated 348 nests is similar to numbers recorded at the site in the late 1990's (Table 1); fledgling numbers, always difficult to estimate, were between 181 to 396 for 2003 (KBC 2003c).

The 2004 nesting season failed to produce any young terns due primarily to heavy egg predation by American crows, although crow carcasses and other methods that were successful in 2003 to deter crows failed in 2004. Problems were apparent from the beginning with the first egg date 11 days later than 2003 and few adults attending the nesting site during most of May. Total nests were estimated at 24, with no eggs surviving to hatching. The nesting site supported fewer than 10 nesting pairs during all monitoring visits in June, resulting ineffective predator defense. Thus, the few eggs laid were quickly depredated by American crows. Evidence of probable further predation by black-crowned night herons (*Nycticorax nycticorax*) in late June resulted in abandonment of the site by least terns and no productivity (KBC 2004c).

The 2005 nesting season began well, with up to 210 least terns present in mid-May. However, reported fish die-offs due to domoic acid in Santa Monica Bay may have reduced prey availability for least terns and delayed nesting. Approximately 90 nests were initiated between May 24 and June 7, 2005, but all eggs were depredated by American crows and the nesting site was abandoned on June 8, 2005 (T. Ryan, pers. comm., 2005.).

With the proposed expansion of the site during the fall of 2005, and more effective predator management proposed for 2006, it is possible that the number of pairs nesting at Venice Beach will increase in 2006 and future years. In addition, the assistance of local residents who provide reports of potential predator activities and fence condition, and their involvement in educating the public through personal communications or interpretive signs, will help ensure a future successful nesting.

IMPACT ANALYSIS

Thresholds of Significance

Potential impacts of the Venice Pumping Plant Forced Main Sewer project on the California least tern were evaluated pursuant to guidelines of the California Environmental Quality Act (CEQA). A primary objective of CEQA is to disclose to decision-makers and the public the "significant" environmental effects of proposed activities. In accordance with the *CEQA Guidelines* and checklist and for the purposes of this EIR, the proposed project would have a significant impact on biological resources and require mitigation if it would:

> Have a substantial[4] 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.

The checklist includes other bullet items regarding impacts on biological resources; however, for this report, which focuses on the least tern, a special-status species known to occur in the project vicinity, only the above item is discussed.

Permanent Impacts

Marquesas Way/Via Marina alignment: This alignment is located a minimum of 1,000 feet from the Venice Beach least tern nesting site and thus would not result in any permanent effects on the nesting site. No permanent impacts on least tern foraging habitat (Marina del Rey Channel, Ballona Creek, Grand Canal) in the project area are expected (however, see Temporary Impacts).

Pacific Avenue Alignment: This alignment is located a minimum of 600 feet from the least tern nesting site and thus would not have any permanent effects on the nesting site. No permanent impacts on least tern foraging habitat (Marina del Rey Channel, Ballona Creek, Grand Canal) in the project area are expected (however, see Temporary Impacts).

Dockweiler Beach Alignment: Portions of this alignment (between Yawl and Topsail streets) are located within 200 feet of the least tern nesting site. However, construction activities associated with this alignment would remain away from the nesting site and thus would not be expected to result in any permanent effects on least terns or the nesting site. However, construction may result in temporary effects on least terns (see Temporary Impacts). No permanent impacts on least tern foraging habitat (Marina del Rey Channel, Ballona Creek, Grand Canal) in the project area are expected (however, see Temporary Impacts).

[4] Because CEQA does not define the term "substantial," a substantial biological effect is defined in this section of the document as one that would adversely affect a biological resource that is considered rare or of limited distribution in coastal Los Angeles County.

Temporary Impacts

Marina del Rey Channel, Ballona Creek, and the Grand Canal: All three alignments cross under the Marina del Rey channel and Ballona Creek via microtunneling, and the Marquesas Way alignment crosses under the Grand Canal via microtunneling. Temporary turbidity in these areas could occur with other tunneling methods, and turbidity may affect least tern foraging either by reducing local prey availability and/or by compromising visibility of prey. However, in general, microtunneling would occur below the bottom of these waterways, and microtunneling generally has no effect on the surface (Justin Brown, pers. comm.). Thus, no turbidity is expected in any of the waterways of the project area where microtunneling will occur. No other temporary impacts on least tern foraging habitat are expected to occur in the project area.

Marquesas Way/Via Marina alignment: This alignment is located a minimum of 1,000 feet from the nesting site and thus would not result in any temporary effects on the nesting site. Considering the fact that least terns nest successfully adjacent to a container terminal in the Los Angeles Harbor and have nested successfully amid substantial human disturbance on a crowded beach in the summer, noise and other activities associated with project construction a minimum of 1,000 feet away would not be expected to affect least terns should construction occur during the least tern nesting season.

Pacific Avenue Alignment: This alignment is located a minimum of 600 feet from the least tern nesting site and thus would not result in any temporary effects on the nesting site. As discussed above, least terns have shown adaptability to noise and human disturbance beyond the fenced nesting site; thus, noise and other activities associated with project construction a minimum of 600 feet away would not be expected to affect least terns should construction occur during the least tern nesting season.

Dockweiler Beach Alignment: Portions of this alignment (between Yawl and Topsail streets) are located within 200 feet of the least tern nesting. If any construction activities were to occur during the least tern nesting season (approximately mid-April through mid-August) when least terns are present (e.g., they have not abandoned the site as they did early in 2004 and 2005), significant temporary impacts on least terns at the nesting site may result if open-cut excavation (trenching) is used, or if microtunneling is used and the jacking pit and/or receiving pit are within 500 feet of the nesting site. These impacts may include noise, surface vibration and increased human disturbance at the nesting site. In addition, the presence of a work crew in the vicinity of the nesting site may attract American crows, which may then enter the nesting site and prey on least tern eggs. If microtunneling is used rather than open-cut excavation, and the jacking pit and receiving pit are more than 500 feet from the nesting site, no significant temporary impacts on least terns at the nesting site would be expected, assuming the microtunneling operation is managed properly and does not result in surface impacts.

AVOIDANCE AND MINIMIZATION MEASURES

1) If the Dockweiler Beach alignment is selected and construction is to be above-ground, or if microtunneling is used and the jacking and/or receving pit is within 500 feet of the nesting site, and any construction activities are to occur during the least tern nesting season (April 1 through August 31), a biological monitor with experience observing and documenting disturbance to least terns shall be present during all construction activities within 500 feet of the nesting site to ensure that construction activities do not adversely

affect least terns using the nesting site. In addition, the monitors will ensure that work crews properly dispose of all garbage in covered containers so that work crews do not attract crows into the area and thus contribute indirectly to depredation of least tern eggs and chicks by crows.

2) Construction of any of the three alignments includes microtunneling under the Marina del Rey Channel and Ballona Creek, and the Marquesas Way alignment includes microtunneling under the Grand Canal. All these waterways have been documented as foraging habitat for the least tern. If any microtunneling activities are to occur during the least tern nesting season (April 1 through August 31), a water quality specialist or biological monitor shall conduct surveys at microtunneling locations a minimum of once daily to ensure that microtunneling does not increase water turbidity. If any turbidity is discovered in these areas, the microtunneling activities shall cease until the leak from the tunnel that is resulting in turbidity is repaired.

Unavoidable Adverse Impacts

If the avoidance and minimization measures above are implemented successfully, no unavoidable adverse impacts are expected.

Cumulative and Secondary Impacts

Assuming the avoidance and minimization measures above are implemented successfully, the project would not contribute to cumulative adverse effects on least terns in southern California or result in secondary impacts on least terns, least tern nesting sites or least tern foraging habitat.

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REPORT

VENICE PUMPING PLANT
DUAL FORCE MAIN
MARINE RESOURCE ANALYSIS
TECHNICAL REPORT

Prepared for

City of Los Angeles
Department of Public Works
Bureau of Engineering

MBC Applied Environmental Sciences

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MARINE RESOURCE ANALYSIS FOR THE PROPOSED VENICE PUMPING PLANT DUAL FORCE MAIN

PROJECT DESCRIPTION

The City of Los Angeles is proposing to construct and install a new force main sewer extending from the Venice Pumping Plant at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles. The project's intent is to construct a second force main to be used in tandem with the existing force main for the purpose of fulfilling two key objectives:

(1) To expand the capacity of the Coastal Interceptor Sewer's force main segment from the Venice Pumping Plant to a connection in Playa Del Rey in the vicinity of Waterview Street, such that all projected wet weather flows can be safely conveyed without future threats of spilling onto city streets and adjacent surface waters; and

(2) To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

The City of Los Angeles Collection Systems Engineering Division investigated and identified several alternative alignments and construction methods for the placement of a new force main. An examination of open-trench method of construction and/or micro-tunneling is proposed for the roadway portion of the project, and micro-tunneling is the proposed method to pass beneath the Marina del Rey and Ballona Creek channels.

REGIONAL SETTING

The project is located in the Marina del Rey and Venice area. This area was once a large wetland marsh fed by the meandering Ballona Creek, which drained into Santa Monica Bay near the current entrance of Ballona Creek. Throughout the 20th century this area was highly modified by the channelization of Ballona Creek, establishment of the Venice Canal system, construction of Marina del Rey and general degradation of the remaining wetlands.

Wetlands in the Santa Monica Bay are threatened by the proximity of highly urbanized areas and the impacts of urbanization on the physical, biological and chemical characteristics of the wetlands (MBC 1993). Specific impacts include: stream alteration and channelization, draining, dredging and filling, diking, urban runoff, boating and shipping, housing and commercial development, introduced species and increased use of wetland areas for recreation. Wetland habitat loss was not unique to Santa Monica Bay; between the late 1800s and the mid-1960s much of the wetland resources of Los Angeles and Orange counties were "reclaimed" with resulting loss of biological diversity and productivity (MBC 1988). Two-thirds of the 28 large estuaries once found in southern California were dredged or filled. Since 1900, 75% of the coastal wetlands and estuaries in southern California have been destroyed or severely altered.

Historically, the Ballona wetland complex covered 2,100 acres as recently as 1868 (MBC 1993). By 1894, that area was reduced to approximately 1,535 acres, from the present-day community of Venice to the north, southwest through La Ballona, inland to Machado and south to present-day Culver Boulevard. This area consisted of a broad marsh behind a long sand spit with a narrow, intermittent opening to Santa Monica Bay. This opening was probably closed in spring and summer, leaving a brackish lagoon behind the spit until winter storms and runoff breached the sand spit, opening the marsh to tidal exchange.

By 1930, the major lagoons of the Ballona wetland complex were drained for agricultural use, oil and gas development, and mosquito and black gnat abatement (MBC 1993). Roads and levees were built across the wetlands to provide access to oil platforms from the 1930s through the 1950s. In the early 1960s the dredging of Marina del Rey further reduced wetland habitat, and the dredge spoils were placed on the northern section of the wetlands that were previously used for agriculture.

By 1938, Ballona Creek, the main freshwater source for the Ballona wetland complex, was completely channelized for flood control (MBC 1993). Channelization reduced freshwater and nutrient flow into the wetland marsh, and allowed the natural inlet to become blocked by sediments. Channelization also altered the salinity and depth regimes of the wetlands, deepening channels and increasing marine influence in the remaining wetland marsh.

Today, the remaining Ballona wetland complex is comprised primarily of Ballona Wetlands, Ballona Lagoon, and Del Rey Lagoon. Additionally, Marina del Rey and Ballona Creek, both highly modified from their natural states as part of the wetlands, are adjacent to and continue to influence the remaining wetlands.

Marina del Rey is one of the largest manmade marinas in the world with more than 6,000 berths (Pondella and Allen, unpublished data). Construction on the marina began in 1960 with the filling or draining of much of the wetlands to allow for urban development. Most of the marina is silt-bottomed with little hard substrate other than retaining walls, floats and pilings. One basin (Basin D) on the west side of the marina terminates in a sandy swimming beach, and eelgrass beds (*Zostera marina*) are present in the subtidal areas of the basin. The marina connects to Santa Monica Bay through an entrance channel bounded by breakwaters running perpendicular to shore with a terminal breakwall running parallel to shore protecting the entrance.

Ballona Creek flood control channel runs parallel to the Marina del Rey entrance channel at the mouth of the creek, emptying into Santa Monica Bay south of the Marina del Rey channel. Within the project area, Ballona Creek is riprap-lined and primarily marine, providing tidal exchange for both Del Rey Lagoon and the nearby Ballona Wetlands. Further upstream the Ballona Creek drains most of Culver City and the surrounding areas (WRA 1990).

To the west of the project area, the Marina del Rey and Ballona Creek entrances bisect Dockweiler Sate Beach. The north beach is adjacent to the Ballona Lagoon and Marina del Rey to the east. A protected California least tern (*Sterna antillarum browni*) nesting area is located near the southern end of the beach. The breeding area is fenced to exclude humans and predators, and the beach within the enclosure is vegetated. The southern extent of Dockweiler State Beach is adjacent to Del Rey Lagoon, Playa del Rey and the Los Angeles International Airport to the south. In the Dey Rey Lagoon area several fenced, vegetated dunes back the beach, and steeper slopes backing the beach in the vicinity of the airport are also vegetated. Two western snowy plover critical habitat units have been proposed for Dockweiler State Beach, the northern most west of the airport, slightly south of the southern extent of the project. Dockweiler State Beach, particularly the upper, dry back-beach area where proposed project activities may occur are, for most part, groomed with maintained paths and volleyball courts.

Initial analysis identified two Environmentally Sensitive Habitat Areas (ESHA's) located in close proximity to most of the potential alignments. To the north, three proposed project alignments are found in proximity to the Grand Canal/Ballona Lagoon in the Venice and Marina del Rey area. To the south, two proposed alignments are near Del Rey Lagoon situated in Playa Del Rey.

EXISTING CONDITIONS

Ballona Lagoon

Ballona Lagoon is a 16-acre, artificially restricted tidal channel consisting of 14.5 acres of open water habitat and 1.5 acres of intertidal habitat (Deets et al 2001). The lagoon varies in width from 150 to 250 ft and is approximately 4,000 ft in length. Ballona Lagoon is at the southern end of the drainage that includes both the Venice Canals and Ballona Lagoon, connected to the Venice Canal to the north via the Grand Canal and to the Pacific Ocean to the south through tide gates that lead to the entrance channel of Marina del Rey (Deets et al 2001, BLMP 2003). Together the Venice Canal–Ballona wetland system drain an estimated 216 acres of the surrounding urban land (Deets et al 2001). Tidal range in the lagoon is restricted by tidal gates operation with an actual tidal range measured during 2000 from about +0.5 to +5.1 ft. The tide gate is designed to close when tides exceed +4.75 ft Mean Sea Level (MSL) (BLMP 2003). On the occasions that the gate closes, the gate reopens when the tide falls below about +4 ft MSL. The County of Los Angeles Department of Beaches and Harbors monitors the depth of water in the channel and limits the height of the water to prevent flooding of adjacent homes. Water level in Ballona Lagoon is further reduced when rain is expected.

Ballona Lagoon, originally a section of the Ballona Creek drainage, became part of an artificial channel system serving the Venice community since the early 1900s (WRA 1990, BLMP 2003). The canal system, with both freshwater and marine influences gradually developed into a wetland system. By the 1970s, Ballona Lagoon was choked with sediments and polluted by urban runoff. In addition, ease of access, erosion and disrepair of the lagoon banks, and extensive use of non-native landscape plants reduced the natural diversity of the lagoon. As a result of continued degradation of the wetland, the Ballona Lagoon Marine Preserve (BLMP) was formed in 1988 to study, protect and restore the wetland habitat of Ballona Lagoon.

In 1989, the BLMP prepared an initial draft resource enhancement plan for Ballona Lagoon, with final plan approval in 1997 (BLMP 2003). The finalized plan included: creation of a deepwater pool at the southern end of the lagoon; improvements in the tidal gates to increase the tidal prism; minor intertidal grading and channelization; removal of concrete structures; removal of exotic plants, revegetation with native wetland and dune species; improvement in public access, including path improvements, a viewing platform and fencing to protect sensitive habitats; and implementation of a ten-year monitoring plan. Implementation of the Ballona Lagoon Enhancement Plan occurred in 1997. Monitoring to assess the success of the enhancement project began in 1999. An additional phase of the Enhancement Plan to make improvements to the west bank of the lagoon is under consideration.

Water Quality. Combinations of tidal flushing, freshwater sources, and nutrient inputs from urban and agricultural runoff affect water quality within Ballona Lagoon. Despite restricted circulation prior to implementation of the enhancement plan, water quality in the lagoon was considered to be relative good (WRA 1990). Water temperature in Ballona Lagoon was found to range from 19 to 26°C, although generally similar to levels found in offshore waters (Deets et al 2001, WRA 1990, CERES 2003). Salinity was found to be seasonally variable in the lagoon with low salinities found during times of stormwater runoff and hypersaline conditions (>40 parts per thousand [ppt]) occasionally found in some areas of the lagoon, likely a result of poor circulation and solar evaporation during the summer. Dissolved oxygen (DO) in the lagoon was found to range from <4.0 mg/l to 9.5 mg/l, while hydrogen ion concentration (pH) showed large variations, ranging from 6.2 to 8.4 between 1994 and 1995.

Beginning in May 2000, monthly sampling of water quality parameters was initiated at four stations in Ballona Lagoon. During the first eight months of monitoring, temperatures in the lagoon were ranged from about 15 to 30° C, with highest temperatures recorded in the lagoon in June (Deets et al. 2001). Temperatures were lowest in November and December, averaging 15° C throughout the area. In general, temperatures in Ballona Lagoon were found to be lowest at the

southern end of the lagoon near the tide gates and gradually increased with distance from the tide gate and where the water is shallower.

Salinity in Ballona Lagoon during the 2000 sampling was found to range from about 22 to 36 ppt (Deets et al. 2001). Salinity within the lagoon was consistently lower than at a station on the Marina del Rey side of the tide gates. Salinity generally decreased with distance along the channel, although the single lowest value occurred in December at about half the length of lagoon. Evaporation-induced hypersaline conditions were not noted during the survey.

Dissolved oxygen concentrations in Ballona Lagoon in 2000 ranged from about 8.5 to 14 mg/l (Deets et al. 2001). Average DO was highest at stations in the northern sections of the lagoon, with highest average DO found near the middle of the lagoon where heavy mats of green algae was observed and high DO values were consistently recorded between August and December 2000. Low DO conditions were not noted during the sampling.

Average pH in the lagoon was found to range narrowly from about 8.1 to 8.4 (Deets et al. 2001). Lowest average values were found near the tide gate, while highest pH occurred midway along the length of the channel. Nitrate and phosphate values were found to be relatively consistent, with occasional spikes, throughout the sampling. Lowest average values for both phosphate and nitrate occurred near the middle of the lagoon, while highest values in the lagoon were found at the station farthest north.

Contaminants. Pollutants come from a variety of sources of both industrial and domestic origin. Oil and gasoline combustion release many substances, including cadmium, copper chromium, lead, mercury, and zinc. These and other metals are used in paints, pigments, batteries, manufacturing, and protective coatings. Aerial fallout is a diffuse and potentially large source of contaminants derived from other sources, and may include metals, chlorinated hydrocarbons, and PAHs (SCCWRP 1973, 1986).

Some metals, such as copper, iron, and zinc are required by aquatic organisms in small amounts to maintain biochemical functions, but are toxic to these same organisms in higher concentrations. Other metals, such as cadmium, mercury, and lead may have toxic effects on marine organisms even in low concentrations.

As these contaminants accumulate on the ground, they are washed into rivers and storm drains by rainfall, and are eventually deposited into the ocean. Contaminants commonly washed into the bay during storms include fertilizer and plant control chemicals associated with landscaping activities and oil residues that have accumulated on roads and parking lots (SDUPD 1980).

Vegetation. Prior to the Ballona Lagoon Enhancement Project vegetation in the lagoon area was generally restricted to the steep banks of the lagoon (WRA 1990). Upland vegetation dominated the plant community, with an assemblage dominated by exotic species such as iceplant. Native intertidal wetland vegetation existed in a narrow band at the base of the banks, and consisted primarily of pickleweed (*Salicornia virginica*), salt grass (*Distichus spicata*) and alkali heath (*Frankenia grandifolia*).

As part of the ongoing monitoring program a field survey of vascular plants was conducted along both banks of Ballona Lagoon in December 2003 and January 2004 (Jones 2003a). A total of 86 plant species were found in the lagoon area, 43 (50%) of which were native California species (Table 1). Common native species found in the area included: beach bur (*Ambrosia chamissonis*); beach evening primrose (*Camissonia cheiranthifolia* var. *cheiranthifolia*); salt grass (*Distichlis spicata*); sea-cliff buckwheat (*Eriogonum parvifolium*); California sagebrush (*Artemisia californica*); jaumea (*Jaumea carnosa*); southwestern spiny rush (*Juncus acutus leopoldii)*; two species of sand-verbena (*Abronia*); two species of pickleweed (*Salicornia*); two species of saltbush (*Atriplex*); and three species of sea-blight (*Suaeda)*. Arroyo willow (*Salix*

*lasiolepis*was) was the only native tree species recorded. Of the non-native species, 16 are considered to be invasive, potentially invasive or an annual grass pest plant species by the California Exotic Pest Plant Council (CalEPPC) (Table 1).

Table 1. Plant species recorded on the banks of Ballona Lagoon. December 2002-January 2003. Native species in bold. Sources: CalEPPC 1999; Jones 2003a, 2003b

Common Name	Species	Status and Comments
Agean wallflower	*Erysimum cheiri*	
alkali heath	***Frankenia salina***	
arroyo willow	***Salix lasiolepis***	
Australian saltbush	*Atriplex semibaccata*	CalEPPC invasive pest plant List A-2
beach evening primrose	***Camissonia cheiranthifolia var. cheiranthifolia***	
beach-bur	***Ambrosia chamissonis***	
Bermuda buttercup	*Oxalis pes-caprae*	CalEPPC potential invasive pest plant
big saltbush	***Atriplex lentiformis***	
black mustard	*Brassica nigra*	CalEPPC invasive pest plant List B
bladderpod	***Isomeris arborea***	
branching phacelia	***Phacelia ramosissima***	
Brazilian pepper	*Schinus terebinthifolius*	CalEPPC invasive pest plant List B
bush sunflower	***Encelia californica***	
Califonia heath-goldenrod	***Ericameria ericoides***	
California broom, deerweed	**Lotus scoparius**	
California burclover	*Medicago polymorpha*	CalEPPC potential invasive pest plant
California poppy	***Eschscholzia californica***	
California sagebrush	***Artemisia californica***	
California sea-blite	***Suaeda californica***	**Federally-listed endangered; California-ranked S1.1; CNPS-listed 1B**
Canary Island palm	*Phoenix canariensis*	
castor bean	Ricinus communis	CalEPPC invasive pest plant List B
caterpillar phacelia	***Phacelia cicutaria var. hispida***	
century plant	*Agave americanum*	
cheeseweed	*Malva neglecta*	
Chinese caps	***Euphorbia crenulata***	
coastal prickly pear	***Opuntia littoralis***	
common plantain	*Plantago major*	
coyote brush	***Baccharis pilularis***	
creeping wood-sorrel	*Oxalis corniculata*	
croton	***Croton californicus***	
crown daisy	*Chrysanthemum coronarium*	
cutweed, everlasting	***Gnaphalium bicolor***	
dudleya	***Dudleya lanceolata***	
fescue	*Vulpia myuros* var. *hirsuta*	
garden nasturtium	*Tropaeolum majus*	
giant reed	Arundo donax	CalEPPC invasive pest plant List A-1
goldenbush	***Isocoma menziesii var. menziesii***	
horned sea-blite	***Suaeda calceoliformis***	
horseweed	*Conyza canadensis*	
Hottentot fig	*Carpobotus edulis*	CalEPPC invasive pest plant List A-1
Indian-fig	*Opuntia ficus-indica*	
jade plant	*Crassula argenta*	
jaumea	***Jaumea carnosa***	

Table 1, continued. Plant species recorded on the banks of Ballona Lagoon. December 2002-January 2003. Native species in bold.

Common Name	Species	Status and Comments
jubata grass	*Cortaderia jubata*	CalEPPC invasive pest plant List A-1
knotweed	*Polygonum* sp	
lamb's quarters	*Chenopodium album*	
lemonadeberry	***Rhus integrifolia***	
London rocket	*Sisymbrium irio*	
marsh baccharis	***Baccharis douglasii***	
marsh sowthistle	*Sonchus arvensis var. uliginosus*	
Mexican fan palm	*Washingtonia gracilis*	
morning-glory	***Calystegia macrostegia***	
Myoporum	*Myoporum laetum*	CalEPPC invasive pest plant List A-2
nightshade	***Solanum douglasii***	
petty spurge	*Euphorbia peplus*	
pickleweed	***Salicornica subterminalis***	**preferred nesting habitat for Belding's savannah sparrow**
pickleweed	***Salicornica virginica***	**preferred nesting habitat for Belding's savannah sparrow**
pigweed	*Chenopodium macrosperma var. halophilum*	
pink sand-verbena	***Abronia umbellata***	**California-ranked S2.1; CNPS-listed 1B**
pride of Madiera	*Echium candicans*	CalEPPC potential invasive pest plant
rancher's fireweed	***Amsinckia menziesii***	
red sand-verbena	***Abronia maritima***	**California-ranked S3?; CNPS-listed 4**
rip-gut brome	*Bromus diandrus*	CalEPPC annual grass
Russian thistle	*Salsola tragus*	CalEPPC potential invasive pest plant
salt grass	***Distichlis spicata***	**host plant of wandering (=saltmarsh) skipper**
sand-spurry	***Spergularia marina***	
scarlet pimpernel	*Anagalis arvensis*	
sea lavender	*Limonium arborescens*	
sea rocket	Cakile maritima	
sea-cliff buckwheat	***Eriogonum parvifolium***	**host plant of El Segundo Blue Butterfly**
shoregrass	***Monanthochloe littoralis***	
slender wild oat	*Avena barbata*	CalEPPC annual grass
south coast saltbush	***Atriplex pacifica***	**California-ranked S2.2; CNPS-listed 1B**
southwestern spiny rush	***Juncus acutus leopoldii***	**California-ranked S3.2; CNPS-listed 4**
stone crop family	*Aeonium arboreum arboreum*	
storksbill	*Erodium cicutarium*	
sweet allysum	*Allysum alyssoides*	
tarragon	***Artemisia dracunculus***	
telegraph weed	***Heterotheca grandiflora***	
telegraph weed, golden aster	***Heterotheca sessiliflora var. bolanderi***	
weeping Chinese banyan	*Ficus benjamina*	
western marsh-rosemary	***Limonium californicum***	
wild oat	*Avena fatua*	CalEPPC annual grass
wild radish	*Raphanus sativus*	
woolly sea-blite	***Suaeda taxifolia***	**California-ranked S2, S3; CNPS-listed 4**
yellow sweetclover	*Melilotus officinalis*	CalEPPC potential invasive pest plant

Within the Ballona Lagoon project area several species of native plants listed as sensitive on the State Department of Fish and Game Special Vascular Plant List were recorded (Jones 2003b). Three of those species, red sand-verbena (*Abronia maritima,* California-ranked S3?; California Native Plant Society [CNPS]-listed 4), southwestern spiny rush (California-ranked

S3.2; CNPS-listed 4) and woolly sea-blight (*Suaeda taxifolia,* California-ranked S2, S3; CNPS-listed 4) are sensitive species found in small populations of limited distribution. Three other plants, pink sand-verbena (*Abronia umbellate,* California-ranked S2.1; CNPS-listed 1B), south coast saltbush (*Atriplex pacifica,* California-ranked S2.2; CNPS-listed 1B) and California sea-blight (*Suaeda californica,* Federally-listed endangered; California-ranked S1.1; CNPS-listed 1B) are considered to be rare, threatened or endangered in California and elsewhere. Several plant species that occurred in the lagoon act as hosts for state or federally listed or sensitive species: sea-cliff buckwheat is the host plant for the El Segundo Blue Butterfly (*Euphilotes bittoides allynii*, Federally-listed endangered species); pickleweed provides food and is the preferred nesting habitat for Belding's savannah sparrow, (*Passerculus sandwichensis beldingi,* California-listed endangered species); and salt grass is the host plant for the wandering (=saltmarsh) skipper (*Panoquina errans*, California-ranked S1).

Along the east bank of the lagoon, the plant community has been restored and revegetated with native species that require regular irrigation and maintenance (Jones 2003b). On the unrestored west bank the plant community was dominated by weedy species, adapted to frequent disturbance.

Several coastal vegetation community types were identified in the Ballona Lagoon area during the vegetation survey (Jones 2003b). Coastal Salt Marsh is characterized by vegetation that occupies intertidal areas and is periodically inundated by rising tides. Coastal Strand is characterized by vegetation typical of upland, beach and dune habitats. Coastal Sage Scrub habitat includes those species typically found higher, above the Coastal Strand community.

Water-Associated Birds. The Ballona wetland complex, including Del Rey Lagoon, is part of the Pacific Flyway, the corridor for birds flying between breeding grounds to the north and wintering sites to the south. The majority of birds found in the wetlands are migrants and use the wetlands as a resting or feeding area, while others are winter visitors or migrants. Overall, bird abundance is generally higher in winter, when large numbers of northern visitors are present.

Bird surveys conducted in Ballona Lagoon on two days in spring of 1989 reported daily bird counts of 10 and 15 species (WRA 1990). Earlier work conducted in 1981 recorded 54 bird species over a one-year period, with 34 species observed over a four-month period during winter (WRA 1990). More recently, surveys of the bird fauna of Ballona Lagoon have been conducted on a monthly basis since April 1996 (BLMP 2003, Almdale 2005). Bird counts are preformed within two hours of low tide when the mudflats are most exposed and shorebirds feeding on the mudflats are most numerous. Counts begin at the northern end of the lagoon and proceed south. Summer counts, when winter migrants are absent, take about one-half the time of winter counts.

During 109 monthly counts conducted between April 1996 and June 2005, 18,889 individuals of 94 bird species have been observed at Ballona Lagoon (Appendix A). As a group, shorebirds dominate the bird counts in Ballona Lagoon, accounting for 43% of the total number of individuals observed, followed by upland bird species (24%) and ducks (16%) (Almsdale 2005). Seven bird species each contributed 5% or more to the total abundance. Western sandpiper (*Calidris mauri)* contributed 16% to the total abundance with 3,065 individuals observed, followed by mallard (*Anas platyrhynchos*) with 10% (1,898 individuals), long-billed dowitcher (*Limnodromus scolopaceus*) with 9% (1,672), European starling (*Sturnus vulgaris*) with 9% (1,642), house sparrow (*Passer domesticus*) with 7% (1,354) and marbled godwit (*Limosa fedoa*) and least sandpiper (*Calidris minutilla*) each contributing about 5% to the total abundance with 994 and 970 individuals, respectively. Of these, the shorebirds, including the western and least sandpipers, the long-billed dowitcher and the marbled godwit, over winter and migrate through the area, but do not reside in southern California year-round (Hamilton and Willick 1996).

Seven species were observed in 80 or more of the surveys: mallard, observed in 101, or 93%, of the monthly surveys; European starling with 98 occurrences (90%); snowy egret (*Egretta thula*) with 93 occurrences (85%); willet (*Catoptrophorus semipalmatus*) with 91 occurrences

(83%); American Crow (*Corvus brachyrhynchos*) and killdeer (*Charadrius vociferous*) both with 86 occurrences (79%); and House Sparrow, observed during 80, or 73%, of the monthly surveys (Appendix A; Almsdale 2005). Altogether, 18 bird species were observed during at least one-half of the monthly surveys (Almsdale 2005). Of those, 44% were upland species, while shore birds and herons as groups each accounted for 22% of those birds that occurred most commonly. Four of the six heron species were among those birds most frequently observed at Ballona Lagoon.

The bird counts have remained fairly consistent over the sampling period (BLMP 2003). Bird count results were lowest, with only 26 individuals of 12 species observed in May 1997, following removal of vegetation in preparation for replanting. Highest species counts occurred in December 1997 and January 1998. Diversity of water and shore birds, specifically those species that feed on fish or invertebrates, has not increased following lagoon enhancement. Diversity of upland bird species, however, increased following revegetation, contributing to a slight overall increase in bird diversity at the lagoon.

Fifteen bird species considered sensitive, most as a result of loss of critical habitat, were observed during the monthly surveys at Ballona Lagoon (Appendix A). Two of those species, California brown pelican (*Pelecanus occidentalis californicus*) and California least tern (*Sterna antillarum browni*) are Federal and State-Listed Endangered species. Although commonly observed during the surveys, California brown pelican is unlikely to utilize the lagoon for foraging, preferring to feed in more open-water areas.

Shallow-water habitat, such as that found at Ballona Lagoon, is the preferred feeding habitat for California least tern. California least terns nest nearby in a protected breeding colony on Dockweiler Beach to the west. California least terns are plunge divers that dive head first into water to catch small fish, including California killifish (*Fundulus parvipinnis*) and topsmelt (*Atherinops affinis*). Studies conducted in the Venice Canals to the north of the lagoon correlated increased distance from the colony to decreased foraging activity (BLMP 2003). While the Venice Canals were found to contribute insignificantly to least tern foraging, the Ballona Lagoon, with a wider channel, less development, available prey species and proximity to the breeding colony is likely an important resource in maintaining the local nesting population.

Fishes. Wetlands, bays and estuaries in southern California serve as nursery areas for several fish species, including California halibut *(Paralichthys calfornicus*) (Cross and Allen 1993). Juveniles of non-commercial species and small fish species such as gobies (Gobiidae) dominate bay and estuarine assemblages, serving as forage for economically important fish and bird species.

Historically, fish assemblages in Ballona Lagoon were comprised of between seven and thirteen species (Deets et al. 2003, CERES 2003). Species collected prior to lagoon enhancement included the gobies longjaw mudsucker (*Gillichthys mirabilis*), shadow goby (*Quietula y-cauda*), arrow goby (*Clevelandia ios*), cheekspot goby (*Ilypnus gilberti*) and the introduced yellowfin goby (*Acanthogobius flavimanus*); flatfishes including diamond turbot (*Pleuronichthys guttulatus*), California halibut and an unidentified turbot (*Pleuronichthys* sp); California killifish; topsmelt; Pacific staghorn sculpin (*Leptocottus armatus*); striped mullet (*Mugil cephalus*); and shiner perch (*Cymatogaster aggregata*) (Deets et al. 2001). In the early surveys topsmelt dominated the fish abundance, accounting for over 80% of all individuals taken.

In 2000, monitoring of fish assemblages in Ballona Lagoon was conducted by seine sampling in two areas of the lagoon, near the tide gate and deep pool at the south end, and in an area about midway along the length of the lagoon. A total of 1,635 individuals of eight species were collected (Deets et al. 2001). As in the historical studies topsmelt dominated the fish catch, accounting for 67% of the total abundance with 1,108 individuals. Other species taken included: shadow goby (249 individuals); California killifish (235 individuals); bay pipefish (*Syngnathus leptorhynchus*, 23 individuals); longjaw mudsucker (12 individuals); bay blenny (*Hypsoblennius gentilis*, 3 individuals); Pacific staghorn sculpin (3 individuals); and diamond turbot (2 individuals).

Other fish species observed but not collected included: striped mullet; round stingray (*Urobatus halleri*); California halibut; juvenile kelp bass (*Paralabrax clathratus*); and opaleye (*Girella nigricans*). All fish species collect in 2000 are among those typically found in bays and estuaries throughout southern California (Allen 1985).

Intertidal and Subtidal Epibiota. The marine invertebrate community of the mudflats and shallow subtidal channels of Ballona Lagoon are not well described. In these environments combinations of physical and chemical stresses limit the biological diversity, and community structure is dominated by species adapted to these stressful conditions (MBC 1988). Intertidal and shallow invertebrate species often act as a food source for fish and bird species in wetlands communities, with abundant and diverse invertebrate assemblages likely to support a more diverse collection of those species that feed on them.

Observations of large invertebrate species prior to lagoon enhancement project generated a relatively short list of common invertebrate species typical of high intertidal mudflats in southern California embayments (Deets et al. 2001). Species observed included: California jackknife clam (*Tagelus californianus*); Pacific littleneck clam (*Protothaca staminea*); California horn snail (*Cerithidea californica*); yellow shore crab (*Hemigrapsus oregonensis*); wavy chione (*Chione undulata*); blue bay mussel (*Mytilus galloprovencialis*); and a polychaete (*Capitella capitata*). Seven species were found during sampling conducted in 1996, including unidentified hydroids, bivalves, and marine snails, and two-spotted octopus (*Octopus bimaculatus*) (CERES 2003).

Seining conducted at two stations in Ballona Lagoon in 2000 captured a total of 13 individuals of seven invertebrate species (Deets et al. 2005). Species collected included: yellow shore crab; California Venus clam (*Chione californiensis*); California bubble snail (*Bulla gouldiana*); blue bay mussel; Pacific gaper clam (*Tresus nuttalli*); and unidentified shrimp and anemone. Additional invertebrate species observed but not collected during the sampling included: fiddler crab (*Uca crenulata*); striped shore crab (*Pachygrapsus crassipes*); the opisthobranch *Navanax inermis*; the barnacle *Chthamalus* sp; an unidentified rock crab (*Cancer* sp); California horn snail; California sea hare (*Aplysia californica*); and many two-spotted octopus. High abundances of California horn snail were also observed on exposed mudflats during a site visit conducted in 2004.

Most of the invertebrates noted are relatively common on the mudflats and shallow subtidal channels in southern California embayments. Fiddler crabs, however, while not considered a sensitive species, are rare in southern California, primarily from habitat loss (Jensen 1995). Fiddler crabs occur on sand and mudflats in the high and middle intertidal of bays and estuaries (Morris et al. 1980). These crabs dig permanent burrows marked by the presence of mud or sand pellets near the entrance. Only the males have the single enlarged claw that they utilize to attract females and in contests with other males. The crabs feed by transferring sediments to their mouths with their small claws where the organic material is removed and the remaining sediment is rejected as a pellet.

Benthic Infauna. Benthic infauna are the macroscopic animals that live in the top layers of sediment of the ocean floor. Their distribution depends on interacting sediment and environmental variability. Of primary importance are sediment characteristics, which influence the abundance and composition of benthic communities (Gray 1974, Rhoades 1974). Grain size of the sediment, for example, determines a variety of infaunal habitat characteristics, including abrasion, amount of interstitial water, ease of burrowing, and materials for tube or burrow construction.

In the mid 1970s, despite reduced tidal exchange, the infauna community found in Ballona Lagoon was considered reasonably natural and healthy, comparable to assemblages found in larger and less impacted areas (MBC 1988). In late 2000, five replicate sediment grab samples each were collected at two stations in Ballona Lagoon, one in the newly constructed

deep pool near the tide gate and the other about halfway along the length of the lagoon (Deets et al. 2001). Although total numbers of individuals collected in the replicates at both stations were, number of species was found to be higher near the tide gate with an average of 17 species per replicate compared to an average of 10 species per replicate midway along the lagoon channel. Altogether 1,075 individuals of 59 invertebrate taxa were collected in the lagoon in 2000. The benthic infauna of the lagoon was dominated by polychaete annelids, bivalve and gastropod mollusks, and crustaceans, with the annelids *Cirriformia* sp BL1 and *Pseudopolydora paucibranchiata*, the amphipod *Grandidierella japonica*, and Pacific littleneck clam among the most abundant and most widely occurring species in the lagoon. Of the 51 species listed in the sampling report, 30 species were annelids, 11 were mollusks, seven were arthropods, and one member each of phoronid, cnidarian, and nemertean were taken. The infaunal assemblage was found to be more diverse than previously reported. Differences in samples appeared to be primarily related to sediment characteristics, with a slightly higher diversity near the deep pool at the south end of the lagoon were sediments were more heterogeneous (Deets et al. 2001, BLMP 2003).

Del Rey Lagoon

Del Rey Lagoon is a remnant of the mouth of Ballona Creek (WRA 1990). Early photographs show Ballona Creek flowing from the north (from the area of the present-day Ballona Lagoon) through the area of Del Rey Lagoon to an ocean outfall at the south side of the lagoon. Later photos showed increasing sedimentation and sand bar formation along the south end of the lagoon. By the 1950s, Ballona Creek channelization was complete and the Del Rey Lagoon was allowed to fill with sediment. The lagoon is now a small coastal pond separated from the Ballona Creek channel by a 40-ft wide levee. Periodic water exchange in the Dey Rey Lagoon is accomplished through a manually controlled tide gate at the north end of the lagoon connected to the tidally influenced portion of Ballona Creek. Additional exchange occurs on some high tides, when tidal elevation exceeds the invert level of the tide gate (Josselyn et al. No date)

Dey Rey Lagoon is surrounded by an urban park with highly manicured landscaping, lawns, a sandy beach, a picnic area, a small dock, and playing fields along the southern end of the lagoon on level parkland about 10 ft above the elevation of the lagoon (WRA 1990). Residential areas border the park on the west, south and east, and the site is managed by the Los Angeles Department of Parks. The northern end of the lagoon is fenced, limiting public access to the area. Landscaping is not maintained in the fenced section and vegetation in this area is generally weedy.

Water Quality. Water quality in the Del Rey Lagoon was characterized as poor to unhealthy in 1990 when the area was posted to avoid human contact (WRA 1990). The primary sources of water to Dey Rey Lagoon are urban runoff from the neighboring residential areas or tidal flow from Ballona Creek, which drains most of Culver City and surrounding communities. Storm water and urban runoff enters the lagoon through street drains that empty directly into the lagoon. Inflows into the lagoon from Ballona Creek occur only when the tide gate is periodically opened (in 1990, the tide gate was operated on a monthly basis), or on high tides when sea level exceeds the invert level of the tide gate. Surface water elevation in the lagoon is maintained to prevent inundation of the surrounding residential area during storm events. Salinity of the lagoon was found to be about 10 to 15 ppt lower than that found in offshore waters. Recent changes in tide gate management appear to have improved water quality in the lagoon. No postings were noted in a 2004 site visit.

Contaminants. Del Rey Lagoon receives street runoff from the surrounding community through from several storm drains. Contaminant sources in the area are similar to those of concern at Ballona Lagoon, including fertilizers plant control chemicals and oil residues that have accumulated on roads. Additional contaminants of concern in Del Rey Lagoon include pet waste and litter washed into the lagoon from park and street runoff.

Vegetation. The banks along the southern end of Del Rey Lagoon are landscaped and maintained as an urban park. Landscaping includes invasive and ornamental plantings such as lawns, palm and various shade trees, large bushes and pampas grass, and iceplant ground cover. On the northern end of the lagoon, the area is dominated by iceplant and weedy species along the banks. In 1990, no emergent wetland vegetation occurred at Del Rey Lagoon. However, several small clumps of vegetation that appeared to be pickleweed (*Salicornia* sp) were noted along the high water line at the northern end of the lagoon during a 2004 site visit.

In 2004, a band of green algae (*Enteromorpha* spp) was noted throughout the lagoon just above the water line, and several algal rafts, also likely *Enteromorpha*, were seen on the water surface. No other aquatic plant species were observed. In 1990, presence of aquatic vegetation and algae on the bottom of the lagoon was noted, but species were not identified (WRA 1990).

Water-Associated Birds. The Ballona wetland complex, including Del Rey Lagoon, is part of the Pacific Flyway, the corridor for birds flying between breeding grounds to the north and wintering sites to the south. The majority of birds found in the wetlands are migrants, and use the wetlands as a resting or feeding area, whereas others are winter visitors or migrants. Overall, bird abundance and biomass are generally higher in winter, when large numbers of northern migrants are present.

Del Rey Lagoon appears to be particularly attractive to waterfowl, which comprise the most commonly observed group of water-associated birds in the lagoon. Mallard, lesser scaup (*Aythya affinis*), American widgeon (*Anas penelope*), bufflehead (*Bucephala albeola,* California-ranked S?), brant (*Branta bernicla*) and domesticated ducks and geese have been observed consistently in the area, although some are found only in winter (SMBAS 1999, 2001; Audubon California 2005). Less commonly observed waterfowl include Canada goose (*Branta canadensis*), Ross's goose (*Chen rossii*) and white-fronted goose (*Anser albifrons*). Wading birds, including herons and egrets, are regularly observed foraging in the area in the early mornings (WRA 1990), and a least bittern (*Ixobrychus excilis,* California-ranked S1) was observed in the area in June 2005 (L.A. Times 2005). Other water-associated bird species, including American coot (*Fulica americana*), gulls and terns are also likely to be observed utilizing the area. A California least tern (Federal and California-listed endangered) nesting site is located nearby and the lagoon may occasionally be utilized for foraging.

Fishes. Wetlands, bays and estuaries in southern California serve as nursery areas for several fish species, including California (Cross and Allen 1993). Juveniles of non-commercial species and small fish species such as gobies dominate bay and estuarine assemblages, serving as forage for economically important fish and bird species.

The fish assemblage of Dey Rey Lagoon is expected to be similar to that found at Ballona Lagoon. The fish community is likely to be dominated by topsmelt, gobies and other small fish species, with lesser numbers of demersal predator fish species such as turbots and California halibut.

Intertidal and Subtidal Epibiota. The intertidal area of Del Rey Lagoon, unlike that of Ballona Lagoon, is not a distinct feature of the area. The banks of Del Rey Lagoon are for the most part fairly steep, and throughout most of the lagoon vegetation grows almost to the water line. On the south side of the lagoon, a more gradual beach is found, with sediments comprised of relatively hard-packed dry sand. These features are likely a result of limited water level variation in the lagoon. Soft, muddy sediments that support a community of specialized intertidal organisms, such as those found at Ballona Lagoon are unlikely to be found in Del Rey Lagoon without cyclic variability in water level in the lagoon.

Improvements in water exchange in the lagoon without variability in water level, however, are likely to lead to an increase in diversity of larger invertebrate species that are typical of

shallow, soft bottom embayments in southern California. Species likely to be found include mollusks such as snails, clams, and opisthobranchs, crabs and other crustaceans, and anemones and hydroids, with a species composition similar to that found in Ballona Lagoon.

Benthic Infauna. Benthic infauna are the macroscopic animals that live in the top layers of sediment of the ocean floor. Their distribution depends on interacting sediment and environmental variability. Of primary importance are sediment characteristics, which influence the abundance and composition of benthic communities (Gray 1974, Rhoades 1974). Grain size of the sediment, for example, determines a variety of infaunal habitat characteristics, including abrasion, amount of interstitial water, ease of burrowing, and materials for tube or burrow construction.

The marine invertebrate community of Dey Rey Lagoon is not well described, although the assemblage is expected to be similar to that found at Ballona Lagoon. The benthic infauna of the lagoon is likely to be dominated by polychaete annelids, bivalve and gastropod mollusks, and crustaceans, with differences in assemblages in the lagoon primarily related to sediment characteristics.

Dunes. Adjacent to Del Rey Lagoon to the south, between Pacific Ave. and Dockweiler State Beach, are several fenced, vegetated dunes. The dunes support a degraded Southern dune scrub habitat (California-ranked S1.1) dominated by invasive iceplant and to a lesser extent the native beach evening primrose. Other plants that occur in low abundance on the dunes include native beach-bur and introduced sea rocket (*Cakile maritime*). Sea-cliff buckwheat host plant of the El Segundo Blue Butterfly (a Federally-listed endangered species) was not noted in photographs taken of the dunes during a site visit conducted in 2004.

Vegetated southern California beach and dune areas are potential habitats for two sensitive beach-nesting bird species, California least tern (Federal- and California-listed endangered) and western snowy plover (*Charadrius alexandrinus nivosus,* Federal-listed threatened). California least terns nest nearby to the north in a protected breeding colony on Dockweiler Beach, but nesting is not known to occur in the dunes near Del Rey Lagoon (Keane, pers. comm. 2005a). In late 2004, the U.S. Fish and Wildlife Service proposed the establishment of western snowy plover critical nesting habitat on the beaches west of the Los Angeles International Airport approximately one-half mile to the south, but nesting in the area of the dunes has not been reported (USFWS 2004, Keane, pers. comm. 2005a, Clark pers. comm. 2005).

Sensitive, Threatened, And Endangered Species

Several species of plants or wildlife that occur (or could potentially occur) within Ballona and Del Rey Lagoons are listed by the federal and/or state governments as threatened or endangered. Additionally, some species are listed by government agencies and other entities as being of concern for various reasons. All marine mammals are protected by the Marine Mammal Protection Act, native birds by the Migratory Bird Treaty Act, and endangered plants and animals by the California Endangered Species Act.

Plants. Several species of sensitive native plants were noted in the Ballona Lagoon area: red sand-verbena, southwestern spiny rush, and woolly sea-blight are sensitive species found in small populations of limited distribution. Three other plants, south coast saltbush, pink sand-verbena, and California sea-blight are considered to be rare, threatened or endangered in California and elsewhere. Another native plant species, salt marsh bird's beak (*Cordylanthus maritimus* ssp. *maritimus*, Federal and California-listed endangered), no longer occurs at any of the wetlands in Santa Monica Bay (MBC 1993).

California sea-blight (Federally-listed Endangered Species; California-ranked S1.1; CNPS-listed 1B). California sea-blight is a federally-listed endangered coastal salt marsh species considered to be rare, threatened, or endangered as a result of habitat loss throughout its range

(CNDDB 2005). This is a multibranched species up to three feet tall with a woody base and small flowers that bloom in July through October (Munz 1964). California sea-blight was noted in the project area at Ballona Lagoon.

Pink sand-verbena (California-ranked S2.1; CNPS-listed 1B). Pink sand-verbena, as a result of habitat loss, is considered to rare, threatened or endangered in California and throughout its range (CNDDB 2005). Pink-sand verbena occurs on the higher areas of beach strands such as back beaches and dunes (Munz 1964), and was reported to occur in Ballona Lagoon (Jones 2003a). Pink sand-verbena is less succulent than red sand-verbena, with small deep to light pink flowers that appear from spring through autumn.

South coast saltbush (California-ranked S2.2; CNPS-listed 1B). This small herb is typically found in mildly disturbed habitats and was noted in the project at Ballona Lagoon (Jones 2003a). Typical habitat for south coast saltbush is coastal scrub, coastal bluff scrub and playas (CNDDB 2005). This species is subject to disturbance and is severely declining throughout its coastal range (Reiser 1994).

Red sand-verbena (California-ranked S3?; CNPS-listed 4). Red sand-verbena is one of three sand-verbenas native to coastal communities on the western United States (Munz 1964). Red sand-verbena is a fleshy, multibranched species with small dark red to purple flowers that bloom from February to October. This species is found on the lower coastal strand, with a range from Lower California to San Luis Obispo County, California. In the project area, red sand-verbena was observed to occur at Ballona Lagoon (Jones 2003a). Once widespread, this species now has only a limited distribution as a result of habitat loss (CNNDB 2005).

Southwestern spiny rush (California-ranked S3.2; CNPS-listed 4). Southwestern spiny rush is a coastal salt marsh species with a limited distribution as a result of habitat loss (CNDDB 2005). This species forms large tufts of stiff stems 2- to 4-ft tall, with small clusters of flowers (Munz 1964). This species is native to coastal salt marshes from Lower California to San Luis Obispo County, California, and occurs in the project area at Ballona Lagoon (Munz 1964, Jones 2003a).

Woolly sea-blight (California-ranked S2, S3; CNPS-listed 4). Woolly sea-blight is native to coastal bluff scrub, marshes and swamps in California (CNDDB 2005). Loss of habitat has limited the distribution of this species in California. In the project area woolly sea-blight was noted in Ballona Lagoon (Jones 2003a).

Insects. Sensitive insect species known to occur in the Marina del Rey area, and that may potentially be found in the project area, include two species of butterflys, the Federally-listed endangered El Segundo Blue Butterfly and the wandering or saltmarsh skipper. Both butterflys are associated with host plant species that are known to occur in Ballona Lagoon plant community. Historically three sensitive insect species, Dorothy's El Segundo Dune weevil (*Trigonoscuta dorothea dorothea,* California-ranked S1*),* Belkin's dune tabanid fly (*Brennania belkini,* California-ranked S1S2) and globose dune beetle (*Coelus globosus,* California-ranked S1), were reported to occur on the dunes of South Dockweiler State Beach (CNDDB 2005). Recent occurrence of these species in the area has not been corroborated.

El Segundo Blue Butterfly (Federally-listed Endangered Species, California-ranked S1). The El Segundo blue is a small butterfly with only one generation per year (Hogue 1993). Adults fly from mid-July to September, with the adult emergence coinciding with the peak flowering of sea-cliff buckwheat, a major nectar source for the adults. The small caterpillars feed on the buckwheat blossoms, whose color and pattern they resemble. The caterpillars are present from August through September, with pupation occurring in the sand at the base of the plant.

The El Segundo blue was recognized as a distinct species in 1975 and designated as a federally endangered species in 1976 (Hogue 1993). Habitat for the El Segundo blue is extremely

limited with the population existing in two remnants of the formally extensive El Segundo Dunes near the beach to the west of the Los Angeles International Airport. Proximity of this habitat to the project area, along with the occurrence of the host plant species at Ballona Lagoon, suggests that the El Segundo blue butterfly could potentially occur in the project area.

Wandering (=saltmarsh) skipper (California-ranked S1). This species exists only in coastal salt marshes dependent on its host salt grass (*Distichlis spicata*) for survival (Hogue 1993). Adults are medium sized and a medium brown in color. Caterpillars are deep green with dark and light striping. The caterpillars feed on salt grass, metabolically able to tolerate high salt levels in the host. Pupa attach to the host by a girdle and a silk button.

Small populations of wandering skippers are known to occur at Ballona Creek, at the Venice Canals and in other areas of the Ballona Wetland Complex where salt grass occurs (Hogue 1993, CNDDB 2005). Presence of the host species at Ballona Lagoon suggests that wandering skipper is likely to occur in the project area.

Birds. California least tern is one of the most common of the sensitive species found in the project area, nesting in a protected breeding site on North Dockweiler State Beach and feeding in shallow waters throughout the area. Western snowy plover, another beach nesting species, is known to occur in the project area in winter, feeding on lower beaches and tidal flats. Summer nesting in the project area is not reported, but critical nesting habitat designation is proposed for Dockweiler State Beach south of the proposed project area. California brown pelican is commonly observed in the area, but is not likely to use local lagoons for foraging, preferring more open-water areas such as Marina del Rey and nearshore coastal areas for feeding. Belding's savannah sparrow requires pickleweed habitat and is known to occur in the Marina del Rey area. Although not noted during monthly sampling in the area, Belding's savannah sparrow could potentially be found foraging in or nesting near Ballona Lagoon. Fourteen additional species of bird observed in the project area are considered to be sensitive by the California Department of Fish and Game. Although several of these birds are considered to secure in California, most are included as a result of loss of critical species habitat.

California Least Tern (Federal and California-listed Endangered Species). California least terns nest colonially on sandy beaches and prefer to forage in quiet bays and lagoons, though they also forage on the open coast. They migrate to Southern California from Central and South America to breed between April and September. This species is listed as endangered primarily because of human disturbance of its nesting habitat. California least terns feed primarily on small fish such as northern anchovy (*Engraulis mordax*), topsmelt, jacksmelt (*Atherinopsis californiensis*), and California grunion (*Leuresthes tenuis*) (Atwood and Kelly 1984).

This species has nested in the project area since at least 1919, with nesting on the beach north of Ballona Creek by three pairs of birds first occurring in 1977 (Keane 2005b). This area on Dockweiler State Beach is now enclosed by protective fencing and has become one of two permanent California least tern nesting sites in Los Angeles County. Nesting pairs at the site increased to 158 by 1980, to 206 in 1990 and to 303 in 1998. From 1978 through 1994 the site contributed over 10% of the fledglings for all nesting sites in the state. Breeding success in the area has declined since 1996 when American crows became major predators in the area, with less than 0.5 fledgling per nest produced since then. Nesting in the site produced no chicks in 1999, 2001, 2004, and 2005.

California Brown Pelican (Federal and California-listed Endangered Species). California brown pelicans nest on some of the Channel Islands and in Mexico. They occur along the California coast year-round, but numbers increase greatly with the influx of post-breeding birds in summer. This species was listed as endangered primarily because of it low reproductive success attributed to egg-shell thinning as a consequence of pesticide contamination. Following prohibition of the use of DDT in 1970, the population largely recovered. Brown pelicans are

plunge-divers, feeding on fish primarily in open waters. Northern anchovy comprises a significant portion of the brown pelican's diet.

California brown pelicans were frequently observed during bird surveys conducted at Ballona Lagoon (Appendix A). While common in the area, California brown pelicans are not likely to use local lagoons for foraging, preferring more open-water areas such as Marina del Rey and nearshore coastal areas for feeding.

Belding's savannah sparrow (California-listed Endangered Species, California-ranked S3). This species is listed as endangered due to draining and filling of coastal salt marshes. This species is nonmigratory, living year-round among pickleweed in coastal salt marshes along the coast of Southern California. Preferred food items include insects and the succulent growing tips of plants (Thelander and Crabtree 1994). The breeding range in California includes 27 sites from Santa Barbara County to the Baja California border, with the largest populations occurring in Mugu Lagoon (Ventura County), Upper Newport Bay (Orange County), and Tijuana Marsh (San Diego County).

A small population of Belding's savannah sparrow is known to occur and nest in the Ballona Wetland adjacent to Ballona Creek east of the project area (CNDDB 2005). Although not observed in Ballona Lagoon during monthly surveys in the area, proximity of this habitat to the project area along with the occurrence of pickleweed at Ballona Lagoon suggest that Belding's savannah sparrow could potentially occur in the project area. As the Ballona Lagoon enhancement project progresses the species may become established in the area.

Western snowy plover (**Federally-listed Threatened Species, California-ranked S2).** The Pacific Coast breeding population of the western snowy plover is threatened throughout its range by loss and disturbance of nesting sites. Poor reproductive success, resulting from human disturbance, predation, and inclement weather, combined with permanent or long-term loss of nesting habitat and encroachment of introduced European beachgrass and urban development, has led to a decline in active nesting colonies, as well as an overall decline in breeding and wintering population of the western snowy plover

The Pacific Coast population of western snowy plovers includes both resident and migratory birds. They breed primarily on coastal beaches from southern Washington to southern Baja California, Mexico (USFWS 2004). Sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries are the preferred habitats for nesting. Twenty of the 28 known breeding sites in the United States occur in California, with larger concentrations of breeding birds occurring to the south. Snowy plovers nest in loose colonies and nest sites typically occur in flat, open areas with sandy or saline substrates and sparse vegetation. The breeding season extends from March through September, while the wintering season is generally from October to February, with some overlap occurring between the seasons. Western snowy plover chicks are precocial and need access to the lower beach to forage almost immediately after hatching.

Western snowy plover use of the beaches in the project area by winter migrants has been observed, but recent nesting in area has not been recorded (Keane, pers. comm. 2005a, Clark pers. comm. 2005). In late 2004, the U.S. Fish and Wildlife Service proposed the establishment of western snowy plover critical nesting habitat (Dockweiler, North, CA-21B) to the south of the project area on the beach west of the Los Angeles International Airport (USFWS 2004).

Least bittern (California-ranked S1). Least bitterns, among the smallest of the herons, forage along the edges of freshwater and brackish marshes while clinging to cattails and reeds with its long toes (Kaufman 1996). Because of its size and habits, this heron is easy to overlook. More common in the eastern United States, the species has declined in many areas as a result of loss of marsh habitats.

Rufous Hummingbird (*Selasphorus rufus* California-ranked S1,S2). This small hummingbird nests from northern California north through Alaska and overwinters in Mexico (Kaufman 1996). In southern California, this species is observed primarily during its spring migration from February to May, and in late summer on its way south (Hamillton and Willick 1996). There has been a slight decline in the species in recent decades, and state ranking is likely related to concerns of change in the bird's nesting habitat (Kaufman 1996, CNDDB 2005).

Black Skimmer (*Rynchops niger*, California-ranked S1,S3). Black skimmers feed by feel rather than by sight as is common in terns (Kaufman 1996). Black skimmers commonly feed on fish by skimming the water while flying, furrowing the water with the lower mandible. When contact with a fish is made, the upper mandible immediately snaps shut. Most common in southern California in summer, black skimmers nest colonially on beaches, gravel bars and unvegetated areas along the southern California coast and at the Salton Sea (CNDDB 2005, Kaufman 1996). The species has recovered from commercial hunting and egg collecting in the late 1800s, but the nesting colonies are still very sensitive to disturbance.

California Gull (*Larus californicus,* California-ranked S2). A common winter visitor, juvenile California gulls are still found in southern California during the summer when most of the adult population has migrated to breed (Hamilton and Willick 1996, Kaufman 1996). Nesting occurs on the ground, occasionally in large mixed-gull colonies (Kaufman 1996). Nesting occurs near large freshwater or strongly alkaline lakes throughout west-central North America (CNDDB 2005. Disturbance and loss of nesting habitat had led to a decline in the species, but the population has increased in recent decades.

Double-crested Cormorant (*Phalacrocorax auritus*, California-ranked S3). Although generally more abundant in winter, non-breeding double-crested cormorants are fairly common in summer, and some breeding does occur in southern California (Hamilton and Willick 1996). Double-crested cormorants feed on fish and other aquatic species by diving from the surface and swimming underwater to pursue their prey. The population of double-crested cormorants was reduced by disturbance of the nesting colonies through the 1920s, with a gradual increase through the 1960s when pesticides impacted the population (Kaufman 1996). Following the ban of DDT the population has continued to increase.

Black-crowned Night Heron (*Nycticorax nycticorax*, California-ranked S3). Black-crowned night herons are most commonly observed roosting in trees near water during the day. This species feeds actively at night in a wide variety of aquatic habitats, foraging along the water edges often from rocks or along piers and pilings. In southern California, black-crowned night herons nest in occasionally mixed colonies in trees near foraging areas. The population probably declined in the 20th century as a result of habitat loss and the effects of DDT and other pesticides, but currently the population is probably stable or increasing (Kaufman 1996).

Great Blue Heron (*Ardea herodias*, California-ranked S4). Great blue herons are large and common birds, frequently observed stalking fish and other prey in southern California wetlands (Kaufman 1996). The local population primarily consists of permanent residents, although they are slightly more abundant in winter with the addition of migrating individuals. Although variable in southern California great blue herons generally nest colonially in treetops near water. The species is considered secure in California, but nesting colonies are subject to disruption by human disturbance.

Great Egret (*Ardea alba,* California-ranked S4). This species was nearly exterminated in the 1800s when its feathers were fashionable for women's hats, but recovered well following conservation efforts in the early 20th century (Kaufman 1996). Similar to great blue herons, great egrets are commonly seen foraging in shallow water along the edges of wetlands. A resident population occurs in southern California, and like most herons in southern California is slightly more abundant in winter. The species is considered secure in California, but the species may be declining in other areas of the United States.

Snowy Egret (*Egretta thula*, California-ranked S4). Snowy egret is a relatively small egret commonly observed foraging in marshes and open fields. The resident population nests in colonies that are subject to human disturbance. Throughout its range, snowy egrets generally disperse north following breeding, and are generally less common in southern California in summer (Nat. Geo 2002, Hamilton and Willick 1996, Kaufman 1996). The species is still expanding its range and increasing its population following near decimation in the late 1800s.

Caspian Tern (*Sterna caspia*, California-ranked S4). The largest of the terns, this species is most common in summer, nesting locally in mixed colonies in protected areas with other ground-nesting tern species. Caspian terns are plunge divers, flying low or hovering over water, then plunging head-first into the water to catch small fish below the surface. In winter, the local breeding population migrates south, to be replaced by fewer numbers of inland breeders (Nat. Geo 2002, Hamilton and Willick 1996, Kaufman 1996). While the population is stable, the ground-nesting habit of the species is easily susceptible to disturbance.

Forster's Tern (*Sterna forsteri*, California-ranked S4). Forster's terns are year-round residents in southern California, nesting in summer in loose colonies in protected areas with other ground-nesting tern species (Nat. Geo 2002, Hamilton and Willick 1996, Kaufman 1996). More marsh oriented than most terns, this species plunge dives for fish and other small prey species and may dip the water surface or take insects in flight. Forster's terns have declined in some areas as a result of loss or degradation of marsh habitat.

Loggerhead Shrike (*Lanius ludovicianus*, California-ranked S4) This predatory songbird is fairly common throughout the year in southern California, with numbers generally slightly higher in winter (Hamilton and Willick 1996). The loggerhead shrike prefers open terrain in lower coastal areas, often nesting in dense vegetation along habitat edges. The loggerhead shrike population has been in decline for several decades and the species is now extirpated from some areas of its former range (Kaufman 1996). The reason for the continuing decline is not poorly understood, possibly related to pesticide use and habitat loss.

Western Grebe (*Aechmophorus occidentalis*, California-ranked S?). Western grebe is a gregarious species abundant in the nearshore waters of southern California in winter (Nat. Geo 2002, Hamilton and Willick 1996). This species breeds in colonies in shallow-water marshes throughout central North America where it makes nests of floating plant material. Western grebe is loosing breeding habitat in some locations (Kaufman 1996).

Bufflehead (**California-ranked S?).** This is a small duck that winters in southern California, but nests in woodlands near small ponds and lakes throughout much of Canada and Alaska (Nat. Geo 2002). Although still relatively common, because of hunting and loss of nesting habitat the species is much less numerous than historically (Kaufman 1996).

Significant Ecological Areas

The entire Ballona Lagoon has been designated as an Environmentally Sensitive Habitat Area by the city of Los Angeles (Jones 2003b). Several coastal vegetation community types were identified in the Ballona Lagoon area during the vegetation survey (Jones 2003b). Coastal Salt Marsh is characterized by vegetation that occupies intertidal areas and is periodically inundated by rising tides. Coastal Strand is characterized by vegetation typical of upland, beach and dune

habitats. Coastal Sage Scrub habitat includes those species typically found higher, above the Coastal Strand community. In addition, the California Natural Diversity Database (CNDDB) identifies two important habitats, similar to those mentioned above, in the project area.

Southern Coastal Salt Marsh (California-ranked S2.1). Southern Coastal Salt Marsh is characterized by vegetation that occupies intertidal areas and is periodically inundated by rising tides. In southern California, coastal salt marshes are typified by a pickleweed community. Other common community species may include Pacific cordgrass (*Spartina foliosa*), alkali heath salt grass, or saltwort (*Batis maritime*). Southern Coastal Salt Marsh has been identified at the mouth of Ballona Creek (CNDDB 2005) and at Ballona Lagoon. The state ranking identifies that this community has been reduced to between 2,000 and 10,000 acres and that the habitat is very threatened.

Southern Dune Scrub (California-ranked S1.1). Southern Dune Scrub is included in part in the Coastal Strand habitat identified in Ballona Lagoon (Jones 2003b). Southern Dune Scrub is typified by upland shrub species. In the project area this community is dominated by California heath-goldenrod (*Ericameria ericoides*), bladderpod (*Isomeris arborea*), lemonadeberry (*Rhus integrifolia*) and sea-cliff buckwheat (CNDDB 2005). This habitat is found locally at Ballona Lagoon and the El Segundo Dunes to the south of the project area.

REGULATORY SETTING

There are several State and Federal laws that apply specific quantitative and qualitative objectives to water quality parameters. The 1972 amendments to the Federal Water Pollution Control Act (the Clean Water Act) prohibit the discharge of pollutants to waters of the U.S. without a permit. Section 401 of the Clean Water Act created the National Pollutant Discharge Elimination System (NPDES) to enforce effluent limitations. The NPDES program prohibits the point-source discharge of pollutants unless an NPDES discharge permit has been obtained. The ultimate goal of the NPDES program is the complete elimination of all discharges.

The NPDES program was expanded in 1987 to regulate stormwater discharges (runoff) originating from municipal and industrial sources. Currently, the State Water Resources Control Board (SWRCB) applies the General Construction Activities Storm Water Permit (GCASP) to all stormwater discharges associated with construction activities. The GCASP pertains to construction projects of one acre or more, and usually requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPP) and Best Management Practices (BMPs) to reduce and/or eliminate pollutant discharges.

Specifically, the GCASP requires all dischargers where construction activity disturbs one acre or more to:

- Develop and implement a Stormwater Pollution Prevention Plan (SWPPP), which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater, with the intent to keep all products of erosion from moving offsite into receiving waters;

- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States; and

- Perform inspections of all BMPs.

On 19 August 1999, the SWRCB reissued the GCASP (Order No. 99-08-DWQ). Several parties filed a petition for writ of mandate challenging the permit in the Superior Court, County of Sacramento. The Court issued a judgement and writ of mandate on 15 September 2000, which directed the SWRCB to modify the provisions of the GCASP to require permittees to implement

specific sampling and analytical procedures to determine whether BMPs implemented on a construction site are:

- Preventing further impairment by sediment in stormwater discharged directly into water listed as impaired for sediment or silt.

- Preventing other pollutants on construction sites that are known or should be known by permittees, and that are not visually detectable in stormwater discharges, from causing or contributing to exceedances of water quality objectives.

Monitoring provisions in the GCASP were modified pursuant to this order.

The General Industrial Activities Storm Water Permit (GIASP) applies to those stormwater discharges not covered by the GCASP or NPDES permits. It was originally issued by the SWRCB on 19 November 1991 (Order No. 02-01-DWQ), but has been modified since that time. Similar to the GCASP, the GIASP requires dischargers to:

- Develop and implement a SWPPP to reduce or prevent industrial pollutants in stormwater discharges.

- Eliminate unauthorized non-stormwater discharges.

- Conduct visual and analytical stormwater discharge monitoring to indicate the effectiveness of the SWPPP in reducing or preventing pollutants in stormwater discharges.

On 26 January 2000, the LARWQCB adopted and approved Board Resolution R-00-02, requiring the development and significant redevelopment projects in Los Angeles County to control the discharge of stormwater pollutants in post-construction stormwater. The Executive Officer issued the approved Standard Urban Stormwater Mitigation Plans (SUSMPs) on 8 March 2000.

The City of Los Angeles is covered under the Permit for Municipal Stormwater and Urban Runoff Discharges within Los Angeles County (LARWQCB Order No. 01-182) and is obligated to incorporate provisions of this document in City permitting actions. The municipal permit incorporates SUSMP requirements and these include implementation of treatment control BMPs for projects falling within certain development/redevelopment categories. These requirements apply to the project and include the retention, infiltration, and/or treatment of runoff from the first 0.75 inch of rainfall (or equivalent numerical design criteria) prior to its discharge to a stormwater conveyance system.

Biological resources are regulated by several federal, state, and local agencies. Principal authority for these resources rests with the local jurisdictions (the City of Los Angeles, for example). However, other agencies share jurisdiction over a number of habitats and resources. Trustee agencies have jurisdiction over certain resources held in trust for the people of California, but do not have legal authority over approving or carrying out a specific project (CEQA Guidelines, Section 15386). Under the California Environmental Quality Act (CEQA), the CDFG is a trustee agency with regard to fish and wildlife, rare or endangered native plants, game refuges, ecological reserves, and other areas administered by the department. The CDFG also has authority over species and habitats listed under the California Endangered Species Act of 1970, while the U.S. Fish and Wildlife Service has regulatory authority over federally endangered species pursuant to the Endangered Species Act of 1973. The U.S. Army Corps of Engineers has regulatory authority pursuant to Section 404 of the Federal Clean Water Act of 1977, which not only pertains to dredging and filling projects in U.S. waters, but expands the Corps jurisdiction to include isolated wetlands and habitats used by migratory birds and endangered species.

Special-status species are those plants and animals afforded protection by the California Endangered Species Act and/or the Endangered Species Act, but may also include those species that fall in one or more of the following categories:

- Species proposed for listing as threatened or endangered under the state or federal Endangered Species Acts,
- Plants protected under California Fish and Game Code, Section 1900 et seq.,
- Animals fully protected under California Fish and Game Code
- Plant and animal species designated by the California Department of Fish and Game as being "of special concern".

In addition, certain habitats may be protected if they meet certain criteria, including their support of sensitive species or their relatively limited occurrence.

Applicable Regulations

Clean Water Act. The Clean Water Act (CWA) of 1972 was designed to restore and maintain the physical, chemical, and biological integrity of the nation's waters. Sections of the CWA control the discharge of wastes and pollutants into aquatic environments. Section 404 of the CWA established a program to regulate dredging and/or filling in U.S. waters. Under Section 404, the U.S. Army Corps of Engineers (COE) can issue two types of permits: a general permit or an individual permit. The general permit is a type of permit issued to the public at large on a regional or national basis, and is only issued when the activities would cause only minimal direct or cumulative impacts. An individual permit is required for an applicant that wishes to conduct activities not already allowed under a general permit.

Rivers and Harbors Appropriations Act of 1899. The Rivers and Harbors Appropriations Act of 1899 authorizes the COE to exercise control over all construction projects in U.S. navigable waters. The Rivers and Harbors Act was originally designed with the intent to protect navigation and navigable capacity. These objectives were later expanded to include environmental protection. The key provision to this Act is Section 13, which makes it a crime to discharge refuse into any navigable water without the permission of the COE.

Federal Endangered Species Act. The Federal Endangered Species Act (ESA) of 1973 prohibits direct harm to species that have been designated by the Environmental Protection Agency (EPA) as threatened or endangered. The ESA provides protection to protected species as well as their habitats. Section 7 of the ESA requires that consultation regarding protection of such species be conducted with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) prior to project implementation.

Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) was authorized in 1996 and requires the NMFS to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a federal fisheries management plan. Essential Fish Habitat is defined as the waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Specifically, the MSA requires: (1) Federal agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that could adversely affect EFH; (2) NMFS to provide conservation recommendations for any federal or state action that could adversely affect EFH; and (3) Federal agencies to provide a detailed response in writing to NMFS within 30 days of receiving EFH conservation recommendations.

The proposed project is located within an area designated as EFH for both the Coastal Pelagics and Pacific Groundfish Management Plans.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act states "it is unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill…any migratory bird, any part, nest, or eggs of any such bird…included in the terms of the conventions between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916 (39 Stat. 1702), the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936, and the United States and the Government of Japan for the protection of migratory birds and birds in danger of extinction, and their environment concluded March 4, 1972."

California Fish and Game Code, Section 1700. Section 1700 of the Fish and Game Code encourages the conservation, utilization, and maintenance of oceanic biological resources for the benefit of the public. The state will promote the development of local and distant-water fisheries in California under international law. Objectives include the maintenance of populations of all species of aquatic organisms to ensure their continued existence and support reasonable use.

California Endangered Species Act. Similar to the Federal ESA, the California ESA provides protection to species considered threatened or endangered by the State of California. The California ESA recognizes the importance of threatened and endangered fish, wildlife, and plant species and their habitats, and prohibits the taking of any endangered, threatened, or rare plant and/or animal species unless specifically permitted for education or management purposes.

PROPOSED ALTERNATIVES

Marquesas Way/Via Marina. From the Pumping Plant on Hurricane Street, the alignment would proceed east under the Grand Canal and along Marquesas Way, then southeast on Via Marina to the Marina del Rey entrance channel. It would then cross under the Marina del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview Street. This alignment is about 10,400 feet long. This is the preferred alignment.

Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview Street. This alignment is the shortest route – about 10,000 feet.

Dockweiler Beach to Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview Street. This alignment is about 10,400 feet long.

Dockweiler Beach Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south within the beachfront easement to a point that aligns with Vista Del Mar near Waterview Street, then southeast to the junction structure in Vista Del Mar near Waterview Street. This alignment is approximately 10,000 feet long.

Lagoon Alignment. This alternative alignment assumes the construction of the proposed 54-inch force main entirely by tunneling from the VPP to Vista Del Mar. The alignment would follow the Grand Canal southerly to the Marina channel and Ballona Creek and continue via tunneling to the Pacific Avenue alignment southerly to the Vista Del Mar terminus.

Construction Methods. The alignments under consideration cross the Marina del Rey entrance channel and Ballona Creek channel, requiring a minimum of about 1,800 feet of tunneling under the two channels. Three alternative construction methods are under consideration: open trench, micro-tunneling, and deep tunneling. While open trench construction costs less, micro-tunneling would eliminate the majority of the surface impacts to water quality or marine resources and can facilitate mitigation of other impacts such as noise. Like micro-tunneling, deep tunneling would eliminate many surface impacts and facilitate mitigation of impacts during construction.

PROJECT IMPACTS

Thresholds Of Significance

Water Quality. The significance criterion applied to water quality is based on guidelines established by the City of Los Angeles (1998). In the present evaluation, a significant effect on water quality in the vicinity of the proposed project would normally occur if the project resulted in one or both of the following:

> The project would cause discharges that create pollution, contamination or nuisance as defined in Section 13050 of the California Water Code;
>
> The project would cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body;
>
> The project would cause creation of site conditions that may result in soil erosion and sediment runoff during construction or following project completion.

"Pollution" is defined as an alteration of the quality of the waters of the state to a degree which unreasonably affects either (1) the waters for beneficial uses, or (2) facilities which serve these beneficial uses. "Contamination" is 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 spread of disease. Contamination also includes any equivalent effect resulting from the disposal of waste, whether or not the waters of the state are affected. Lastly, "nuisance" refers to anything which: (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.

Biota. Thresholds of significance for effects on biota and habitats have been established by the City of Los Angeles (1998). In this evaluation, a significant effect on biota and/or habitats in the vicinity of the proposed project would normally occur if the project resulted in one or more of the following:

> The loss of individuals, or the reduction of existing habitat, a state or federal listed endangered, threatened, rare, protected, candidate, or sensitive species, or a species of special concern;
>
> 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.

Permanent Impacts

Marquesas Way/Via Marina. This alignment would pass under Ballona Creek/ Grand Canal from the pumping station at Hurricane St., along Marquesas Way, then southeast on Via

Marina to the Marina del Rey entrance channel. It would then cross under the Marina del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Ballona Creek/ Grand Canal, Marina del Rey and Ballona Creek, while additional construction and tunneling launch and receiving sites would be located within close proximity (100 ft to 1,000 ft) of Ballona Creek/ Grand Canal, Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. While temporary impacts associated with construction are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from this alignment.

Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek, with most of the construction activities, including tunneling launch and receiving sites, located within about 200 ft of Ballona Creek/ Grand Canal, Marina del Rey, Ballona Creek, Dey Rey Lagoon or the dunes adjacent to Del Rey Lagoon. While temporary impacts associated with construction are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from this alignment.

Dockweiler Beach to Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek, while additional construction and tunneling launch and receiving sites would be located within of 500 ft of Ballona Creek/ Grand Canal, and less than 200 ft of Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. In addition, this alignment passes within 200 ft of a protected California least tern nesting site on Dockweiler Beach. While temporary impacts associated with construction are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from this alignment.

Dockweiler Beach Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south along Dockweiler State Beach, turning southeast to a junction structure in Vista Del Mar near Waterview St. This alignment would run under Dockweiler State Baech for most of the length. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek. Construction and tunneling launch and receiving sites would be located within of 500 ft of Ballona Creek/ Grand Canal, and about 200 ft from Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. In addition, this alignment passes within 200 ft of a protected California least tern nesting site on Dockweiler State Beach Beach. While temporary impacts associated with construction are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from this alignment.

Lagoon Alignment. This alternative alignment assumes the construction of the proposed 54-inch force main entirely by tunneling from the VPP to Vista Del Mar. The alignment would follow the Grand Canal southerly to the Marina channel and Ballona Creek and continue via tunneling to the Pacific Avenue alignment southerly to the Vista Del Mar terminus. Deep tunneling

associated with this alignment would pass under Marina del Rey and Ballona Creek, with most of the construction activities occurring in the immediate vicinity of the tunneling sites located within about 200 ft of Ballona Creek/ Grand Canal and near the Vista Del Mar terminus. While temporary impacts associated with construction are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from this alignment.

Construction Alternatives. The alignments under consideration cross the Marina del Rey entrance channel and Ballona Creek channel, requiring a minimum of about 1,800 feet of tunneling under the two channels. Additionally the Marquesas Way/Via Marina alignment would require tunneling under Ballona Creek/ Grand Canal. Three alternative construction methods are under consideration: open trench, micro-tunneling and deep tunneling. All three methods share the potential to impact the local resources through a combination of physical disturbance, noise and releases of excavated sediments and water into the local environment. Tunneling construction methods have the advantage of reducing these impacts by limiting construction activities to the launch and receive sites, while trenching could lead to impacts along the entire project length. While temporary impacts associated with all three construction methods are possible, the proposed project is not likely to result in a long-term reduction in water quality or the loss of individuals or habitat in the area. No permanent impacts to the water quality or marine resources in the project area are anticipated from either construction method.

Temporary Impacts

Marquesas Way/Via Marina. This alignment would pass under Ballona Creek/ Grand Canal from the pumping station at Hurricane St., along Marquesas Way, then southeast on Via Marina to the Marina del Rey entrance channel. It would then cross under the Marina del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Ballona Creek/ Grand Canal, Marina del Rey and Ballona Creek, while additional construction and tunneling launch and receiving sites would be located within close proximity (100 ft to 1,000 ft) of Ballona Creek/ Grand Canal, Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. Temporary impacts associated with construction include physical disturbance, noise and releases of excavated sediments and water into the local environment. No physical disturbance of local resources is anticipated. Noise is most likely to impact bird use in the construction areas. Bird use in the project area is greatest at Ballona Lagoon where construction will be several hundred feet from the lagoon and separated by a residential area. Noise impacts area are expected to be minimal. Temporary impacts to water quality and marine resources could occur through the unintentional release of excavated sediments and water into the local environment. Implementation of BMPs will be required for all construction phases to minimize impacts.

Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek, with most of the construction activities, including tunneling launch and receiving sites, located within about 200 ft of Ballona Creek/ Grand Canal, Marina del Rey, Ballona Creek, Dey Rey Lagoon or the dunes adjacent to Del Rey Lagoon. Temporary impacts associated with construction include physical disturbance, noise and releases of excavated sediments and water into the local environment. No physical disturbance of local resources is anticipated. Noise is most likely to impact bird use in the construction areas. Bird use in the project area is greatest at Ballona Lagoon where construction will be about 200 ft from the lagoon and separated by a residential area. Noise impacts area are expected to be minimal. Temporary impacts to water quality and marine resources could occur

through the unintentional release of excavated sediments and water into the local environment. Implementation of BMPs will be required for all construction phases to minimize impacts.

Dockweiler Beach to Pacific Avenue Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview St. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek, while additional construction and tunneling launch and receiving sites would be located within of 500 ft of Ballona Creek/ Grand Canal, and less than 200 ft of Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. In addition, this alignment passes within 200 ft of a protected California least tern nesting site on Dockweiler Beach. Temporary impacts to the least California tern nesting site are addressed by Keane (2005b). Physical disturbance of the upper strand of Dockweiler State Beach is anticipated in this alignment. This area of the beach is groomed and has substantial human disturbance, suggesting that construction disturbance is likely to result in little additional impact. Noise is most likely to impact bird use in the construction areas. Other than at the California least tern nesting area, bird use in the project area is greatest at Ballona Lagoon where construction will be about 500 ft from the lagoon and separated by a residential area. Noise impacts are expected to be minimal. Temporary impacts to water quality and marine resources could occur through the unintentional release of excavated sediments and water into the local environment. Implementation of BMPs will be required for all construction phases to minimize impacts.

Dockweiler Beach Alignment. From the pumping plant on Hurricane Street, the alignment would proceed west to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina del Rey and Ballona Creek channels, and continue south along Dockweiler State Beach, turning southeast to a junction structure in Vista Del Mar near Waterview St. This alignment would run under Dockweiler State Baech for most of the length. Tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek. Construction and tunneling launch and receiving sites would be located within of 500 ft of Ballona Creek/ Grand Canal, and about 200 ft from Marina del Rey, Ballona Creek, Dey Rey Lagoon and the dunes adjacent to Del Rey Lagoon. In addition, this alignment passes within 200 ft of a protected California least tern nesting site on Dockweiler State Beach Beach. Temporary impacts to the least California tern nesting site are addressed by Keane (2005b). Physical disturbance of the upper strand of Dockweiler State Beach is anticipated in this alignment. This area of the beach is groomed and has substantial human disturbance, suggesting that construction disturbance is likely to result in little additional impact. Noise is most likely to impact bird use in the construction areas. Other than at the California least tern nesting area, bird use in the project area is greatest at Ballona Lagoon where construction will be about 500 ft from the lagoon and separated by a residential area. Noise impacts are expected to be minimal. Temporary impacts to water quality and marine resources could occur through the unintentional release of excavated sediments and water into the local environment. Implementation of BMPs will be required for all construction phases to minimize impacts.

Lagoon Alignment. This alternative alignment assumes the construction of the proposed 54-inch force main entirely by tunneling from the VPP to Vista Del Mar. The alignment would follow the Grand Canal southerly to the Marina channel and Ballona Creek and continue via tunneling to the Pacific Avenue alignment southerly to the Vista Del Mar terminus. Deep tunneling associated with this alignment would pass under Marina del Rey and Ballona Creek, with most of the construction activities occurring in the immediate vicinity of the tunneling sites located within about 200 ft of Ballona Creek/ Grand Canal and near the Vista Del Mar terminus. Deep tunneling would eliminate the majority of the surface impacts to water quality or marine resources and can facilitate mitigation of other impacts such as noise. Temporary impacts associated with construction include physical disturbance, noise and releases of excavated sediments and water into the local environment. No physical disturbance of local resources is anticipated. Noise is most likely to impact bird use in the construction areas. Bird use in the project area is greatest at

Ballona Lagoon. Noise impacts area are expected to be minimal. Temporary impacts to water quality and marine resources could occur through the unintentional release of excavated sediments and water into the local environment. Implementation of BMPs will be required for all construction phases to minimize impacts.

Construction Alternatives. The alignments under consideration cross the Marina del Rey entrance channel and Ballona Creek channel, requiring a minimum of about 1,800 feet of tunneling under the two channels. Additionally the Marquesas Way/Via Marina alignment would require tunneling under Ballona Creek/ Grand Canal. Three alternative construction methods are under consideration: open trench, micro-tunneling and deep tunneling. All methods share the potential to impact the local resources through a combination of physical disturbance, noise and releases of excavated sediments and water into the local environment. Tunneling construction methods have the advantage of reducing these impacts by limiting construction activities to the launch and receive sites, which could be located away from sensitive areas. All three construction techniques could lead to temporary impacts to water quality and marine resources which could occur through the unintentional release of excavated sediments and water into the local environment. While tunneling generally has no effect on the surface above the excavation, tunneling may occasionally lead to small fractures that allow drilling sediments to escape to the surface. In the area where tunneling will pass under water bodies, these areas should be examined at least once a day during construction. These fractures will result in increased turbidity in the water near the fracture. If turbidity is observed, tunneling activities should cease until the leak in the tunnel producing the turbidity is repaired. In addition, implementation of BMPs will be required for all construction phases to minimize impacts.

Unavoidable Adverse Impacts

If management practices to control the unintentional release of excavated sediments and water into the local environment are successful. No unavoidable adverse impacts are expected.

Cumulative Impacts

No significant cumulative impacts have been identified to biota or habitats in the project area. There are no other known projects in the vicinity of the proposed project that, when considered together, would result in significant adverse impacts to the wildlife and habitats in the Marina del Rey area.

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APPENDIX 1
Bird species recorded during monthly surveys of Ballona Lagoon.

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Appendix A. Bird species recorded during monthly surveys of Ballona Lagoon. April 1996 -June 2005. Sources: Almdale 2005, CNDDB 2005, Nat. Geo 2002.

Family Common Name Species	Status	Total Individuals	Total Occurances
Grebes		**73**	**53**
Western Grebe *Aechmophorus occidentalis*	S?	12	12
Red-necked Grebe *Podiceps grisegena*		2	1
Horned Grebe *Podiceps auritus*		3	2
Eared Grebe *Podiceps nigricollis*		21	15
Pied-billed Grebe *Poddilymbus podiceps*		35	23
Cormorants & Pelicans		**177**	**75**
Double-crested Cormorant *Phalacrocorax auritus*	S3	98	45
Pelagic Cormorant *Phalacrocorax pelagicus*		1	1
California Brown Pelican *Pelecanus occidentalis californicus*	FE,SE	78	29
Herons		**1,061**	**319**
Great Blue Heron *Ardea herodias*	S4	106	71
Great Egret *Ardea alba*	S4	183	70
Snowy Egret *Egretta thula*	S4	587	93
Little Blue Heron *Egretta caerulea*		1	1
Green Heron *Butorides virescens*		121	58
Black-crowned Night Heron *Nycticorax nycticorax*	S3	63	26
Ducks		**2,943**	**226**
Domestic (Greylag) Goose *Anser anser*		2	1
Brant *Brant bernicla*		3	3
Ruddy Duck *Oxyura jamaicensis*		4	2
American Wigeon *Anas americana*		169	12
Mallard *Anas platyrhynchos*		1,898	101
Blue-winged Teal *Anas discors*		2	1
Green-winged Teal *Anas crecca*		2	1

Appendix A, continued. Bird species recorded during monthly surveys of Ballona Lagoon. April 1996 -June 2005. Sources: Almdale 2005, CNDDB 2005, Nat. Geo 2002.

Family Common Name Species	Status	Total Individuals	Total Occurances
Ducks, continued			
Greater Scaup *Aythya marila*		20	2
Lesser Scaup *Aythya affinis*		258	21
Bufflehead *Bucephala albeola*	S?	142	26
Common Goldeneye *Bucephala clangula*		2	2
Red-breasted Merganser *Mergus serrator*		409	49
Surf Scoter *Melanitta perspicillata*		32	5
Raptors		**14**	**14**
Red-tailed Hawk *Buteo jamaicensis*		1	1
American Kestral *Falco sparverius*		13	13
Coots		**8**	**8**
American Coot *Fulica americana*		8	8
Shorebirds		**8,108**	**508**
Black-bellied Plover *Pluvialis squatarola*		169	54
Killdeer *Charadrius vociferus*		457	86
Semipalmated Plover *Charadrius semipalmatus*		18	9
Greater Yellowlegs *Tringa melanoleuca*		5	5
Willet *Catoptrophorus semipalmatus*		460	91
Spotted Sandpiper *Actitis macularia*		2	2
Whimbrel *Numenius phaeopus*		213	73
Marbled Godwit *Limosa fedoa*		994	67
Dunlin *Calidris alpina*		47	12
Sanderling *Calidris alba*		1	1
Western Sandpiper *Calidris mauri*		3,065	31
Least Sandpiper *Calidris minutilla*		970	26

Appendix A, continued. Bird species recorded during monthly surveys of Ballona Lagoon. April 1996 -June 2005. Sources: Almdale 2005, CNDDB 2005, Nat. Geo 2002.

Family Common Name Species	Status	Total Individuals	Total Occurances
Shorebirds, continued			
Short-billed Dowitcher *Limnodromus griseus*		33	7
Long-billed Dowitcher *Limnodromus scolopaceus*		1,672	42
Wilson's Snipe *Gallinago gallinago*		1	1
Red-necked Phalarope *Phalaropus lobatus*		1	1
Gulls & Terns		**1,255**	**198**
Ring-billed Gull *Larus delawarensis*		506	67
California Gull *Larus californicus*	S2	367	31
Herring Gull *Larus argentatus*		5	5
Thayer's Gull *Larus thayeri*		1	1
Western Gull *Larus occidentalis*		131	53
Glaucous-winged Gull *Larus glaucescens*		2	2
Heermann's Gull *Larus heermanni*		1	1
Caspian Tern *Sterna caspia*	S4	3	2
Forster's Tern *Sterna forsteri*	S4	20	11
California Least Tern *Sterna antillarum browni*	FE,SE	217	24
Black Skimmer *Rynchops niger*	S1,S3	2	1
Doves		**614**	**179**
Rock Dove *Columba livia*		277	74
Mourning Dove *Zenaida macroura*		278	64
Spotted Dove *Streptopelia chinensis*		59	41
Parrots		**4**	**1**
Yellow-chevroned Parakeet *Brotogeris chiriri*		4	1

Appendix A, continued. Bird species recorded during monthly surveys of Ballona Lagoon. April 1996 -June 2005. Sources: Almdale 2005, CNDDB 2005, Nat. Geo 2002.

Family Common Name Species	Status	Total Individuals	Total Occurances
Hummingbirds		**80**	**53**
Black-chinned Hummingbird *Archiochus alexandri*		1	1
Anna's Hummingbird (or sp?) *Calypte anna* / sp		31	23
Rufous Hummingbird *Selasphorus rufus*	S1,S2	1	1
Allen's Hummingbird *Selasphorus sasin*		47	28
Kingfishers		**65**	**51**
Belted Kingfisher *Ceryle alcyon*		65	51
Passerines		**4,487**	**613**
Cassin's Kingbird *Tyrannus vociferans*		1	1
Western Kingbird *Tyrannus verticalis*		1	1
Black Phoebe *Sayornis nigricans*		147	76
Say's Phoebe *Sayornis saya*		19	15
Pacific-slope Flycatcher *Empidonax difficilis*		1	1
Northern Rough-winged Swallow *Stelgidopteryx serripennis*		12	7
Cliff Swallow *Petrochelidon pyrrhonota*		30	8
Barn Swallow *Hirundo rustica*		51	21
Western Scrub-Jay *Aphelocoma californica*		2	2
American Crow *Corvus brachyrhynchos*		281	86
Bushtit *Psaltriparus minimus*		49	7
Northern Mockingbird *Mimus polyglottus*		113	57
Loggerhead Shrike *Lanius ludovicianus*	S4	1	1
Bewick's Wren *Thryomanes bewickii*		2	2
House Wren *Troglodytes aedon*		5	5
Ruby-crowned Kinglet *Regulus calendula*		1	1

Appendix A, continued. Bird species recorded during monthly surveys of Ballona Lagoon. April 1996 -June 2005. Sources: Almdale 2005, CNDDB 2005, Nat. Geo 2002.

Family Common Name Species	Status	Total Individuals	Total Occurances
Passerines, continued			
European Starling *Sturnus vulgaris*		1,642	98
Orange-crowned Warbler *Vermivora celata*		3	3
Yellow-rumped Warbler *Dendroica coronata*		25	15
Common Yellowthroat *Geothlypis trichas*		22	14
Song Sparrow *Melospiza melodia*		2	2
Lincoln's Sparrow *Melospiza lincolnii*		3	2
White-crowned Sparrow *Zonotrichia leucophrys*		97	24
Golden-crowned Sparrow *Zonotrichia atricapilla*		1	1
Hooded Oriole *Icterus cucullatus*		4	3
House Finch *Carpodacus mexicanus*		593	78
Lesser Goldfinch *Carduelis psaltria*		25	2
House Sparrow *Passer domesticus*		1,354	80
Total Birds Sighted			**18,889**
Total Bird Occurances			**2,298**
Total Species Sighted			**94**

FE =Federally-listed Endangered Species
SE = State-listed Endangered Species
State Ranking:
S1 = <6 occurances or < 1,000 individual or <2,000 acres habitat
S2 = 6-20 occurances or 1,000-3,000 individuals or 2,000-10,000 acres
S3 = 21-100 occurances or 3,000-10,000 individuals or 10,000-50,000 acres
S4 = secure in California
S? = status uncertain

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REPORT

VENICE PUMPING PLANT DUAL FORCE MAIN BIOLOGICAL RESOURCES TECHNICAL REPORT

Prepared for

City of Los Angeles
Department of Public Works
Bureau of Engineering

URS

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REGULATORY SETTING FOR BIOLOGICAL ISSUES

U.S. Fish and Wildlife Service and National Marine Fisheries Service

Jurisdiction Subject to Section 7 of the Endangered Species Act:

The Federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.) is administered by the USFWS, and by the National Marine Fisheries Service (NMFS) in areas where marine habitats exist. Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce, jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Pursuant to the requirements of the California Environmental Quality Act (CEQA), an agency reviewing a proposed project within its jurisdiction must determine whether any federal-listed threatened or endangered species or species proposed for listing as threatened or endangered may be present in the vicinity of the proposed project area, and determine whether the proposed project would have a potentially significant impact on such species. Informal consultation with the appropriate federal agencies, including notifying them of the proposed route and intentions of the Project, has been initiated.

The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) typically reviews project plans and species information to determine the effects of federal actions on a proposed or candidate species. The USFWS recommends that candidate species and species proposed for listing also be considered in informal consultation during a project's environmental review. This is recommended because, in the event that a species were to be listed during the design or construction phases of a project, new studies and restrictions might be imposed. USFWS encourages consideration of species of concern in project planning, as they may become candidate species in the future. The determination of significance for species of concern must be made on a case-by-case basis, and must take into consideration current scientific knowledge about the individual species, known threats, and specific proposals.

Section 7 of the ESA requires federal agencies to use their authorities to conserve threatened and endangered species. It also directs federal agencies to consult with USFWS (or NMFS) if any action they authorize, fund, or carry out "may affect" in either a beneficial or adverse manner, any species that is listed or proposed for listing, or any designated or proposed critical habitat. For example, if the issuance of a CWA section 404 permit by the Corps for a private development project may affect any listed species, the Corps must consult with USFWS on the effects of the issuance of that permit. Species that are candidates for listing by the USFWS may also be addressed during federal interagency coordination. Section 7 also provides a mechanism for 'incidental take,' for actions that may affect a listed species, but which do not jeopardize its continued existence or destroy or adversely modify critical habitat.

Section 9 of the ESA prohibits 'take' (i.e., harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collecting, or the attempt to engage in any such conduct) of threatened and endangered species. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.

Recently, the USFWS diverted its resources from listing species to proposing and designating critical habitat. Currently, the USFWS had proposed or designated critical habitat for 16 wildlife and plant species. Critical habitat is defined as:

> *The specific areas within the geographical area occupied by the species, at the time it is listed ..., upon a determination ... that such areas are essential for the conservation of the species.*

The USFWS requires consultation for any modification to the critical habitat of a listed species.

Magnuson-Stevens Fishery Conservation and Management Act:

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) was authorized in 1996 and requires the NMFS to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a federal fisheries management plan. Essential Fish Habitat is defined as the waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Specifically, the MSA requires: (1) Federal agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that could adversely affect EFH; and (2) NMFS to provide conservation recommendations for any federal or state action that could adversely affect EFH.

U.S. Army Corps of Engineers

Jurisdiction Subject to Section 404 of the Clean Water Act:

Pursuant to Section 404 of the Clean Water Act, the ACOE regulates the discharge of dredged and/or fill material into waters of the United States. Waters of the United States include navigable waterways and wetlands adjacent to navigable waterways, non-navigable waterways and wetlands adjacent to non-navigable waters that are contiguous with navigable waterways. The term "waters of the United States" is defined at 33 CFR Part 328 and currently includes (1) all navigable waters (including all waters subject to the ebb and flow of the tide), (2) all interstate waters and wetlands, (3) all impoundments of waters mentioned above, (4) all tributaries to waters mentioned above, (5) the territorial seas, and (6) all wetlands adjacent to waters mentioned above.

On January 9, 2001 the U.S. Supreme Court ruled (in Solid Waste Agency of Northern Cook County V. U.S. Army Corps of Engineers) that the ACOE jurisdiction does not extend to previously regulated isolated waters, including but not limited to isolated ponds, reservoirs, and wetlands. Examples of isolated waters that are affected by this ruling include: vernal pools; stock ponds, lakes (without outlets); playa lakes; and desert washes that are not tributary to navigable or interstate waters or to other jurisdictional waters.

In the absence of wetlands, the limits of ACOE jurisdiction in non-tidal waters, including intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(e) as:

...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Wetlands are defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987 the ACOE published a manual to guide its field personnel in determining jurisdictional wetland boundaries. In 1989 the Federal Interagency Committee for Wetland Delineation developed an updated methodology which was adopted by the ACOE, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), and U.S.D.A. Natural Resources Conservation Service and which replaced the 1987 Wetland Manual.[1] The use of this 1989 manual was perceived by many to excessively increase the jurisdictional limits of wetlands. After several congressional hearings, EPA, ACOE, U.S. Department of Agriculture Soil Conservation Service, and USFWS published proposed 1991 revisions to the 1989 manual.[2] A few days afterwards, the President signed the Energy and Water Development Appropriations Act of 1992 which, in effect, prohibits the use of the 1989 manual. Because the 1991 proposed revisions to the 1989 manual have not yet been adopted, the only remaining valid methodology is the 1987 Wetland Manual.

The discharge of dredged or fill material (temporarily or permanently) into waters of the United States requires prior authorization from the ACOE pursuant to Section 404 of the Clean Water Act. Activities that usually involve a regulated discharge of dredged or fill materials include (but are not limited to) grading, placing of riprap for erosion control, pouring concrete, laying sod, preparing soil for planting (e.g., turning soil over, adding soil amendments[3]), stockpiling excavated material, mechanized removal of vegetation, and driving of piles for certain types of structures.

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[1] Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication.

[2] Government Printing Office. 1991. Federal Register, "1989 Federal Manual for Identifying Jurisdictional Wetlands; Proposed Revisions." August 14, 1991, Vol. 56, No. 157, pp 40446-40480.

[3] Similar planting activities associated with on-going farming operations may be exempt from regulation by Section 404 of the Clean Water Act.

Jurisdiction Subject to the Rivers and Harbors Appropriations Act of 1899:

The Rivers and Harbors Appropriations Act of 1899 authorizes the COE to exercise control over all construction projects in U.S. navigable waters. The Rivers and Harbors Act was originally designed with the intent to protect navigation and navigable capacity. These objectives were later expanded to include environmental protection. The key provision to this Act is Section 13, which makes it a crime to discharge refuse into any navigable water without the permission of the COE.

California Department of Fish and Game

Jurisdiction Subject to Section 1600 et seq. of the California Fish and Game Code:

Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFG defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFG's definition of "lake" includes "natural lakes or man-made reservoirs."

CDFG jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFG Legal Advisor has prepared the following opinion:

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects and riparian vegetation will be treated like natural waterways...

- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses, should be treated by [CDFG] as natural waterways...

- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions...

Thus, CDFG jurisdictional limits closely mirror those of the ACOE. Exceptions are CDFG's addition of artificial stock ponds and irrigation ditches constructed on uplands, and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status.

California Endangered Species Act (CESA):

The CESA (Fish & Game Code sections 2050, et seq.) is administered by the California Department of Fish and Game (CDFG), and generally parallels the federal ESA. CESA prohibits the "taking" of listed species, except as otherwise provided in State law. Unlike its federal counterpart, CESA applies

the take prohibitions to species petitioned for listing (state candidates) during the one-year listing review period. 'Take' is defined as to 'hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill' a protected species. Under Section 2081 of the Fish & Game Code, the CDFG may authorize the take of a State endangered, threatened, or candidate species if the take is incidental to an otherwise lawful activity and any impacts to the species are minimized and fully mitigated.

A State lead agency (the agency that has principal responsibility for carrying out or approving a project) is required to consult with CDFG to ensure that any action it undertakes is not likely to jeopardize the continued existence of any State endangered, threatened, or candidate species or result in adverse modification of essential habitat. A lead agency may also determine that species listed or proposed as threatened or endangered under the federal ESA warrant special review and consideration in CEQA documents. CEQA Guidelines Section 15380(d) allows a lead agency to consider a species as a "de-facto" threatened or endangered species if information can be presented showing the species would qualify for listing. This can apply to proposed, candidate, or any other species not actually listed by the CDFG or USFWS as rare, threatened, or endangered.

The Natural Community Conservation Planning Act was added to CESA in 1991 (Fish & Game Code sections 2800-2840), and provides for voluntary cooperation among CDFG, landowners, and other interested parties to develop natural community conservation plans which provide for early coordination of efforts to protect listed species or species that are not yet listed. The primary purpose of the Act is to preserve species and their habitats, while allowing reasonable and appropriate development to occur on affected lands.

Migratory Bird Treaty Act:

This Act placed all migratory birds under federal jurisdiction and protection. It prohibits the capture, killing, or possession of any bird species identified by various international conventions. Conventions to protect migratory birds have been signed with Great Britain, Mexico, Japan, and Russia. In this Act, the federal government is provided with the authority to establish threshold regulations that govern the hunting and management of listed species. This Act does not provide for acquisition of habitat.

Native Plant Protection Act:

The Native Plant Protection Act (California Fish and Game Code Sec. 1900-1913) prohibits the taking, possessing, or sale within the state of any rare, threatened or endangered plants as defined by CDFG, except as authorized by law and regulation. This applies to any plants with a state designation of rare, threatened or endangered.

California Coastal Commission

The California Coastal Act of 1976 (California Resources code section (30000 et seq) was enacted by the State legislature in 1976 to provide for the long-term protection of California's 1,100 mile coastline. The California Coastal Commission policies include: the protection, enhancement, and restoration of environmentally sensitive habitats, including inter tidal and near shore waters, wetlands, bays, and estuaries, riparian habitat, and habitat for rare and endangered

plants or animals. Local Coastal Plans (LCP's) identify the location, type, densities, and other ground rules for future development in the coastal zone portions for 73 cites and counties along the coast. LCP's are prepared by local government, these programs govern decisions that determine the short-term and long-term conservation and use of coastal resources. These coastal resources include: (1) sensitive species; (2) environmental sensitive habitat areas; and (3) CCC-defined wetlands.

Sensitive Species

Least Terns and other species as identified in the Keane Biological Report and several species of plants or wildlife as identified in the Marine Resources Analysis, both located in this section.

Environmental Sensitive Habitat Areas

Environmental Sensitive Habitat Areas (ESHA's) are any areas in which plant or animal life or their habitat are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and development. ESHA's have been identified by the Local Coastal Plan (see below). The California coastal Act states that ESHA's shall be protected against significant disruption of habitat value. Development in areas adjacent to ESHA's shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat areas. The Least Tern Nesting site located on the north side of the Marina Del Rey/Ballona Lagoon Channels on Dockweiler Beach to the West of Marina Del Rey beachfront access trail is an ESA.

Wetland Jurisdiction Subject to California Coastal Commission Act:

Any person or public agency proposing development within the coastal zone must obtain a Coastal Development Permit. In general, the coastal zone extends from the State's three-mile seaward limit to an average of approximately 1,000 yards inland from the mean high tide of the sea. The California Coastal Commission (CCC), made up of representatives from various coastal areas and state agencies, reviews the coastal development permits for conformity with the coastal policies of the California Coastal Act.

In 1975 a four-person team (Cowardin, Carter, Frank Golet, and Ted LaRoe) developed the U.S. Fish and Wildlife Serves (FWS) wetland classification system (Cowrdin et al., 1976) that included the following wetland definition for review.

> *Wetland is land where an excess of water is the dominant factor determining the nature of soil development and the types of plant and animal communities living at the soil surface. It spans a continuum of environments where terrestrial and aquatic systems intergrade. For purposes of this classification system, wetland is defined more specifically as land where water table is at, near, or above the land surface long enough each year to promote the formation of hydric soils and to support the growth of hydrophytes, as long as other environmental conditions are*

> *favorable… In certain wetland types, vegetation is absent ad soils are poorly developed or absent as a result of frequent and drastic fluctuations of surface-water levels, wave action, water flow, turbidity, or extremely high concentrations of salts or other substances in the water or substrate. Wetlands lacking vegetation and hydric soils can be recognized by the presence of surfacewater at some time during the year and their location within, or adjacent to, vegetated wetlands or aquatic habitats.*

An April 1977 version contained a similar definition with only minor revisions (Cowardin et al., 1977a). This version was made available for public review and comment. In October 1977, the FWS produced an operational draft version of its classification system for initiating wetland mapping (Cowardin et al., 1977b). The definition is essentially the same as the 1976 version except that the first two sentences were eliminated from the definition and moved to the concepts discussion preceding the definition.

> *Wetlands is defined as land where the water table is at, or near or above, the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes. Inc certain types of wetlands, vegetation is lacking and soils are poorly developed or absent as the result of frequent and drastic fluctuations of the surface-water levels, wave action, water flow, turbidity, or high concentrations of salts or other substances in the water of substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats.*

After using the operational draft for a couple of years and receiving public input, the USFWS amended its classification and revised its wetland definition (Cowardin et al., 1979). The following definition has served as the FWS's official wetland definition for nearly 2 decades and continues to be used for wetland mapping.

> *Wetlands are lands transitional between terrestrial and aquatic systems **where the water table is usually at or near the surface or the land** [emphasis added] is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydropytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season each year.*

To summarize, a one parameter Cowadin wetland is defined by one or more of three parameters (hydrophytic vegetation, hydric soils, and/or saturated or shallow water some time during the growing season) <u>in areas where the water table is usually at or near the surface</u>. These CCC-defined wetlands include the Ballona Lagoon, Ballona Creek, Marina del Rey Channel, and Dockweiler State Beach (both north and south).

California Department of Parks and Recreation

The California Department of Parks and Recreation (DPR) has a major role in the protection, restoration, and interpretation of the State's wetlands. A primary goal for DPR is the preservation of the State's biological diversity and the protection of its valued natural resources including wetlands. DPR manages over 265 park units, including over 280 miles of coastline and 250 miles of rivers. Many of the coastal units contain river mouths with coastal lagoons and estuaries. In addition to being included in DPR's primary mission, wetlands preservation is also a mandated responsibility under the Keene-Nejedly California Wetlands Preservation Act of 1976 (Pub. Res. Code Div. 5, Ch. 7). The Act directs DPR, along with the Department of Fish and Game, to recognize opportunities for protecting wetlands which lie within or adjacent to State Park System units, and to consider acquisition of wetlands in proximity of State Parks. In addition to lands directly owned by DPR, the Department also has certain jurisdiction over granted or un-granted tidelands or submerged lands abutting State Park System lands (Pub. Res. Code 5003.5).

Wetlands restoration is a high priority in the Department's Resource Management Program and is pursued in all California bioregions. For example, DPR's coastal area projects focus on the restoration of natural hydrologic conditions and the re-establishment of native plant communities while its riparian restoration projects focus on the restoration of altered channel morphology through the application of bioengineering.

California State Lands Commission

The Legislature has granted general authority to the California State Lands Commission (Commission) to manage trust lands. Unless otherwise expressly stated in the State Constitution or statutes, the public trust doctrine mandates the criteria for Commission management of trust lands. Lands under the ocean and under navigable streams are owned by the public and held in trust for the people by government. These are referred to as public trust lands, and include filled lands formerly under water. Public trust lands cannot be bought and sold like other state-owned lands. The regulatory authority of the Commission extends to: preventing damage to life, health, property, natural resources, the environment, damage to underground oil and gas deposits from infiltrating water and other causes, loss of oil, gas, or reservoir energy and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances, by reason of the drilling, operation, maintenance, or abandonment of wells, and the operation, maintenance, and removal or abandonment of oilfield facilities.

State Water Quality Control Board – Los Angeles Region

<u>Jurisdiction Subject to Section 401 of the Clean Water Act:</u>

A 401 water quality certification is required for those applicants who seek a federal permit to discharge fill material into a water of the United States (e.g., Section 404 permit, as described above). The ACOE will not grant authorization until the water quality certification has been

obtained or has been waived. A water quality certification is issued by the RWQCB that states that the applicant will comply with all pertinent water quality standards (both federal and state water quality standards). The jurisdictional limits of the RWQCB pursuant to Section 401 of the Clean Water Act are identical as that defined above for the ACOE under Section 404 of the Clean Water Act.

If the applicant is not notified by the Regional Board within 60 days of the postmarked date of the application, the applicant may assume that the project meets the conditions of the certification.

Jurisdiction Subject to Section 402 of the Clean Water Act:

In 1972, the Clean Water Act was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful, unless the discharge is in compliance with a NPDES permit. In 1987 amendments tot eh CWA added Section 402 (p) which establishes a framework for regulating municipal and industrial storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Board has issued a general permit for storm water discharges associated with construction activities statewide. Regulated construction activity includes clearing, grading, or excavation that results in soil disturbance of at least five acres of total land area.

City of Venice Beach

Land Use Plan and Local Coastal Program:

This plan has been developed in order to comply with the California Coastal Act of 1976. The coastal act directs each local government located wholly or partly within the Coastal Zone (see Figure ** for Coastal Zone Map) to prepare a Local Coastal Program (LCP). Consequently, the City of Venice Beach has prepared a LCP that also serves as a Land Use Plan (LUP).

The LCP/LUP states the following:

- Policy III. C. 2. states that "No development permits shall be granted for development which would have a potential significant impact on the least tern nesting ground in the vicinity of the jetty at the Marina Channel".

- The environmentally sensitive habitat areas in the Venice Coastal Zone include the Ballona Lagoon and Grand Canal south of Washington Boulevard, Venice Canals north of Washington Boulevard, habitat buffer areas on the east and west banks of Ballona Lagoon, and the California least tern nesting areas, as identified on Figure **. The LUP states that the existing and potential values in these environmentally sensitive habitat areas shall be protected, enhanced, and where feasible, restored.

- Section 30230. Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or

economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

- Section 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

- Section 30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

    a. Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

    b. Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

- Policy IV. A. 1. Canals Rehabilitation Project. The canal area north of Washington Boulevard shall continue to be maintained as a unique coastal, environmental and social resource, as provided by the Venice Canals Rehabilitation Plan approved by Coastal Commission Coastal Development Permit 5-91-584. The goals and objectives of the rehabilitation plan shall continue to be implemented in order to improve water quality, bank stability, public access, and biological productivity. The canal tidal gates located beneath the Washington Boulevard bridge shall be operated in a manner that sustains and enhances biological productivity in the canals by ensuring maximum water circulation.

- Policy IV. A. 2. Permitted Uses. Uses permitted in or adjacent to the canals shall be implemented in a manner to protect the biological productivity of marine resources and maintain healthy populations of marine organisms. Such uses as open space, habitat management, controlled nature study and interpretation, and passive public recreation use of walkways for bird watching, photography, and strolling shall be encouraged and promoted.

- Policy IV. A. 3. Venice Canals Landscape Buffer. To protect the marine habitat, a one and one-half to two-foot-wide safety landscape buffer strip shall continue to be provided and maintained between the canal banks and sidewalks. Landscaping in the buffer strip shall consist of native Ballona Lagoon and Grand Canal South of Washington Boulevard coastal strand marshland or wetland vegetation as specified in the Venice Canals Rehabilitation Plan approved by Coastal Commission Coastal Development Permit 5-91-584.

- Policy IV. A. 4. Venice Canals Setback and Yard Area. In order to provide a setback for access. to protect visual quality and the biological productivity of the canals. and to limit. water runoff. a setback with an average depth of 15 feet (and a minimum depth at any point of 10 feet) shall be provided and maintained in the front yard areas of private residences (adjacent to the canal property line). This setback shall provide a permeable yard with an area at least 15 feet times the width of the lot line at the canal side. (See also Policy 1.A.4a for details).

- Ballona Lagoon Enhancement Plan. The Ballona Lagoon shall be restored, protected and maintained for shallow tidal and intertidal marine habitat. fisheries and public access as provided in the Ballona Lagoon Enhancement Plan (See Coastal Commission Coastal Development Permit 5-95-152 and amendments). The plan is intended to improve water quality and tidal flushing; reduce the amount of garbage, sediment and other pollutants in the lagoon; maintain and expand habitat values for the endangered least tem, shorebirds and fisheries; restore native vegetation; protect banks from erosion; maintain and if possible increase the existing 50-year flood protection; and enhance public trails and interpretative overlooks without invading the privacy of adjoining residents. The goals and policies of the Enhancement Plan shall be carried out in a manner consistent with the policies of this LUP. The Ballona Lagoon tidal gates located beneath Via Marina shall be operated in a manner that sustains and enhances biological productivity in the lagoon by ensuring maximum water circulation.

  Only uses compatible with preservation of this habitat shall be permitted in and adjacent to the lagoon. Uses permitted in or adjacent to the lagoon shall be carried out in a manner to protect the biological productivity of marine resources and maintain healthy populations of marine organisms. Such uses as open space, habitat management, controlled nature study and interpretation, and passive public recreation such as bird watching, photography, and strolling shall be encouraged and promoted. No fill shall occur in Ballona Lagoon unless it is consistent with Coastal Act Section 30233 and is the least environmentally damaging alternative. No untreated runoff shall be directed into the lagoon.

  The California Coastal Commission reviewed the Enhancement Plan and on January 10, 1996, granted Coastal Development Permit No.5-95-152, for restoration of Ballona Lagoon and lagoon bluffs along the east bank, subject to conditions.

- Policy IV. B. 2. Ballona Lagoon Buffer Strip. The City shall implement methods of permanent protection of the lagoon, including acceptance of all outstanding and future

offers to dedicate open space and public access buffer strips along the east and west banks.

a. East Bank. The habitat protection buffer strip, a 4o-foot wide dedicated open space and public easement shall continue to be provided and maintained adjacent to the east bank of Ballona Lagoon, in the Silver Strand Subarea, as required by Coastal Development Permit (CDP) Nos. A-266-77, 5-87-112, and 5-86-641. For additional details, see Policy I.A.4b.

b. West Bank. A habitat protection buffer strip shall be provided and maintained between the lagoon and all development permitted on the properties situated on the west bank of Ballona Lagoon. Because of the steep embankment and the need to provide some buffering from the automobile traffic on Pacific Avenue, the strategy along the western shore is to limit physical access. Most of the lots located on the west side of the lagoon, particularly between lronsides and Topsail Streets, are quite narrow. Given the location and size of these parcels, first priority for use of these parcels is permanent open space. However, in case of any development, all structures located south of lronsides Street to Via Marina shall be set back at least twenty-five feet from the property line nearest the lagoon. North of Ironsides Street, an average setback of 15 feet, but not less than 10 feet, shall be maintained. (See LUP Policies 1.A.4.c, LA.4.d and LA.7.b for specific lagoon buffer and setback requirements).

c. West Bank Properties South of Ironsides Street to Topsail Street. These properties, commonly known as the Alphabet Lots, consist of the vacant lots located on the west bank of Ballona Lagoon between lronsides Street and Topsail Street. The use of these parcels shall be permanent Open Space with restoration of the native vegetation. Nonintrusive public access may be permitted in a manner that protects the environmentally sensitive habitat areas (See also Policy I.A.4.d).

Permitted uses within the buffer strip shall be limited to open space, habitat management, nature study and interpretation for educational purposes and pedestrian walkways for passive recreation such as bird watching, photography and strolling. Landscaping in the buffer strip shall consist of native plants and shrubs. Non-native species shall be phased out and the area restored as feasible. (For more detailed, refer to the Ballona Lagoon Enhancement Plan.)

- Policy IV. C. 1. Stormwater Runoff. All new public and private development, substantial rehabilitation, redevelopment or related activity, which discharges stormwater runoff into the Ocean, Ballona Lagoon, Grand Canal south of Washington Boulevard or the Venice Canals shall be designed and conducted in compliance with the County-wide Municipal National Pollution Discharge Elimination System (NPDES) Stormwater Permit, issued by the California Regional Water" Quality Control Board (RWQCB), the RWQCB approved Standard Urban Stormwater Mitigation Plan, and the NPDES General Permit for Stormwater Discharges Associated with Construction Activity, issued by the State Water Resources Control Board (SWRCB), where applicable. Methods to improve water

quality, such as the mitigation of the first-flush stormwater runoff entering coastal waterways, shall be imposed as conditions of development by the City of Los Angeles in accordance with SWRCB and RWQCB recommendations and regulations, and the Santa Monica Bay Restoration Project Action Plan in order to protect, restore, and where feasible, enhance the water quality and habitat of these waterways.

- Policy IV. C. 2. Water Quality. The methods to improve water quality, recommended in California's Plan for the Control of Non-Point Source Pollution (January 2000), such as watershed planning and management programs, and habitat restoration projects, shall be considered and implemented by the City of Los Angeles where feasible opportunities exist. Selected Best Management Practices (BMPs) or suites of BMPs shall be designed to treat, infiltrate or filter the stormwater runoff from each runoff event up to and including the 8S11 percentile, 24-hour runoff event for volume based BMPs and/or the 8S11 percentile, 1 hour event, with an appropriate safety factor, for flow-based BMPs.

- Policy IV. D. 1. Venice Canals Habitat. The Venice Canals have been identified by the Least Tern Recovery Team as a foraging habitat for the Least Tern. Development within or adjacent to the canals that might affect this foraging habitat shall not be permitted.

- Policy IV. D. 2. Ballona Lagoon Habitat. The Ballona Lagoon has been identified by the Least Tern Recovery Team as a critical habitat for the Least Tem for feeding. Development within or adjacent to the lagoon that might adversely impact the quality of this foraging habitat shall not be permitted.

- Policy IV. D. 3. Venice Beach. The Least Tern nesting habitat on Venice Beach shall be preserved and shall not be disturbed by encroachments of public improvements and activities.

- Policy IV. F. 1. Diking, dredging and fill shall be permitted only in conjunction with an approved restoration plan and maintenance activity consistent with Coastal Act Section 30233. No construction shall be permitted on sandy beaches, except for construction in conjunction with approved recreational, ecological, and erosion control facilities. No fill shall be permitted in coastal waterways or below the seven foot contour for structures adjacent to the lagoon unless it is consistent with Coastal Act Section 30233 and is the least environmentally damaging alternative.

- Regulations regarding the use of native flora, setbacks, and higher floor and driveway elevations to mitigate potential for erosion and flooding, and to provide for habitat protection, shall be consistent with the Venice Canals Rehabilitation Plan approved by Coastal Commission Coastal Development Permit 5-91-584, and the Ballona Lagoon Enhancement Plan approved by Coastal Commission Coastal Development Permit 5-95-152 and amendments.

Venice Community Plan (A part of the City of Los Angeles General Plan):

The Venice Community Plan contains an area of approximately 2 acres of land within the City of Los Angeles and includes the Venice Beach. A stated goal of the Venice Community Plan is to protect environmental resources. Consequently, it is a stated policy to protect and maintain open space areas, including the Venice Canals, Grand Canal, Ballona Lagoon, and beaches.

Venice Coastal Zone Specific Plan:

The Venice Coastal Zone Plan regulates all development, including use, height, density, setback, buffer zone, and other factors in order that it be compatible in character with the existing community and to provide for the consideration of aesthetics and scenic preservation and enhancement, and to protect environmentally sensitive areas. This involves the protection, maintenance, and enhancement, and where feasible, restores the overall quality of the coastal zone environment and its natural and man-made resources. The goal is to implement the Local Coastal Program for that portion of Venice community within the coastal Zone as designated by the State Legislature. Consistent with these goals, the Venice Coastal Zone Plan has established a habitat protection buffer strip around the Ballona Lagoon.

County of Los Angeles

Department of Beaches and Harbor:

Beaches within the boundaries of the City of Los Angeles include Venice Beach. City beaches are leased to Los Angeles County. The County maintains them and their related facilities. The County of Los Angeles Beach Commission is a 20-member body appointed by the Board of Supervisors. It reviews Department of Beaches and Harbors policies, capital projects and contracts as related to the County-operated beaches.

Ten members are appointed by the Fourth Supervisory District, seven from the Third Supervisory District (both districts feature all the County-operated beaches) and one each from the First, Second and Fifth Districts.

Manage Marina del Rey and County owned or operated beaches to enhance public access and enjoyment while maximizing County revenue through professional and proactive asset management. This includes Marina lease administration and leasehold redevelopment; beach concession, parking and use permit administration; beach and Marina maintenance (refuse removal, restroom cleaning, grounds maintenance, and facility repairs); Marina leasehold and beach facilities maintenance inspections; planning and implementation of Marina del Rey and beach capital and infrastructure improvement programs; marketing and management of promotional campaigns; and children's programs including the Day in the Marina and the Water Awareness, Training, Education, and Recreation (W.A.T.E.R.) programs.

Significant Ecological Areas (SEA's) and Coastal Wetlands:

SEA's are significant habitats identified by Los Angeles County as important of the preservation and maintenance of biodiversity. These SEA's were identified and documented by the Regional Planning Commission (1976). Each SEA was selected on the basis of existing known habitats of sensitive or endangered species as well as sites containing a diversity of native plant and animal resources. The Ballona Wetland and the Venice Canal system are considered to be both a coastal wetlands and SEA's by the County of Los Angeles. Policy 1 – is to identify significant habitat areas, corridors and buffers and to take measure to protect, enhance, and/or restore them. Policy 2 is to protect, restore, and / or enhance habitat areas, linkages, and corridor segments, to the greatest extent practicable within city owned or managed sites.

City of Los Angeles

California Environmental Quality Act (CEQA):

CEQA requires state and local agencies, in this case the City of Venice Beach, to evaluate the environmental impacts of proposed projects and avoid or mitigate impacts on the environment. CEQA also provides that agencies can approve or undertake projects that will significantly impact the environment if the agency makes specific findings of overriding considerations.

The purpose of an Environmental Impact Report (EIR), as defined in section 15121 (a) of the State Guidelines for the implementation of the California Environmental Quality Act (CEQA) California Code of Regulations (CCR), Title 14, Division 6, Chapter 3 "Guidelines" is as follows:

> *An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effect and describe reasonable alternatives to the project.*

This document assesses the significant environmental impacts, including unavoidable adverse impacts and cumulative impacts, related to the adoption of the City's proposed construction and operation of a 54-inch force main from the existing Venice Pumping Plant.

The City of Los Angeles is the lead agency, as defined by Section 21067 of CEQA, for this Draft EIR and has supervised its preparation. The City of Los Angeles' City Council has primary responsibility for the adoption and implementation of the proposed project and the certification of the project's Final EIR.

General Plan: Conservation Element:

The State in 1970 and 1971 required that conservation and open space elements be included in the City of Los Angeles General Plan. The conservation element addresses the natural resources

of the City of Los Angeles, including endangered species, beach erosion, significant ecological areas, and coastal wetlands.

Endangered Species. Then city's objectives to protect and promote the restoration, to the greatest extent practical, of sensitive plant and animal species and their habitats. Policy 1 – is 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 habitat. Policy 2 – 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.

Beach Erosion. Beaches within the boundaries of the City of Los angels include Venice Beach. City beaches are leased to Los Angeles County (see above for - Department of Beaches and Parks). The County maintains them and their related facilities. Therefore, the City of Los Angeles does not have primary jurisdiction over beach management.

Ballona Lagoon Bird Census Summary

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BALLONA LAGOON BIRD CENSUS SUMMARY

For period April 1996 through June 2005

	Species / Date	14-Apr-96	9-May-96	20-Jun-96	27-Jul-96	18-Aug-96	22-Sep-96	20-Oct-96	24-Nov-96	8-Dec-96	18-Jan-97	17-Feb-97	8-Mar-97	27-Apr-97	25-May-97	22-Jun-97	Jul 97
	Person-minutes per visit	**45**	**105**	**30**	**20**	**52**	**30**	**25**	**61**	**50**	**50**	**45**	**45**	**30**	**35**	**40**	
	Water level (in meters)																
1	Western Grebe									3							
2	Red-necked Grebe																
3	Horned Grebe																
4	Eared Grebe								1								
5	Pied-billed Grebe								2		2		1				
6	Double-crested Cormorant		1								1			1			
7	Pelagic Cormorant																
8	Brown Pelican									1	2	2					
9	Great Blue Heron	1				2			2		1	1			1	1	
10	Great Egret		1						2	1	1		3				
11	Snowy Egret	1	2			1	2	1	17	2	7	18	14				
12	Little Blue Heron																
13	Green Heron	3	7	3	1	2	2	2	2		1	1		3	1	5	
14	Black-crowned Night Heron		1			1											
15	Domestic (Greylag) Goose																
16	Brant																
17	Ruddy Duck																
18	American Wigeon																
19	Mallard	15	8	6		6			27	27	16	14	6	13	4	2	
20	Blue-winged Teal																
21	Green-winged Teal																
22	Greater Scaup																
23	Lesser Scaup	1															
24	Bufflehead												2				
25	Common Goldeneye																
26	Red-breasted Merganser								6	8	11	12	19				
27	Surf Scoter																
28	Red-tailed Hawk																
29	American Kestral	1					1	1									
30	American Coot					1											
31	Black-bellied Plover	1	1			4	12	1	6	5	1	7					
32	Killdeer		3		4	5	6	12	1	2		1	4	3	2	1	
33	Semipalmated Plover					1	1									5	
34	Greater Yellowlegs						1		1							1	
35	Willet	4	7			15	13	7	5	8	6	6	6	4	1	1	
36	Spotted Sandpiper																
37	Whimbrel	2	1			3	1	1	6	4	4	6	3	1	2		
38	Marbled Godwit	37	2			4	1		28	32	43	47	35	12			
39	Dunlin								2		2	3					
40	Sanderling																
41	Western Sandpiper	3							4	82	309	305	3			2	
42	Least Sandpiper	5							4	31	9	150					
43	Short-billed Dowitcher	1												5			
44	Long-billed Dowitcher								66	12	38	76	72				
45	Wilson's Snipe																
46	Red-necked Phalarope					1											
47	Ring-billed Gull		3			2		3	17	11	35	24	16				
48	California Gull	4			3					9	3	7	14				
49	Herring Gull																
50	Thayer's Gull																
51	Western Gull			1		1	1	1			2		1			3	
52	Glaucous-winged Gull																
53	Heerman's Gull																
54	Caspian Tern																
55	Forster's Tern	3														2	
56	Least Tern		18	8											2	9	
57	Black Skimmer																
58	Rock Dove	10	5	15	5	12	1	3	3		6	7	2	5	4	5	
59	Mourning Dove	1	4	2		1										2	
60	Spotted Dove	1	1	1					1					1		1	
61	Yellow-chevroned Parakeet																
62	Black-chinned Hummingbird																
63	Anna's Hummingbird (or Sp?)														1		
64	Rufous Hummingbird																
65	Allen's Hummingbird									2							
66	Belted Kingfisher						1				1		1				
67	Cassin's Kingbird																
68	Western Kingbird	1															
69	Black Phoebe	1	4			2		1		2		1				1	
70	Say's Phoebe																
71	Pacific-slope Flycatcher																
72	Northern Rough-winged Swallow																
73	Cliff Swallow	12	8														
74	Barn Swallow	4	3	3	1											4	
75	Western Scrub-Jay																
76	American Crow	2	5	3	3				1		2	3				3	
77	Bushtit																
78	No. Mockingbird		1	11	2	1										1	
79	Loggerhead Shrike										1						
80	Bewick's Wren						1				1						
81	House Wren																
82	Ruby-crowned Kinglet																
83	European Starling	18	32	32	5	31			7	1	2	20	18	11	2	16	
84	Orange-crowned Warbler																
85	Yellow-rumped Warbler																
86	Common Yellowthroat																
87	Song Sparrow																
88	Lincoln's Sparrow																
89	White-crowned Sparrow																
90	Golden-crowned Sparrow																
91	Hooded Oriole																
92	House Finch	7	21	3			2								2	2	
93	Lesser Goldfinch																
94	House Sparrow	6	8	14	34	1						2	13	1	4	7	
Total Birds Sighted		**145**	**147**	**102**	**58**	**97**	**46**	**33**	**211**	**243**	**507**	**713**	**233**	**60**	**26**	**74**	
% of Tot Sightings		**0.8%**	**0.8%**	**0.5%**	**0.3%**	**0.5%**	**0.2%**	**0.2%**	**1.1%**	**1.3%**	**2.7%**	**3.8%**	**1.2%**	**0.3%**	**0.1%**	**0.4%**	
Total Species Sighted		**27**	**24**	**13**	**9**	**21**	**15**	**11**	**23**	**19**	**26**	**22**	**19**	**12**	**12**	**21**	
% of Tot Species		**28.7%**	**25.5%**	**13.8%**	**9.6%**	**22.3%**	**16.0%**	**11.7%**	**24.5%**	**20.2%**	**27.7%**	**23.4%**	**20.2%**	**12.8%**	**12.8%**	**22.3%**	
Average Total Birds Sighted			**146**	**131**	**113**	**110**	**99**	**90**	**105**	**120**	**159**	**209**	**211**	**200**	**187**	**180**	
Average % of Tot Sightings			**101%**	**78%**	**51%**	**88%**	**46%**	**37%**	**201%**	**202%**	**319%**	**341%**	**110%**	**30%**	**14%**	**41%**	
Average Total Species Sighted			**25.5**	**21.3**	**18.3**	**18.8**	**18.2**	**17.1**	**17.9**	**18.0**	**18.8**	**19.1**	**19.1**	**18.5**	**18.1**	**18.3**	
Average % of Tot Species			**94%**	**61%**	**49%**	**112%**	**83%**	**64%**	**129%**	**106%**	**138%**	**115%**	**100%**	**65%**	**66%**	**115%**	

For period April 1996 through June 2005

	Species / Date	16-Aug-97	18-Sep-97	17-Oct-97	14-Nov-97	27-Dec-97	Jan 1998	8-Feb-98	27-Mar-98	29-Apr-98	29-May-98	30-Jun-98	25-Jul-98	23-Aug-98	9-Sep-98	18-Oct-98	5-Nov-98
	Person-minutes per visit	30	90	80	70	150		130	55	15	30	40	30	78	90	80	80
	Water level (in meters)																
1	Western Grebe				1			1		1							
2	Red-necked Grebe								2								
3	Horned Grebe					1		2									
4	Eared Grebe				1	3		4	1								
5	Pied-billed Grebe			1	3	2		4									
6	Double-crested Cormorant				1	1		3		3						4	3
7	Pelagic Cormorant																
8	Brown Pelican				1	1		8	3								3
9	Great Blue Heron		2	3	1			1				2	2	1	1	1	2
10	Great Egret			3	1	4		2	2	1					1	2	3
11	Snowy Egret	1	8	6	5	7		9	11	9	1	1				6	2
12	Little Blue Heron																
13	Green Heron	3	1	3	1	1				6	4	5	3	2	3	3	
14	Black-crowned Night Heron			5						5	2		1	9			
15	Domestic (Greylag) Goose																2
16	Brant																
17	Ruddy Duck								2								
18	American Wigeon																
19	Mallard	7	29	49	13	25		12	11	7	8	2	12	4	31	20	42
20	Blue-winged Teal																
21	Green-winged Teal																
22	Greater Scaup																
23	Lesser Scaup							22									
24	Bufflehead					15											
25	Common Goldeneye																
26	Red-breasted Merganser				3	5		23	19	1							1
27	Surf Scoter							5	19	2	4	2					
28	Red-tailed Hawk																
29	American Kestral				1	1		1								1	
30	American Coot																
31	Black-bellied Plover		3	2	1	3		2						3	4	6	5
32	Killdeer	4	7	8	6	5		3	2				3	3	4	13	12
33	Semipalmated Plover																
34	Greater Yellowlegs																
35	Willet	5	6	5	3	9		5	10			2	5	7	9	10	5
36	Spotted Sandpiper																
37	Whimbrel	3	5	2	1	3		3	3	4				3	2	3	2
38	Marbled Godwit	2	14	18	4	24		23	15	7	3	2	4	16	6	25	6
39	Dunlin				1	8		1									
40	Sanderling																
41	Western Sandpiper			62		288		87	10								
42	Least Sandpiper	9	2		2	20		1									
43	Short-billed Dowitcher								7								
44	Long-billed Dowitcher				44	41		123								2	19
45	Wilson's Snipe																
46	Red-necked Phalarope																
47	Ring-billed Gull		2	1	1	45		15		7				1			5
48	California Gull			2	4	29		13	5	7							
49	Herring Gull							1									
50	Thayer's Gull																
51	Western Gull									13	2		1		4	1	
52	Glaucous-winged Gull																
53	Heerman's Gull			1													
54	Caspian Tern																
55	Forster's Tern								1	2							
56	Least Tern									8	6	11	3				
57	Black Skimmer												2				
58	Rock Dove		4		1	7		4		1	7	2	4			2	1
59	Mourning Dove			1						1	1	3	21	5			
60	Spotted Dove	1						4	1				2	1	2		
61	Yellow-chevroned Parakeet																
62	Black-chinned Hummingbird																
63	Anna's Hummingbird (or Sp?)			1		2								1			
64	Rufous Hummingbird																
65	Allen's Hummingbird										1						
66	Belted Kingfisher	1	1		1	1		1						2		1	1
67	Cassin's Kingbird																
68	Western Kingbird																
69	Black Phoebe	1	4	3	1	2		1	2	1	2			1			2
70	Say's Phoebe					1											
71	Pacific-slope Flycatcher																
72	Northern Rough-winged Swallow																
73	Cliff Swallow										1	3					
74	Barn Swallow										1			4		3	
75	Western Scrub-Jay																
76	American Crow	2	1	2	3	5		4	3	2	3	3		4	3	1	2
77	Bushtit															10	
78	No. Mockingbird											1	1	2			
79	Loggerhead Shrike																
80	Bewick's Wren																
81	House Wren																
82	Ruby-crowned Kinglet																
83	European Starling		42		3	32		13	5	7	15	1	9	18		2	16
84	Orange-crowned Warbler																
85	Yellow-rumped Warbler				1	2		1									
86	Common Yellowthroat																
87	Song Sparrow																
88	Lincoln's Sparrow																
89	White-crowned Sparrow																
90	Golden-crowned Sparrow																
91	Hooded Oriole																
92	House Finch		2			4			3			2	10	28		3	1
93	Lesser Goldfinch																
94	House Sparrow									3	20	23	6	7			
Total Birds Sighted		**39**	**133**	**178**	**109**	**597**		**402**	**137**	**98**	**81**	**65**	**89**	**122**	**70**	**119**	**135**
% of Tot Sightings		**0.2%**	**0.7%**	**0.9%**	**0.6%**	**3.2%**		**2.1%**	**0.7%**	**0.5%**	**0.4%**	**0.3%**	**0.5%**	**0.6%**	**0.4%**	**0.6%**	**0.7%**
Total Species Sighted		**12**	**17**	**20**	**28**	**32**		**33**	**22**	**22**	**17**	**16**	**17**	**21**	**12**	**21**	**21**
% of Tot Species		**12.8%**	**18.1%**	**21.3%**	**29.8%**	**34.0%**		**35.1%**	**23.4%**	**23.4%**	**18.1%**	**17.0%**	**18.1%**	**22.3%**	**12.8%**	**22.3%**	**22.3%**
Average Total Birds Sighted		**171**	**169**	**169**	**166**	**188**		**198**	**195**	**191**	**186**	**181**	**178**	**176**	**172**	**170**	**169**
Average % of Tot Sightings		**23%**	**79%**	**105%**	**66%**	**318%**		**203%**	**70%**	**51%**	**43%**	**36%**	**50%**	**69%**	**41%**	**70%**	**80%**
Average Total Species Sighted		**17.9**	**17.8**	**17.9**	**18.5**	**19.2**		**19.8**	**19.9**	**20.0**	**19.9**	**19.7**	**19.6**	**19.7**	**19.4**	**19.4**	**19.5**
Average % of Tot Species		**67%**	**95%**	**111%**	**152%**	**167%**		**167%**	**111%**	**110%**	**86%**	**81%**	**87%**	**107%**	**62%**	**108%**	**108%**

For period April 1996 through June 2005

	Species / Date	6-Dec-98	18-Jan-99	15-Feb-99	28-Mar-99	21-Apr-99	19-May-99	16-Jun-99	16-Jul-99	28-Aug-99	26-Sep-99	25-Oct-99	21-Nov-99	23-Dec-99	20-Jan-00	18-Feb-00	17-Mar-00
	Person-minutes per visit	70	100	40	110	60	60	60	44	70	100	96	90	76	30	60	100
	Water level (in meters)																
1	Western Grebe	1															
2	Red-necked Grebe																
3	Horned Grebe																
4	Eared Grebe			1													1
5	Pied-billed Grebe												1		1	1	
6	Double-crested Cormorant	2									1	1	3		1	1	1
7	Pelagic Cormorant																
8	Brown Pelican	1									1		1		1	4	3
9	Great Blue Heron	1	1	2	1				1	4	1	2	1	1	1	2	1
10	Great Egret	1	1	1	1	1					3	1	5	6		1	2
11	Snowy Egret	12	1	3	15	5	1	1		3	7	1	13	6		12	6
12	Little Blue Heron																
13	Green Heron				2	5		1	3	2	1	2				1	1
14	Black-crowned Night Heron										3			6			
15	Domestic (Greylag) Goose																
16	Brant																
17	Ruddy Duck																
18	American Wigeon																
19	Mallard	44	18	51	10	7	6	6	5	24	81	27	25	24	25	8	4
20	Blue-winged Teal																
21	Green-winged Teal																
22	Greater Scaup																
23	Lesser Scaup		3												2	2	1
24	Bufflehead		2												9	8	
25	Common Goldeneye																
26	Red-breasted Merganser	13	7	7											13	14	18
27	Surf Scoter																
28	Red-tailed Hawk																
29	American Kestral				1										1		
30	American Coot	1	1	1													
31	Black-bellied Plover	4	7	4	1	2				4	5	6	4	6	2		1
32	Killdeer	3	16	14	4		3	2	3	2	12	18	4	7		4	9
33	Semipalmated Plover							3									
34	Greater Yellowlegs																
35	Willet	3	7	5	6	3			1	10	10	4	5	5	1	8	6
36	Spotted Sandpiper																
37	Whimbrel	1	1	1	3	3				4	5	4	5	5	3	5	3
38	Marbled Godwit	5	4	2	22	11				1			11	3		33	50
39	Dunlin															23	
40	Sanderling																
41	Western Sandpiper		2		57	74										12	1000
42	Least Sandpiper					13											19
43	Short-billed Dowitcher					1											
44	Long-billed Dowitcher	48	99	28	3							4		39	19	54	40
45	Wilson's Snipe																
46	Red-necked Phalarope																
47	Ring-billed Gull	3	6	12	2	2				1	1	3	21	24	15	9	4
48	California Gull	48	92	32	4	1				4	2		31		1		
49	Herring Gull													1			
50	Thayer's Gull																
51	Western Gull				1							1	2	1			1
52	Glaucous-winged Gull																
53	Heerman's Gull																
54	Caspian Tern																
55	Forster's Tern																
56	Least Tern						8	2									
57	Black Skimmer																
58	Rock Dove				4	6	5	3	8		4	4	2	2	1	10	4
59	Mourning Dove					2	4		2							6	8
60	Spotted Dove		2	3	1		1	2	1			1	1	1			2
61	Yellow-chevroned Parakeet																
62	Black-chinned Hummingbird																
63	Anna's Hummingbird (or Sp?)									1		2			1		1
64	Rufous Hummingbird																
65	Allen's Hummingbird							3									
66	Belted Kingfisher		1	1	3						2	2		1			1
67	Cassin's Kingbird																
68	Western Kingbird																
69	Black Phoebe		2	3			2	1	2	1	1	2	2	1	2		1
70	Say's Phoebe	2		2							1						
71	Pacific-slope Flycatcher																
72	Northern Rough-winged Swallow																
73	Cliff Swallow							1									
74	Barn Swallow					3	6	2									
75	Western Scrub-Jay																
76	American Crow			2	2	4	1	1	1	3	2	4				4	4
77	Bushtit																
78	No. Mockingbird				1		2		1		2	2					2
79	Loggerhead Shrike																
80	Bewick's Wren																
81	House Wren																
82	Ruby-crowned Kinglet																
83	European Starling	1	33	29	23	7	10	5	13	27	32	9	6	10	1	3	14
84	Orange-crowned Warbler																
85	Yellow-rumped Warbler	1		2								1					
86	Common Yellowthroat										2						
87	Song Sparrow										1	1					
88	Lincoln's Sparrow																
89	White-crowned Sparrow											4	2	9			2
90	Golden-crowned Sparrow				1												
91	Hooded Oriole																
92	House Finch	4	4	12	2	3	6	5	2	25	1	6	6	12			11
93	Lesser Goldfinch																
94	House Sparrow				17	5	15	6	9	12	3			2			45
Total Birds Sighted		**199**	**310**	**218**	**187**	**158**	**70**	**44**	**52**	**128**	**184**	**112**	**151**	**172**	**100**	**225**	**1,266**
% of Tot Sightings		**1.1%**	**1.6%**	**1.2%**	**1.0%**	**0.8%**	**0.4%**	**0.2%**	**0.3%**	**0.7%**	**1.0%**	**0.6%**	**0.8%**	**0.9%**	**0.5%**	**1.2%**	**6.7%**
Total Species Sighted		**21**	**22**	**23**	**25**	**20**	**14**	**16**	**14**	**17**	**25**	**25**	**21**	**22**	**19**	**23**	**32**
% of Tot Species		**22.3%**	**23.4%**	**24.5%**	**26.6%**	**21.3%**	**14.9%**	**17.0%**	**14.9%**	**18.1%**	**26.6%**	**26.6%**	**22.3%**	**23.4%**	**20.2%**	**24.5%**	**34.0%**
Average Total Birds Sighted		**170**	**174**	**176**	**176**	**175**	**173**	**169**	**166**	**165**	**165**	**164**	**164**	**164**	**163**	**164**	**188**
Average % of Tot Sightings		**117%**	**178%**	**124%**	**106%**	**90%**	**41%**	**26%**	**31%**	**78%**	**111%**	**68%**	**92%**	**105%**	**62%**	**137%**	**674%**
Average Total Species Sighted		**19.5**	**19.6**	**19.7**	**19.9**	**19.9**	**19.7**	**19.6**	**19.5**	**19.4**	**19.6**	**19.7**	**19.7**	**19.8**	**19.8**	**19.8**	**20.1**
Average % of Tot Species		**107%**	**112%**	**117%**	**126%**	**101%**	**71%**	**82%**	**72%**	**88%**	**128%**	**127%**	**107%**	**111%**	**96%**	**116%**	**159%**

For period April 1996 through June 2005

	Species / Date	15-Apr-00	6-May-00	4-Jun-00	31-Jul-00	30-Aug-00	29-Sep-00	26-Oct-00	13-Nov-00	13-Dec-00	9-Jan-01	8-Feb-01	7-Mar-01	6-Apr-01	26-May-01	25-Jun-01	23-Jul-01
	Person-minutes per visit	144	54	50	62	56	60	80	70	70	35	50	55	120	45	28	25
	Water level (in meters)							-1.00	-0.75	-0.45	-0.42	-0.50				-0.15	0.10
1	Western Grebe							1					1				
2	Red-necked Grebe																
3	Horned Grebe																
4	Eared Grebe							2									
5	Pied-billed Grebe							1		1		2					
6	Double-crested Cormorant	2	1		1	1		2	1	3	1	2	1				
7	Pelagic Cormorant																
8	Brown Pelican	2						3	2	1	7		3				
9	Great Blue Heron		1				1	1	1	2	1	2	1		2		1
10	Great Egret					3	4	5	2	4	1	1	2	2			2
11	Snowy Egret	9	1		1	1	8	5	3	1	2	1	7	4			
12	Little Blue Heron	1															
13	Green Heron	4	2	1	2	1	1	1				1					3
14	Black-crowned Night Heron						1	2	2	4	1	2					
15	Domestic (Greylag) Goose																
16	Brant																
17	Ruddy Duck																
18	American Wigeon											2	4				
19	Mallard	3	5	3	17	39	21	13	28	60	16	14	8	11		3	3
20	Blue-winged Teal																
21	Green-winged Teal																
22	Greater Scaup																
23	Lesser Scaup	1										8	18				
24	Bufflehead										3	5	4	2			
25	Common Goldeneye																
26	Red-breasted Merganser	3							6	11	11	13	7	2			
27	Surf Scoter																
28	Red-tailed Hawk																
29	American Kestral				1												
30	American Coot																
31	Black-bellied Plover	1				2	6	2	4								
32	Killdeer	4	1	1	5	1	17	3	2	4	5	6	3	1		1	1
33	Semipalmated Plover				1												
34	Greater Yellowlegs																
35	Willet	14	2	1	1	1	6	3	1			1	4	5		1	10
36	Spotted Sandpiper																
37	Whimbrel	6			3		9	3	2	2	1	3	4	4			
38	Marbled Godwit	16					4			1	1	7	5	22			
39	Dunlin								1								
40	Sanderling																
41	Western Sandpiper	166					4							75			
42	Least Sandpiper	6							1			21					
43	Short-billed Dowitcher	16															
44	Long-billed Dowitcher							15									1
45	Wilson's Snipe																
46	Red-necked Phalarope																
47	Ring-billed Gull	1						4	7	19	12	14	7	5			
48	California Gull	3						2		10	16	13					
49	Herring Gull	1							1								
50	Thayer's Gull																
51	Western Gull		1	2	1		3	1			1	1	1	2	2		
52	Glaucous-winged Gull																
53	Heerman's Gull																
54	Caspian Tern															2	
55	Forster's Tern	1												1			
56	Least Tern		18	4	5										11	18	4
57	Black Skimmer																
58	Rock Dove	5	1	8	8			1		1		2			4	2	1
59	Mourning Dove	2	2	2	6								4		8	6	7
60	Spotted Dove	2	2		1	1		2					1	2		2	
61	Yellow-chevroned Parakeet																
62	Black-chinned Hummingbird																
63	Anna's Hummingbird (or Sp?)			1				3	1	2					1		
64	Rufous Hummingbird																
65	Allen's Hummingbird				2	1		1					1	1			
66	Belted Kingfisher					2	1	1	1		1	1	1				
67	Cassin's Kingbird																
68	Western Kingbird																
69	Black Phoebe	1					1	1	1	2	2	2	1	3	1	2	
70	Say's Phoebe							1		1		1					
71	Pacific-slope Flycatcher																
72	Northern Rough-winged Swallow															2	
73	Cliff Swallow	2	1														
74	Barn Swallow			2											1		
75	Western Scrub-Jay																
76	American Crow	9	5	2	2	3	6	9	3		6	3	3	4	3	2	3
77	Bushtit									14							
78	No. Mockingbird	4	1	1	2			1		1	1		3		4	2	3
79	Loggerhead Shrike																
80	Bewick's Wren																
81	House Wren																
82	Ruby-crowned Kinglet																
83	European Starling	13	19	13	8	30		12	5	4	31	16	7	10	12	11	14
84	Orange-crowned Warbler																
85	Yellow-rumped Warbler																
86	Common Yellowthroat								1				1				
87	Song Sparrow																
88	Lincoln's Sparrow																
89	White-crowned Sparrow								6	5	4	10	6				
90	Golden-crowned Sparrow																
91	Hooded Oriole																
92	House Finch	10	4		2	13			1	22	6		3	8	4	8	1
93	Lesser Goldfinch																
94	House Sparrow	18	7	4	38			3		2	3	31	42	21	7	3	9
Total Birds Sighted		**326**	**74**	**45**	**107**	**99**	**93**	**104**	**83**	**177**	**133**	**185**	**153**	**185**	**60**	**65**	**63**
% of Tot Sightings		**1.7%**	**0.4%**	**0.2%**	**0.6%**	**0.5%**	**0.5%**	**0.6%**	**0.4%**	**0.9%**	**0.7%**	**1.0%**	**0.8%**	**1.0%**	**0.3%**	**0.3%**	**0.3%**
Total Species Sighted		**30**	**18**	**14**	**20**	**14**	**16**	**30**	**24**	**24**	**23**	**28**	**29**	**20**	**13**	**15**	**15**
% of Tot Species		**31.9%**	**19.1%**	**14.9%**	**21.3%**	**14.9%**	**17.0%**	**31.9%**	**25.5%**	**25.5%**	**24.5%**	**29.8%**	**30.9%**	**21.3%**	**13.8%**	**16.0%**	**16.0%**
Average Total Birds Sighted		**191**	**188**	**186**	**184**	**182**	**181**	**179**	**177**	**177**	**177**	**177**	**176**	**176**	**174**	**173**	**171**
Average % of Tot Sightings		**171%**	**39%**	**24%**	**58%**	**54%**	**52%**	**58%**	**47%**	**100%**	**75%**	**105%**	**87%**	**105%**	**34%**	**38%**	**37%**
Average Total Species Sighted		**20.3**	**20.3**	**20.1**	**20.1**	**20.0**	**19.9**	**20.1**	**20.2**	**20.3**	**20.3**	**20.4**	**20.6**	**20.6**	**20.5**	**20.4**	**20.3**
Average % of Tot Species		**148%**	**89%**	**70%**	**99%**	**70%**	**80%**	**149%**	**119%**	**118%**	**113%**	**137%**	**141%**	**97%**	**64%**	**74%**	**74%**

For period April 1996 through June 2005

	Species / Date	23-Aug-01	18-Sep-01	19-Oct-01	14-Nov-01	13-Dec-01	12-Jan-02	28-Feb-02	24-Mar-02	7-Apr-02	29-May-02	13-Jun-02	13-Jul-02	11-Aug-02	9-Sep-02	9-Oct-02	4-Nov-02
	Person-minutes per visit	34	30	30	65	35	118	59	122	110	60	66	64	35	64	70	70
	Water level (in meters)	-0.30	-0.50		-1.00		-0.30			-0.70	0.00	-0.32	-0.10		-0.30	-0.30	-1.00
1	Western Grebe																
2	Red-necked Grebe																
3	Horned Grebe																
4	Eared Grebe			1		1											
5	Pied-billed Grebe					1											
6	Double-crested Cormorant			3	3	1		1				1	2			1	
7	Pelagic Cormorant																
8	Brown Pelican		7		1						1						2
9	Great Blue Heron		1	3	2		1	1	1		1	1	1	2	1	2	1
10	Great Egret	2	2	2	2		1	6	2	2	2	2	5	3	2	2	2
11	Snowy Egret	4	2	1	13		1	26	7	41	4	2	7	6	4	2	2
12	Little Blue Heron																
13	Green Heron	1	2							1		1	1				
14	Black-crowned Night Heron			1				1				1	1				
15	Domestic (Greylag) Goose																
16	Brant																
17	Ruddy Duck																
18	American Wigeon																
19	Mallard	31	5	83	11	35	55	26	8	4	9	3		10	41	39	80
20	Blue-winged Teal																
21	Green-winged Teal																
22	Greater Scaup							15	5								
23	Lesser Scaup								13								
24	Bufflehead					4	1	6	3								
25	Common Goldeneye																
26	Red-breasted Merganser					7	16	9	3	1							
27	Surf Scoter																
28	Red-tailed Hawk																
29	American Kestral							1									
30	American Coot																
31	Black-bellied Plover			2		3	5	2	2	1				1	2	3	5
32	Killdeer		4	2	9	5	15	1	2	1	2	2	1	4	6	4	2
33	Semipalmated Plover													2			
34	Greater Yellowlegs			1					1								
35	Willet	5	4	6	7	2	6	6	7	14		1	6	10	5	7	6
36	Spotted Sandpiper														1		
37	Whimbrel	5	4	3	7	2	2	2	2	3			1	2		2	1
38	Marbled Godwit		3	2	8	1	35	26	53	43				2	1		
39	Dunlin																
40	Sanderling						1										
41	Western Sandpiper					1		1	102	58			2				
42	Least Sandpiper					32	128	8	103	196							
43	Short-billed Dowitcher									2							
44	Long-billed Dowitcher					9	13	50	9								1
45	Wilson's Snipe																
46	Red-necked Phalarope																
47	Ring-billed Gull		3	1	2	16	11	14	2					1	1	1	5
48	California Gull					2			3								
49	Herring Gull																
50	Thayer's Gull															1	
51	Western Gull			8	11	3		2	2			2					2
52	Glaucous-winged Gull						1										
53	Heerman's Gull																
54	Caspian Tern																
55	Forster's Tern								1	1							
56	Least Tern											9					
57	Black Skimmer																
58	Rock Dove	6		1		1		2		2	2	6	4	8		3	6
59	Mourning Dove	1	8		11	1	1	1	2	4	8	6	2	10	26	1	
60	Spotted Dove	1						2		1	2	2					
61	Yellow-chevroned Parakeet																
62	Black-chinned Hummingbird																
63	Anna's Hummingbird (or Sp?)				1	1	1										1
64	Rufous Hummingbird																
65	Allen's Hummingbird			1	1						2		1				3
66	Belted Kingfisher	1	2	1	2		1							1			2
67	Cassin's Kingbird																
68	Western Kingbird																
69	Black Phoebe			1	2	2	3			1	1		1		3	1	
70	Say's Phoebe						1										1
71	Pacific-slope Flycatcher									1							
72	Northern Rough-winged Swallow									1	1	3					
73	Cliff Swallow																
74	Barn Swallow									2	3	1	1	1			
75	Western Scrub-Jay																
76	American Crow	2	2		2			5	5	4	7	5		3	4	1	1
77	Bushtit																
78	No. Mockingbird		1	2	1	1		1			2	3	5		1	1	
79	Loggerhead Shrike																
80	Bewick's Wren																
81	House Wren			1													
82	Ruby-crowned Kinglet																
83	European Starling	6	1	11	5	16	9	18	8	20	13	31	50	42	71	20	17
84	Orange-crowned Warbler																
85	Yellow-rumped Warbler			1		4		2									
86	Common Yellowthroat															1	
87	Song Sparrow																
88	Lincoln's Sparrow						1										
89	White-crowned Sparrow				6			2		1						2	
90	Golden-crowned Sparrow																
91	Hooded Oriole																
92	House Finch			7		6	2	9	4	5	4	2	8	4		5	5
93	Lesser Goldfinch																1
94	House Sparrow	8	16		10		9	16	14	22	10	19	14	16	23	6	15
Total Birds Sighted		**73**	**67**	**145**	**117**	**157**	**320**	**262**	**364**	**432**	**74**	**103**	**113**	**128**	**192**	**105**	**161**
% of Tot Sightings		**0.4%**	**0.4%**	**0.8%**	**0.6%**	**0.8%**	**1.7%**	**1.4%**	**1.9%**	**2.3%**	**0.4%**	**0.5%**	**0.6%**	**0.7%**	**1.0%**	**0.6%**	**0.9%**
Total Species Sighted		**13**	**17**	**24**	**22**	**25**	**25**	**30**	**26**	**26**	**19**	**21**	**19**	**19**	**16**	**21**	**22**
% of Tot Species		**13.8%**	**18.1%**	**25.5%**	**23.4%**	**26.6%**	**26.6%**	**31.9%**	**27.7%**	**27.7%**	**20.2%**	**22.3%**	**20.2%**	**20.2%**	**17.0%**	**22.3%**	**23.4%**
Average Total Birds Sighted		**169**	**168**	**167**	**167**	**167**	**169**	**170**	**173**	**177**	**175**	**174**	**173**	**173**	**173**	**172**	**172**
Average % of Tot Sightings		**43%**	**40%**	**87%**	**70%**	**94%**	**190%**	**154%**	**211%**	**245%**	**42%**	**59%**	**65%**	**74%**	**111%**	**61%**	**94%**
Average Total Species Sighted		**20.2**	**20.1**	**20.2**	**20.2**	**20.3**	**20.3**	**20.5**	**20.6**	**20.6**	**20.6**	**20.6**	**20.6**	**20.6**	**20.5**	**20.5**	**20.5**
Average % of Tot Species		**64%**	**85%**	**119%**	**109%**	**123%**	**123%**	**146%**	**126%**	**126%**	**92%**	**102%**	**92%**	**92%**	**78%**	**102%**	**107%**

For period April 1996 through June 2005

	Species / Date	4-Dec-02	29-Jan-03	27-Feb-03	28-Mar-03	21-Apr-03	21-May-03	16-Jun-03	15-Jul-03	30-Aug-03	9-Sep-03	25-Oct-03	28-Nov-03	26-Dec-03	21-Jan-04	14-Feb-04
	Person-minutes per visit	**90**	**130**	**114**	**110**	**66**	**30**	**80**	**43**	**80**	**35**	**78**	**25**	**62**	**96**	**126**
	Water level (in meters)	**-1.00**	**0.10**	**-1.80**	**-0.80**	**-0.45**		**-0.40**	**0.00**	**-0.35**		**0.00**		**-0.70**	**-0.50**	**-0.35**
1	Western Grebe													1	1	
2	Red-necked Grebe															
3	Horned Grebe															
4	Eared Grebe															
5	Pied-billed Grebe	1	1													1
6	Double-crested Cormorant	8	1								1			1	1	1
7	Pelagic Cormorant															
8	Brown Pelican	11	1	1				1						3		
9	Great Blue Heron	1		5		1		2	1	1	4	1		1		
10	Great Egret	7	1	6	1	1		1		3	10	4		2	3	1
11	Snowy Egret	7	1	25	12	2	5	5	2	6	19	1	1	5	5	7
12	Little Blue Heron															
13	Green Heron				2	1	1	1	1	1	2					
14	Black-crowned Night Heron					1		5	1		2					
15	Domestic (Greylag) Goose															
16	Brant															
17	Ruddy Duck											2				
18	American Wigeon		11	15										7		12
19	Mallard	16	7		7	9	1	3	1	14	4	54	10	32	17	13
20	Blue-winged Teal											2				
21	Green-winged Teal											2				
22	Greater Scaup															
23	Lesser Scaup		33	24											24	12
24	Bufflehead		11	6	3								3	3	11	5
25	Common Goldeneye														1	1
26	Red-breasted Merganser	13	12	11	5									12	10	11
27	Surf Scoter															
28	Red-tailed Hawk														1	
29	American Kestral															1
30	American Coot													1		
31	Black-bellied Plover	3			1	1				3		2			1	2
32	Killdeer	18	3	1	6			3		5	3	13		2	8	29
33	Semipalmated Plover				2											
34	Greater Yellowlegs															
35	Willet	5	4	6	8	2	1		1	5	4	1		5		2
36	Spotted Sandpiper															
37	Whimbrel	1		2	3	3				4	3		2	1		4
38	Marbled Godwit	3	3	33	62								4	34		36
39	Dunlin	2			1											
40	Sanderling															
41	Western Sandpiper			17	44											171
42	Least Sandpiper			7	102					13	18					48
43	Short-billed Dowitcher															
44	Long-billed Dowitcher	40		39	39								4	17	77	104
45	Wilson's Snipe										1					
46	Red-necked Phalarope															
47	Ring-billed Gull	25	3	11	2	1						3		2	7	4
48	California Gull											1		1		
49	Herring Gull														1	
50	Thayer's Gull															
51	Western Gull	2		3	10			3	1	3	1				1	1
52	Glaucous-winged Gull															
53	Heerman's Gull															
54	Caspian Tern										1					
55	Forster's Tern			5	2											
56	Least Tern					12	6	6	4							
57	Black Skimmer															
58	Rock Dove		2		3	2	2		2	1	1					
59	Mourning Dove	1	8	5	5	4	1	2	3	4	1	7			1	8
60	Spotted Dove					1		1		1					1	
61	Yellow-chevroned Parakeet							4								
62	Black-chinned Hummingbird															
63	Anna's Hummingbird (or Sp?)	1								3				1		1
64	Rufous Hummingbird															
65	Allen's Hummingbird	1						1				1				1
66	Belted Kingfisher		1	1						1	1	2	1	2	1	2
67	Cassin's Kingbird															
68	Western Kingbird															
69	Black Phoebe	3	1	1	3	3		7	1	3	2	3		2	2	1
70	Say's Phoebe														2	2
71	Pacific-slope Flycatcher															
72	Northern Rough-winged Swallow							1								
73	Cliff Swallow								2							
74	Barn Swallow															
75	Western Scrub-Jay															
76	American Crow	7		6	4	2	2	3	1	1	2	2			13	5
77	Bushtit											6				
78	No. Mockingbird	1			2	3	1	1	2	1		2			2	3
79	Loggerhead Shrike															
80	Bewick's Wren															
81	House Wren	1											1			
82	Ruby-crowned Kinglet															
83	European Starling	13		7	12	22	11	20	11	62	31	72			15	1
84	Orange-crowned Warbler											1				1
85	Yellow-rumped Warbler													2	2	
86	Common Yellowthroat	1		2						1	2	3			2	
87	Song Sparrow															
88	Lincoln's Sparrow	2														
89	White-crowned Sparrow	3		3	2									1	5	1
90	Golden-crowned Sparrow															
91	Hooded Oriole								1							
92	House Finch	12	6	26	9	10	4	5	1	12	8			2	29	6
93	Lesser Goldfinch															
94	House Sparrow	13	39	24	14	26	16	21	18	28	12	33			29	22
Total Birds Sighted		**222**	**149**	**292**	**366**	**107**	**51**	**96**	**54**	**176**	**133**	**218**	**26**	**140**	**273**	**520**
% of Tot Sightings		**1.2%**	**0.8%**	**1.5%**	**1.9%**	**0.6%**	**0.3%**	**0.5%**	**0.3%**	**0.9%**	**0.7%**	**1.2%**	**0.1%**	**0.7%**	**1.4%**	**2.8%**
Total Species Sighted		**30**	**20**	**27**	**28**	**20**	**12**	**21**	**18**	**23**	**23**	**23**	**8**	**24**	**29**	**34**
% of Tot Species		**31.9%**	**21.3%**	**28.7%**	**29.8%**	**21.3%**	**12.8%**	**22.3%**	**19.1%**	**24.5%**	**24.5%**	**24.5%**	**8.5%**	**25.5%**	**30.9%**	**36.2%**
Average Total Birds Sighted		**173**	**172**	**174**	**176**	**175**	**174**	**173**	**171**	**172**	**171**	**172**	**170**	**170**	**171**	**175**
Average % of Tot Sightings		**129%**	**86%**	**168%**	**208%**	**61%**	**29%**	**56%**	**31%**	**103%**	**78%**	**127%**	**15%**	**83%**	**160%**	**298%**
Average Total Species Sighted		**20.7**	**20.7**	**20.7**	**20.8**	**20.8**	**20.7**	**20.7**	**20.7**	**20.7**	**20.7**	**20.8**	**20.6**	**20.6**	**20.7**	**20.9**
Average % of Tot Species		**145%**	**97%**	**130%**	**135%**	**96%**	**58%**	**101%**	**87%**	**111%**	**111%**	**111%**	**39%**	**116%**	**140%**	**163%**

For period April 1996 through June 2005

	Species / Date	19-Mar-04	8-Apr-04	7-May-04	26-Jun-04	30-Jul-04	6-Aug-04	29-Sep-04	15-Oct-04	12-Nov-04	12-Dec-04	22-Jan-05	9-Feb-05	7-Mar-05	6-Apr-05	27-May-05
	Person-minutes per visit	84	50	50	88	50	52	92	60	74	80	100	132	72	122	82
	Water level (in meters)	-0.42	-0.20		-0.40	-0.10	0.08	0.10	-0.28	0.20	0.22	0.22	0.04	0.10	-0.70	-0.25
1	Western Grebe													1		
2	Red-necked Grebe															
3	Horned Grebe															
4	Eared Grebe							1	1	1			1		1	
5	Pied-billed Grebe								1	1	1	2	2	2		
6	Double-crested Cormorant		1									5	7	13	3	1
7	Pelagic Cormorant									1						
8	Brown Pelican															
9	Great Blue Heron	1	1	2				2	1		1		2	2		2
10	Great Egret	2	12	2	8		1	2							2	1
11	Snowy Egret	6	3	1	9	5		2	6	1	2	4	10	10	12	30
12	Little Blue Heron															
13	Green Heron				1	1									2	
14	Black-crowned Night Heron				1										1	3
15	Domestic (Greylag) Goose															
16	Brant												1	1	1	
17	Ruddy Duck															
18	American Wigeon	6								8	6	32	39	27		
19	Mallard	4	1	3			1	16	22	31	14	37	47	7	9	20
20	Blue-winged Teal															
21	Green-winged Teal															
22	Greater Scaup															
23	Lesser Scaup	8								1	5	19	36	24	1	
24	Bufflehead	3								4	4	13	11	1		
25	Common Goldeneye															
26	Red-breasted Merganser	12			1	1	1	1	1	1	4	18	11	8	6	1
27	Surf Scoter															
28	Red-tailed Hawk															
29	American Kestral										1					
30	American Coot											1	1	1		
31	Black-bellied Plover							1	1							
32	Killdeer	4		1	1			4	15				5	6		
33	Semipalmated Plover					1							2			
34	Greater Yellowlegs															
35	Willet	1	1	1	3		3	6	6	3				1	7	
36	Spotted Sandpiper								1							
37	Whimbrel		1				1		2						2	
38	Marbled Godwit		3	2				1	1			1	2	1	26	
39	Dunlin												2			
40	Sanderling															
41	Western Sandpiper											5	111	1	7	
42	Least Sandpiper												22			
43	Short-billed Dowitcher						1									
44	Long-billed Dowitcher		20	3				6		77	91	24	115	21	70	
45	Wilson's Snipe															
46	Red-necked Phalarope															
47	Ring-billed Gull	3	2				1		1	2	6	6	4	5	1	
48	California Gull									1						
49	Herring Gull															
50	Thayer's Gull															
51	Western Gull	1			5			2	4	1		1	1	1	7	1
52	Glaucous-winged Gull														1	
53	Heerman's Gull															
54	Caspian Tern															
55	Forster's Tern			1												
56	Least Tern			9	9											27
57	Black Skimmer															
58	Rock Dove			1	2		2			1	1		2	2	1	1
59	Mourning Dove	1		4	3	7	2		2	1		2	1	13	5	2
60	Spotted Dove			1	1											
61	Yellow-chevroned Parakeet															
62	Black-chinned Hummingbird														1	
63	Anna's Hummingbird (or Sp?)							2			1					
64	Rufous Hummingbird												1			
65	Allen's Hummingbird	1	1	4	2	2		2	1		2	1		2	5	
66	Belted Kingfisher	1	1					1	1	1	2	2	1	1	1	
67	Cassin's Kingbird	1														
68	Western Kingbird															
69	Black Phoebe	2		5	2		1	4	1		1	2	2	2	2	3
70	Say's Phoebe								1	1		1	1			
71	Pacific-slope Flycatcher															
72	Northern Rough-winged Swallow			2												
73	Cliff Swallow															
74	Barn Swallow			2	3											1
75	Western Scrub-Jay				1				1							
76	American Crow	3	1	2	2	2	2		3		6	2	3	4	3	4
77	Bushtit	2										8	4	5		
78	No. Mockingbird	3	2	2	3					1	1	1	2	3	4	1
79	Loggerhead Shrike															
80	Bewick's Wren															
81	House Wren							1				1				
82	Ruby-crowned Kinglet												1			
83	European Starling	19	6	8	1		3	24		1	2	41	46	29	29	18
84	Orange-crowned Warbler												1			
85	Yellow-rumped Warbler										1	3	1	1		
86	Common Yellowthroat		2					2			1			1		
87	Song Sparrow															
88	Lincoln's Sparrow															
89	White-crowned Sparrow	2								4	12	4	1			
90	Golden-crowned Sparrow															
91	Hooded Oriole		2													
92	House Finch	15	2	7	20	3		11		8	4	9	9		34	2
93	Lesser Goldfinch													24		
94	House Sparrow	71	12	24	25	40	3	58	1	12	4	7	7	45	45	30
Total Birds Sighted		**172**	**74**	**87**	**103**	**62**	**22**	**149**	**74**	**163**	**173**	**252**	**515**	**265**	**289**	**148**
% of Tot Sightings		**0.9%**	**0.4%**	**0.5%**	**0.5%**	**0.3%**	**0.1%**	**0.8%**	**0.4%**	**0.9%**	**0.9%**	**1.3%**	**2.7%**	**1.4%**	**1.5%**	**0.8%**
Total Species Sighted		**24**	**19**	**22**	**21**	**9**	**13**	**21**	**22**	**23**	**24**	**28**	**37**	**32**	**29**	**18**
% of Tot Species		**25.5%**	**20.2%**	**23.4%**	**22.3%**	**9.6%**	**13.8%**	**22.3%**	**23.4%**	**24.5%**	**25.5%**	**29.8%**	**39.4%**	**34.0%**	**30.9%**	**19.1%**
Average Total Birds Sighted		**175**	**173**	**173**	**172**	**171**	**169**	**169**	**168**	**168**	**168**	**169**	**172**	**173**	**174**	**174**
Average % of Tot Sightings		**99%**	**43%**	**50%**	**60%**	**36%**	**13%**	**88%**	**44%**	**97%**	**103%**	**149%**	**299%**	**153%**	**166%**	**85%**
Average Total Species Sighted		**20.9**	**20.9**	**20.9**	**20.9**	**20.8**	**20.7**	**20.7**	**20.7**	**20.7**	**20.8**	**20.8**	**21.0**	**21.1**	**21.2**	**21.1**
Average % of Tot Species		**115%**	**91%**	**105%**	**100%**	**43%**	**63%**	**101%**	**106%**	**111%**	**116%**	**134%**	**176%**	**152%**	**137%**	**85%**

	For period April 1996 through June 2005	Total Individuals Sighted	Percent of Total	Total Occasions Sighted	Percent of Total	Total # Individuals	Individ. Percents	Total Occur Sightings	Sightings Percents	Summary
	Species / Date									
	Person-minutes per visit	**7,304**		**109**	**67**					
	Water level (in meters)	**45**		**-0.346**						
1	Western Grebe	12	0.06%	12	0.52%	73	0.39%	53	2.31%	**Grebes**
2	Red-necked Grebe	2	0.01%	1	0.04%	177	0.94%	75	3.26%	**Cormorant & Pelican**
3	Horned Grebe	3	0.02%	2	0.09%	1,061	5.62%	319	13.88%	**Herons**
4	Eared Grebe	21	0.11%	15	0.65%	2,943	15.58%	226	9.83%	**Ducks**
5	Pied-billed Grebe	35	0.19%	23	1.00%	14	0.07%	14	0.61%	**Raptors**
6	Double-crested Cormorant	98	0.52%	45	1.96%	8	0.04%	8	0.35%	**Coots**
7	Pelagic Cormorant	1	0.01%	1	0.04%	8,108	42.92%	508	22.11%	**Shorebirds**
8	Brown Pelican	78	0.41%	29	1.26%	1,255	6.64%	198	8.62%	**Gulls & Terns**
9	Great Blue Heron	106	0.56%	71	3.09%	614	3.25%	179	7.79%	**Doves**
10	Great Egret	183	0.97%	70	3.05%	4	0.02%	1	0.04%	**Parrots**
11	Snowy Egret	587	3.11%	93	4.05%	80	0.42%	53	2.31%	**Hummingbirds**
12	Little Blue Heron	1	0.01%	1	0.04%	65	0.34%	51	2.22%	**Kingfishers**
13	Green Heron	121	0.64%	58	2.52%	4,487	23.75%	613	26.68%	**Passerines**
14	Black-crowned Night Heron	63	0.33%	26	1.13%					
15	Domestic (Greylag) Goose	2	0.01%	1	0.04%	18,889	100.00%	2,298	100.00%	**Totals**
16	Brant	3	0.02%	3	0.13%					
17	Ruddy Duck	4	0.02%	2	0.09%					
18	American Wigeon	169	0.89%	12	0.52%					
19	Mallard	1,898	10.05%	101	4.40%					
20	Blue-winged Teal	2	0.01%	1	0.04%					
21	Green-winged Teal	2	0.01%	1	0.04%					
22	Greater Scaup	20	0.11%	2	0.09%					
23	Lesser Scaup	258	1.37%	21	0.91%					
24	Bufflehead	142	0.75%	26	1.13%					
25	Common Goldeneye	2	0.01%	2	0.09%					
26	Red-breasted Merganser	409	2.17%	49	2.13%					
27	Surf Scoter	32	0.17%	5	0.22%					
28	Red-tailed Hawk	1	0.01%	1	0.04%					
29	American Kestral	13	0.07%	13	0.57%					
30	American Coot	8	0.04%	8	0.35%					
31	Black-bellied Plover	169	0.89%	54	2.35%					
32	Killdeer	457	2.42%	86	3.74%					
33	Semipalmated Plover	18	0.10%	9	0.39%					
34	Greater Yellowlegs	5	0.03%	5	0.22%					
35	Willet	460	2.44%	91	3.96%					
36	Spotted Sandpiper	2	0.01%	2	0.09%					
37	Whimbrel	213	1.13%	73	3.18%					
38	Marbled Godwit	994	5.26%	67	2.92%					
39	Dunlin	47	0.25%	12	0.52%					
40	Sanderling	1	0.01%	1	0.04%					
41	Western Sandpiper	3,065	16.23%	31	1.35%					
42	Least Sandpiper	970	5.14%	26	1.13%					
43	Short-billed Dowitcher	33	0.17%	7	0.30%					
44	Long-billed Dowitcher	1,672	8.85%	42	1.83%					
45	Wilson's Snipe	1	0.01%	1	0.04%					
46	Red-necked Phalarope	1	0.01%	1	0.04%					
47	Ring-billed Gull	506	2.68%	67	2.92%					
48	California Gull	367	1.94%	31	1.35%					
49	Herring Gull	5	0.03%	5	0.22%					
50	Thayer's Gull	1	0.01%	1	0.04%					
51	Western Gull	131	0.69%	53	2.31%					
52	Glaucous-winged Gull	2	0.01%	2	0.09%					
53	Heerman's Gull	1	0.01%	1	0.04%					
54	Caspian Tern	3	0.02%	2	0.09%					
55	Forster's Tern	20	0.11%	11	0.48%					
56	Least Tern	217	1.15%	24	1.04%					
57	Black Skimmer	2	0.01%	1	0.04%					
58	Rock Dove	277	1.47%	74	3.22%					
59	Mourning Dove	278	1.47%	64	2.79%					
60	Spotted Dove	59	0.31%	41	1.78%					
61	Yellow-chevroned Parakeet	4	0.02%	1	0.04%					
62	Black-chinned Hummingbird	1	0.01%	1	0.04%					
63	Anna's Hummingbird (or Sp?)	31	0.16%	23	1.00%					
64	Rufous Hummingbird	1	0.01%	1	0.04%					
65	Allen's Hummingbird	47	0.25%	28	1.22%					
66	Belted Kingfisher	65	0.34%	51	2.22%					
67	Cassin's Kingbird	1	0.01%	1	0.04%					
68	Western Kingbird	1	0.01%	1	0.04%					
69	Black Phoebe	147	0.78%	76	3.31%					
70	Say's Phoebe	19	0.10%	15	0.65%					
71	Pacific-slope Flycatcher	1	0.01%	1	0.04%					
72	Northern Rough-winged Swallow	12	0.06%	7	0.30%					
73	Cliff Swallow	30	0.16%	8	0.35%					
74	Barn Swallow	51	0.27%	21	0.91%					
75	Western Scrub-Jay	2	0.01%	2	0.09%					
76	American Crow	281	1.49%	86	3.74%					
77	Bushtit	49	0.26%	7	0.30%					
78	No. Mockingbird	113	0.60%	57	2.48%					
79	Loggerhead Shrike	1	0.01%	1	0.04%					
80	Bewick's Wren	2	0.01%	2	0.09%					
81	House Wren	5	0.03%	5	0.22%					
82	Ruby-crowned Kinglet	1	0.01%	1	0.04%					
83	European Starling	1,642	8.69%	98	4.26%					
84	Orange-crowned Warbler	3	0.02%	3	0.13%					
85	Yellow-rumped Warbler	25	0.13%	15	0.65%					
86	Common Yellowthroat	22	0.12%	14	0.61%					
87	Song Sparrow	2	0.01%	2	0.09%					
88	Lincoln's Sparrow	3	0.02%	2	0.09%					
89	White-crowned Sparrow	97	0.51%	24	1.04%					
90	Golden-crowned Sparrow	1	0.01%	1	0.04%					
91	Hooded Oriole	4	0.02%	3	0.13%					
92	House Finch	593	3.14%	78	3.39%					
93	Lesser Goldfinch	25	0.13%	2	0.09%					
94	House Sparrow	1,354	7.17%	80	3.48%					
Total Birds Sighted		**18,889**	**100.00%**	**2,298**	**100.00%**					
% of Tot Sightings		**100.0%**								
Total Species Sighted		**94**								
% of Tot Species		**100.0%**								
Average Total Birds Sighted										
Average % of Tot Sightings										
Average Total Species Sighted										
Average % of Tot Species										

	BALLONA LAGOON BIRD CENSUS FOR: June, 2005							
Date:	6/24/2005 Friday		Low Tide:	06:15 am -1.5 ft.				
Start Time:	7:35 AM		End Time:	8:13 AM				
Observer:	Chuck Almdale		Recorder:	Chuck Almdale				**Total**
							Individual	**of**
Species		**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	**Zone 5**	**Total**	**Species**
Pied-billed Grebe								
Double-crested Cormorant								
Brown Pelican								**0**
Great Blue Heron								
Great Egret								
Snowy Egret		1W					**1**	
Green Heron								
Black-crowned Night Heron								**1**
Mallard		2Me 3Ws	6Ws 22Bw				**33**	
Bufflehead								
Red-breasted Merganser								**1**
American Kestral								**0**
Black-bellied Plover								
Killdeer								
Willet		1Me	1Mw			1Me 1Mw	**4**	
Whimbrel								
Marbled Godwit								
Western Sandpiper								
Least Sandpiper								
Short-billed Dowitcher								
Long-billed Dowitcher								**1**
Ring-billed Gull								
California Gull								
Western Gull								
Least Tern								**0**
Rock Dove				6UBw		2Bw	**8**	
Mourning Dove				2UBw			**2**	
Spotted Dove								**2**
Anna's Hummingbird								
Belted Kingfisher								**0**
Black Phoebe					1Mw	1Me 2Mw	**4**	
Say's Phoebe								
Cliff Swallow								
Barn Swallow								
American Crow				2A	2Pw		**4**	
Bushtit								
No. Mockingbird		1Be		1Pw			**1**	
European Starling		1Bw	3Bw 1Pw	3UBw	2Bw	2Me 1Mw 1Bw	**14**	
Common Yellowthroat								
White-crowned Sparrow								
House Finch		2Bw	2A			1Be 2Bw	**7**	
House Sparrow		9Be 2Bw	5Bw 2UBw	4Be		4Bw	**26**	**6**
Dunlin			1Mw sleeping				**1**	
Rough-winged Swallow						2A feeding	**2**	
Hooded Oriole		1A					**1**	
								3
Other Notes:	Outlet level +0.05m @ 8:13am, flow rate 0 ft/sec					**Totals**	**108**	**14**
Many 10,000's small fish 2-5", thin, looking like tiny Jack Mackerel. 1 fish appears like Kelp Rockfish among the rocks. 3 coal-gray fish with 2 white spots								
like Opaleye. 3 very large sea slugs. 1 scallop moving by flapping shells.								

Habitat Codes		**Zones (3 Blocks Long)**	
W - Open Water	**s - swimming**	**1 - South end to Union Jack St.**	
M - Intertidal Mud Flat (may be wet or dry)		**2 - Union Jack to Reef St.**	
S - Saltmarsh (pickleweed, fleshy jaumea)		**3 - Reef to Outrigger St.**	
UB - Unvegetated Bank (above high tide zone)		**4 - Outrigger to Foot Bridge**	
B - Vegetated Bank		**5 - Foot Bridge to North End**	
P - Perches	**A - Aerial (overhead)**	**e - east**	**w - west**
::			

1	**33**	**Ducks**
2	**0**	**Water - other**
3	**1**	**Herons**
4	**0**	**Raptors**
5	**5**	**Shorebirds**
6	**0**	**Gulls & Terns**
7	**10**	**Doves**
8	**0**	**Nonpasserine - other**
9	**59**	**Passerines**
	108	**Total Individuals**
	14	**Total Species**

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CalEPPC. See California Exotic Pest Plant Council

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Jones, W. 2003b. Ballona Lagoon water quality enhancement project (W.O. SSBALWQE) vegetation assessment report. Prepared by the City of Los Angeles Bureau of Engineering Environmental Group. Prepared for the Ballona Lagoon Marine Preserve.

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Thelander, C.G. and M. Crabtree. 1994. Life on the edge: A guide to California's endangered natural resources: wildlife. BioSystems Books, Santa Cruz, CA. 550 p.

U.S. Fish and Wildlife Service. 2004. Western Snowy Plover Proposed Critical Habitat Designation

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Wetlands Research Associates, Inc. 1990. Port of Los Angeles Local Wetland Mitigation Program. Prepared for Port of Los Angeles, 425 S. Palos Verdes St., San Pedro, Ca 90733. Prepared by Wetlands Research Associates, Inc., 2169-G E. Francisco Blvd., San Rafael, CA 94901.(includes: Zuma Beach, Malibu Lagoon, Topanga Cyn., Oxford Flood Control Channel, Venice Canals, Ballona Lagoon, Ballona Wetlands, Del Rey Lagoon, El Segundo Dunes, Madrona Marsh, Sanitary District Wetland, Machado Lake, and Cabrillo Tidal Salt Marsh.)

08-0504 BPW 005-08

APPENDIX **E**

TRAFFIC IMPACT STUDY

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

APPENDIX E-1

TRAFFIC COUNTS

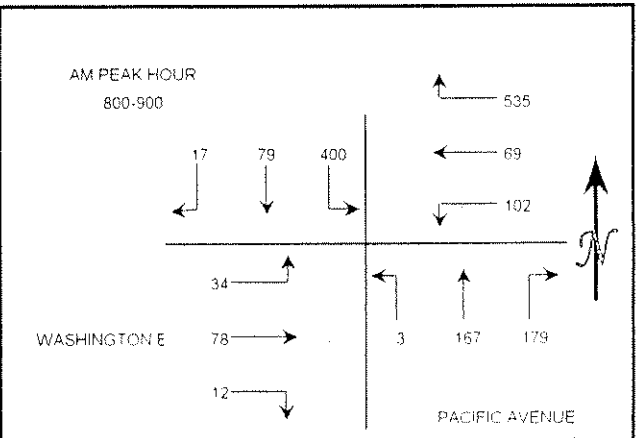
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

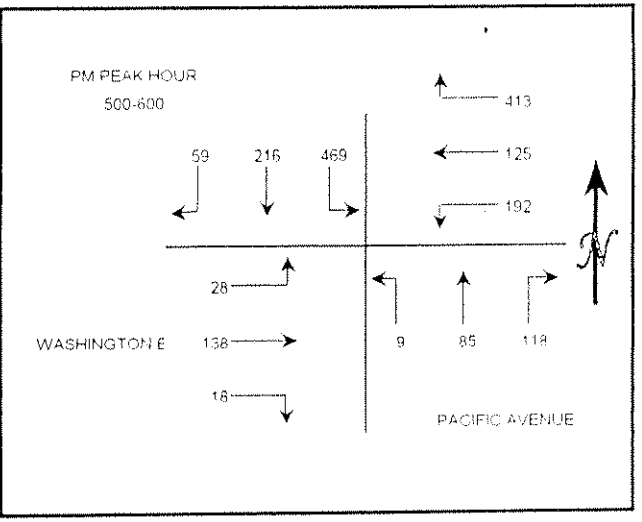
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S PACIFIC AVENUE
E/W WASHINGTON BOULEVARD

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	7	8	43	81	13	12	29	18	0	4	6	8	229
715-730	3	6	53	104	19	16	34	29	0	4	9	3	280
730-745	10	11	58	126	16	20	29	37	2	3	20	3	335
745-800	10	10	84	109	15	18	29	38	1	4	21	9	348
800-815	5	16	110	132	21	30	40	44	0	4	19	9	430
815-830	2	22	83	132	13	23	38	40	1	3	14	8	379
830-845	4	25	102	156	13	25	78	39	1	1	26	12	482
845-900	6	16	105	115	22	24	23	44	1	4	19	5	384
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	30	35	238	420	63	66	121	122	3	15	56	23	1192
715-815	28	43	305	471	71	84	132	148	3	15	69	24	1393
730-830	27	59	335	499	65	91	136	159	4	14	74	29	1492
745-845	21	73	379	529	62	96	185	161	3	12	80	38	1639
800-900	17	79	400	535	69	102	179	167	3	12	78	34	1675



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	13	46	109	99	28	46	41	25	3	7	30	7	454
415-430	15	47	105	92	32	34	32	21	1	2	24	11	416
430-445	18	47	91	113	31	36	30	35	4	13	33	7	458
445-500	14	49	112	100	21	42	41	23	4	4	32	10	452
500-515	11	54	101	100	30	55	30	15	1	2	35	11	445
515-530	14	59	105	109	32	45	34	27	2	7	47	3	484
530-545	11	54	133	113	27	49	25	21	4	6	33	7	483
545-600	23	49	130	91	36	43	29	22	2	3	23	7	458
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	60	189	417	404	112	158	144	104	12	26	119	35	1780
415-515	58	197	409	405	114	167	133	94	10	21	124	39	1771
430-530	57	209	409	422	114	178	135	100	11	26	147	31	1839
445-545	50	216	451	422	110	191	130	86	11	19	147	31	1864
500-600	59	216	469	413	125	192	118	85	9	18	138	28	1870



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: SPEEDWAY AVENUE BETWEEN PRIVATEER STREET AND QUARTERDECK STREET
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	4	6	2	16
1:00	4	1	1	0	6
2:00	1	5	1	1	8
3:00	3	0	1	0	4
4:00	0	1	1	3	5
5:00	0	0	1	1	2
6:00	2	8	4	10	24
7:00	10	12	8	12	42
8:00	11	17	8	12	48
9:00	10	18	16	16	60
10:00	16	11	8	20	55
11:00	14	13	16	16	59
12:00	20	22	18	15	75
13:00	17	14	14	14	59
14:00	16	10	13	16	55
15:00	17	18	22	26	83
16:00	18	16	10	18	62
17:00	20	26	17	16	79
18:00	20	15	12	22	69
19:00	19	20	18	10	67
20:00	12	9	18	11	50
21:00	16	9	13	11	49
22:00	16	19	14	6	55
23:00	9	12	10	1	32
				TOTAL	1064

AM PEAK HOUR	0915-1015
VOLUME	66
PM PEAK HOUR	1515-1615
VOLUME	84

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	1064

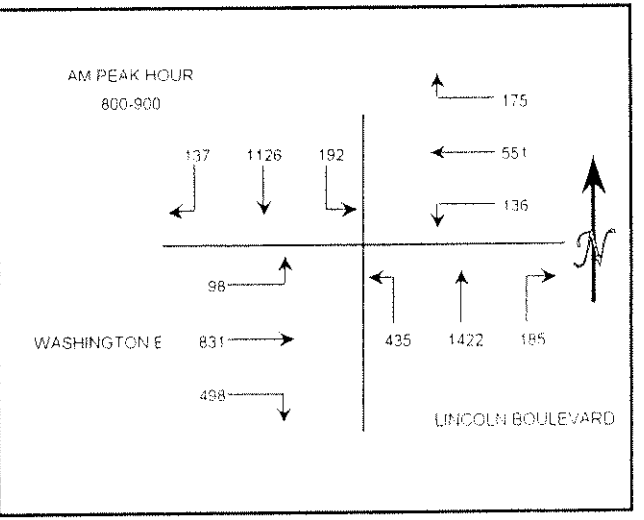
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

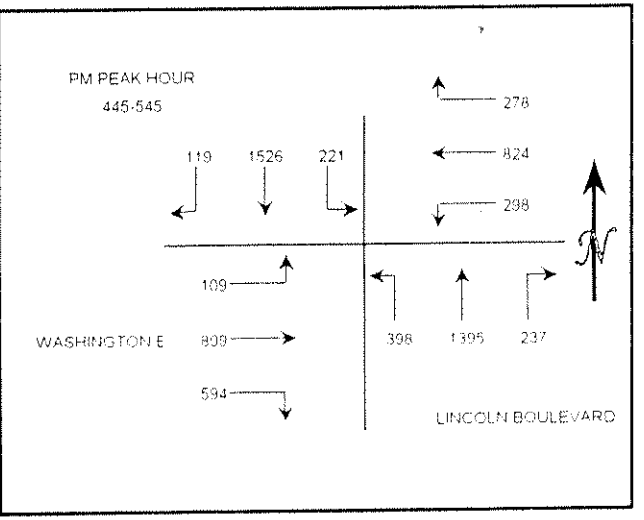
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S LINCOLN BOULEVARD
E/W WASHINGTON BOULEVARD

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	27	151	17	36	91	35	24	341	78	74	105	14	993
715-730	33	201	25	41	84	20	39	423	90	79	118	14	1167
730-745	22	228	30	32	118	32	45	408	117	115	179	18	1344
745-800	40	265	40	50	120	40	36	381	103	114	157	23	1369
800-815	36	259	43	42	145	26	44	368	100	96	164	21	1344
815-830	29	286	38	41	121	33	32	340	114	108	210	24	1376
830-845	47	281	64	42	128	37	55	314	101	141	221	22	1453
845-900	25	300	47	50	157	40	54	400	120	153	236	31	1613
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	122	845	112	159	413	127	144	1553	388	382	559	69	4873
715-815	131	953	136	165	467	118	164	1580	410	404	618	76	5224
730-830	127	1038	151	165	504	131	157	1497	434	433	710	86	5433
745-845	152	1091	185	175	514	136	167	1403	418	459	752	90	5542
800-900	137	1126	192	175	551	136	185	1422	435	498	831	98	5786



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	29	338	53	54	195	81	95	378	128	139	191	25	1706
415-430	27	307	43	85	161	87	70	304	102	135	200	30	1551
430-445	36	309	55	67	208	56	48	287	143	130	198	32	1569
445-500	29	374	63	84	228	77	57	338	100	155	198	20	1723
500-515	28	386	50	70	173	85	66	329	101	151	184	32	1655
515-530	29	372	53	64	207	63	66	356	95	126	218	33	1682
530-545	33	394	55	60	216	73	48	372	102	162	209	24	1748
545-600	31	376	44	69	206	59	42	318	116	103	208	38	1610
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	121	1328	214	290	792	301	270	1307	473	559	787	107	6549
415-515	120	1376	211	306	770	305	241	1258	446	571	780	114	6498
430-530	122	1441	221	285	816	281	237	1310	439	562	798	117	6629
445-545	119	1526	221	278	824	298	237	1395	398	594	809	109	6808
500-600	121	1528	202	263	802	280	222	1375	414	542	819	127	6695



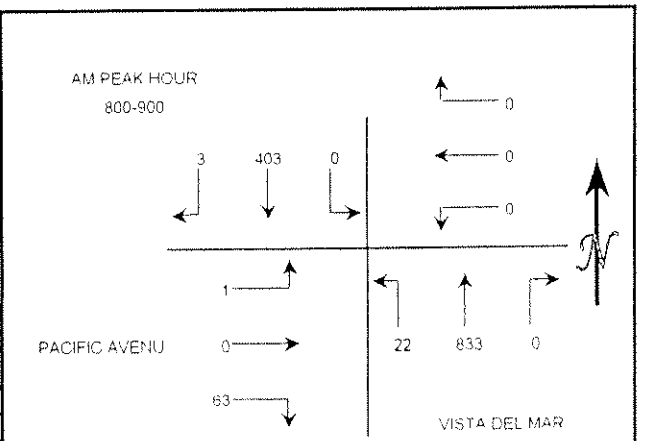
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

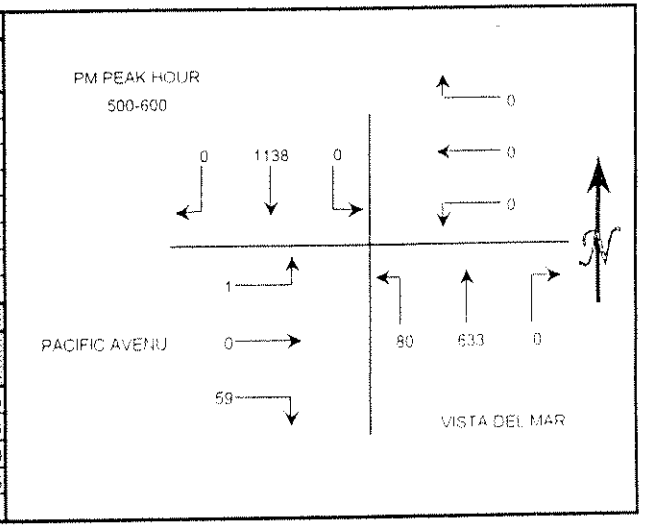
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S VISTA DEL MAR
E/W PACIFIC AVENUE

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	57	0	0	0	0	0	203	3	8	0	2	273
715-730	1	70	0	0	0	0	0	247	1	8	0	0	327
730-745	0	58	0	0	0	0	0	203	5	12	0	0	278
745-800	0	88	0	0	0	0	0	197	0	16	0	2	303
800-815	0	103	0	0	0	0	0	211	9	16	0	0	339
815-830	1	84	0	0	0	0	0	192	3	23	0	0	303
830-845	1	108	0	0	0	0	0	227	4	11	0	0	351
845-900	1	108	0	0	0	0	0	203	6	13	0	1	332
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	1	273	0	0	0	0	0	850	9	44	0	4	1181
715-815	1	319	0	0	0	0	0	858	15	52	0	2	1247
730-830	1	333	0	0	0	0	0	803	17	67	0	2	1223
745-845	2	383	0	0	0	0	0	827	16	66	0	2	1296
800-900	3	403	0	0	0	0	0	833	22	63	0	1	1325



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	230	0	0	0	0	0	150	9	21	0	0	410
415-430	0	190	0	0	0	0	0	125	15	15	0	0	345
430-445	0	240	0	0	0	0	0	120	11	21	0	0	392
445-500	0	216	0	0	0	0	0	142	15	14	0	1	388
500-515	0	289	0	0	0	0	0	153	15	14	0	0	471
515-530	0	250	0	0	0	0	0	175	22	11	0	1	459
530-545	0	306	0	0	0	0	0	151	22	18	0	0	497
545-600	0	293	0	0	0	0	0	154	21	16	0	0	484
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	876	0	0	0	0	0	537	50	71	0	1	1535
415-515	0	935	0	0	0	0	0	540	56	64	0	1	1596
430-530	0	995	0	0	0	0	0	590	63	60	0	2	1710
445-545	0	1061	0	0	0	0	0	621	74	57	0	2	1815
500-600	0	1138	0	0	0	0	0	633	80	59	0	1	1911



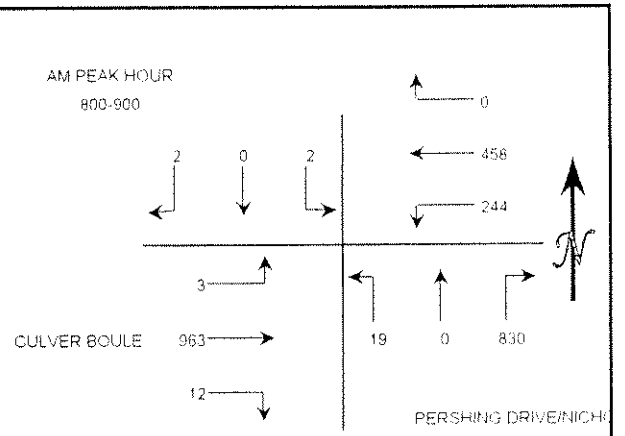
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

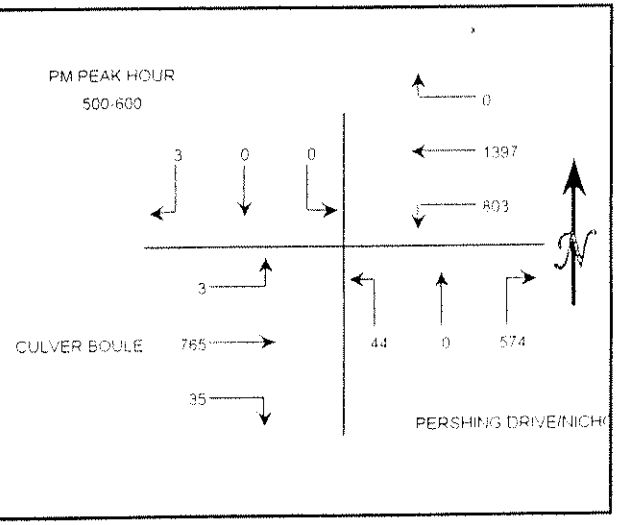
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S PERSHING DRIVE/NICHOLSON
E/W CULVER BOULEVARD

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	0	0	0	67	35	206	0	3	3	245	0	559
715-730	0	0	0	0	78	41	215	0	2	3	253	1	593
730-745	0	0	0	0	71	56	215	0	4	0	249	0	595
745-800	0	0	0	0	109	71	211	1	4	2	224	0	622
800-815	0	0	2	0	106	64	220	0	5	3	229	1	630
815-830	1	0	0	0	112	70	215	0	4	4	224	0	630
830-845	1	0	0	0	124	53	200	0	7	2	248	0	635
845-900	0	0	0	0	116	57	195	0	3	3	262	2	638
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	0	0	0	325	203	847	1	13	8	971	1	2369
715-815	0	0	2	0	364	232	861	1	15	8	955	2	2440
730-830	1	0	2	0	398	261	861	1	17	9	926	1	2477
745-845	2	0	2	0	451	258	846	1	20	11	925	1	2517
800-900	2	0	2	0	458	244	830	0	19	12	963	3	2533



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	1	0	0	262	167	132	0	6	5	173	1	747
415-430	0	0	0	0	232	145	159	0	18	10	181	1	746
430-445	0	0	0	0	292	172	133	0	6	4	155	3	765
445-500	0	0	0	0	297	178	136	0	7	3	176	1	798
500-515	1	0	0	0	353	189	145	0	10	11	181	1	891
515-530	1	0	0	0	319	181	153	0	8	4	187	0	853
530-545	0	0	0	0	363	207	155	0	14	10	194	1	944
546-600	1	0	0	0	362	226	121	0	12	10	203	1	936
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	1	0	0	1083	662	560	0	37	22	685	6	3056
415-515	1	0	0	0	1174	684	573	0	41	28	693	6	3200
430-530	2	0	0	0	1261	720	567	0	31	22	699	5	3307
445-545	2	0	0	0	1332	755	589	0	39	28	738	3	3486
500-600	3	0	0	0	1397	803	574	0	44	35	765	3	3624



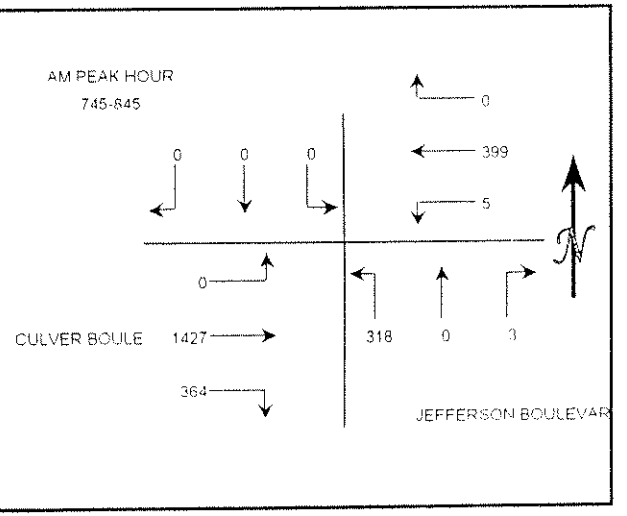
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

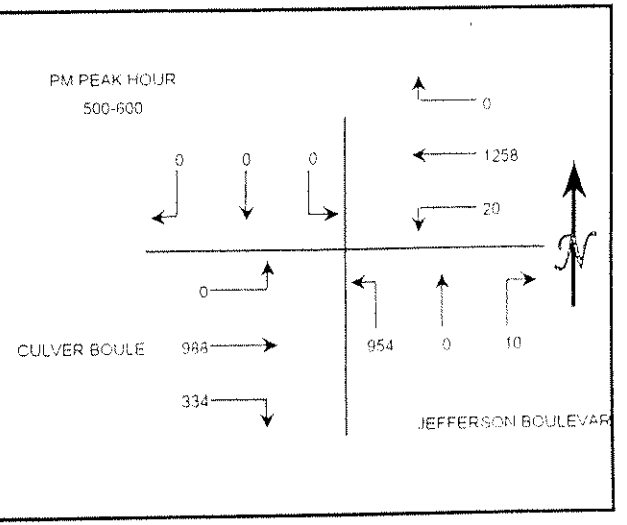
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S JEFFERSON BOULEVARD
E/W CULVER BOULEVARD

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	0	0	0	65	2	0	0	28	66	362	0	523
715-730	0	0	0	0	75	0	1	0	45	84	386	0	591
730-745	0	0	0	0	76	2	0	0	54	88	390	0	610
745-800	0	0	0	0	99	2	1	0	89	75	365	0	631
800-815	0	0	0	0	97	2	0	0	73	85	354	0	611
815-830	0	0	0	0	103	1	1	0	77	95	349	0	626
830-845	0	0	0	0	100	0	1	0	79	109	359	0	648
845-900	0	0	0	0	99	3	0	0	75	96	345	0	618
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	0	0	0	315	6	2	0	216	313	1503	0	2355
715-815	0	0	0	0	347	6	2	0	261	332	1495	0	2443
730-830	0	0	0	0	375	7	2	0	293	343	1458	0	2478
745-845	0	0	0	0	399	5	3	0	318	364	1427	0	2516
800-900	0	0	0	0	399	6	2	0	304	385	1407	0	2503



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	0	0	0	225	6	4	0	150	66	208	0	659
415-430	0	0	0	0	241	8	3	0	177	89	236	0	754
430-445	0	0	0	0	280	4	0	0	214	72	216	0	786
445-500	0	0	0	0	254	5	2	0	208	92	272	0	833
500-515	0	0	0	0	289	6	4	0	230	88	227	0	844
515-530	0	0	0	0	282	4	4	0	235	70	244	0	839
530-545	0	0	0	0	350	5	1	0	239	88	271	0	954
546-600	0	0	0	0	337	5	1	0	250	88	246	0	927
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	0	0	0	1000	23	9	0	749	319	932	0	3032
415-515	0	0	0	0	1064	23	9	0	829	341	951	0	3217
430-530	0	0	0	0	1105	19	10	0	887	322	959	0	3302
445-545	0	0	0	0	1175	20	11	0	912	338	1014	0	3470
500-600	0	0	0	0	1258	20	10	0	954	334	988	0	3564



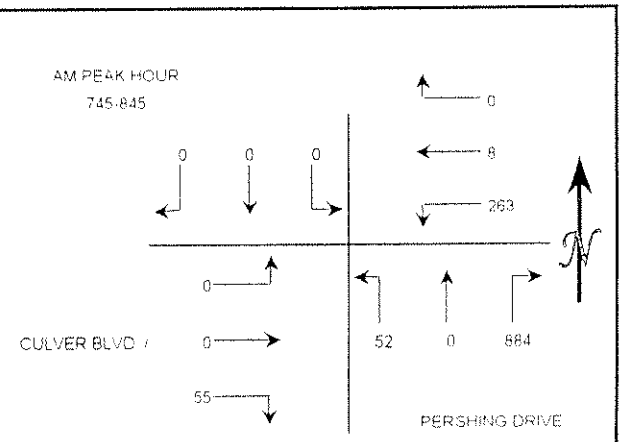
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

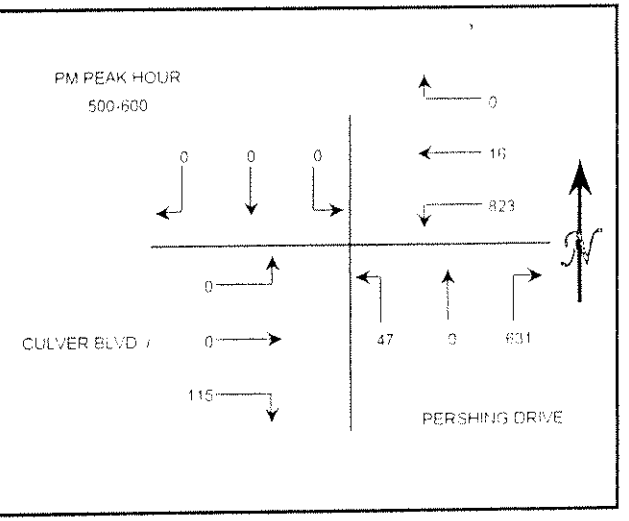
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S PERSHING DRIVE
E/W CULVER BLVD. / NICHOLSON ST.

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	0	0	0	1	30	201	0	5	13	0	0	250
715-730	0	0	0	0	0	38	208	0	7	6	0	0	259
730-745	0	0	0	0	1	51	214	0	17	13	0	0	296
745-800	0	0	0	0	2	81	243	0	10	14	0	0	350
800-815	0	0	0	0	4	63	217	0	9	13	0	0	306
815-830	0	0	0	0	1	65	213	0	15	10	0	0	304
830-845	0	0	0	0	1	54	211	0	18	18	0	0	302
845-900	0	0	0	0	2	63	209	0	16	15	0	0	305
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	0	0	0	4	200	866	0	39	46	0	0	1155
715-815	0	0	0	0	7	233	882	0	43	46	0	0	1211
730-830	0	0	0	0	8	260	887	0	51	50	0	0	1256
745-845	0	0	0	0	8	263	884	0	52	55	0	0	1262
800-900	0	0	0	0	8	245	850	0	58	56	0	0	1217



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	0	0	0	5	162	130	0	18	32	0	0	347
415-430	0	0	0	0	7	168	190	0	13	18	0	0	396
430-445	0	0	0	0	3	178	130	0	7	38	0	0	356
445-500	0	0	0	0	1	178	152	0	17	39	0	0	387
500-515	0	0	0	0	2	168	143	0	12	32	0	0	357
515-530	0	0	0	0	4	208	177	0	14	23	0	0	426
530-545	0	0	0	0	4	220	169	0	9	33	0	0	435
545-600	0	0	0	0	6	227	142	0	12	27	0	0	414
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	0	0	0	16	686	602	0	55	127	0	0	1486
415-515	0	0	0	0	13	692	615	0	49	127	0	0	1496
430-530	0	0	0	0	10	732	602	0	50	132	0	0	1526
445-545	0	0	0	0	11	774	641	0	52	127	0	0	1605
500-600	0	0	0	0	16	823	631	0	47	115	0	0	1632



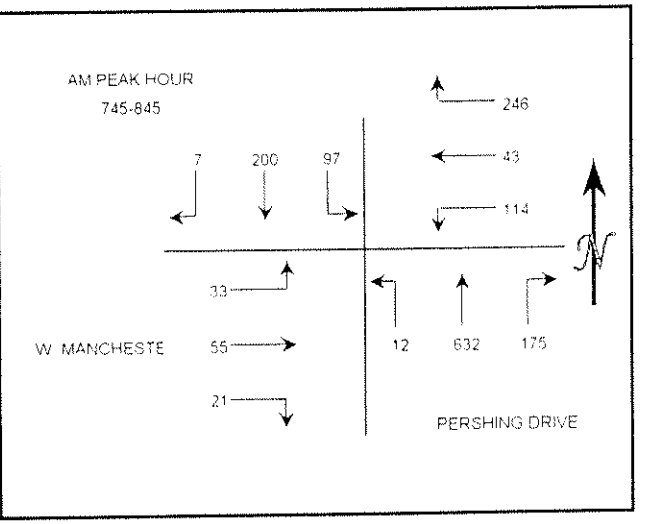
WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

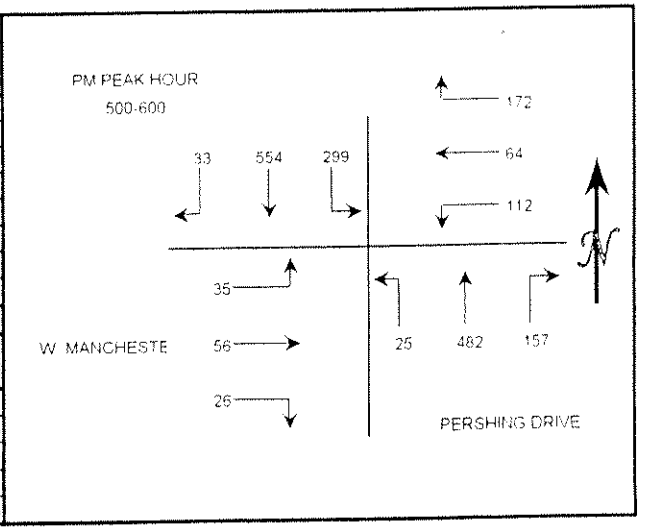
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S PERSHING DRIVE
E/W W. MANCHESTER AVENUE

15 MIN COUNTS	7:00 AM TO 9:00 AM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	3	29	19	54	3	25	35	155	1	4	4	5	337
715-730	1	38	19	52	8	25	32	181	2	3	10	8	379
730-745	3	44	28	55	11	29	28	138	3	2	10	5	356
745-800	3	55	27	67	14	33	50	173	6	5	11	9	453
800-815	2	57	20	61	5	30	43	152	1	11	11	8	401
815-830	1	46	26	63	13	23	45	160	3	2	14	3	399
830-845	1	42	24	55	11	28	37	147	2	3	19	13	382
845-900	0	47	23	55	9	26	90	162	6	8	13	7	446
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	10	166	93	228	36	112	145	647	12	14	35	27	1525
715-815	9	194	94	235	38	117	153	644	12	21	42	30	1589
730-830	9	202	101	246	43	115	166	623	13	20	46	25	1609
745-845	7	200	97	246	43	114	175	632	12	21	55	33	1635
800-900	4	192	93	234	38	107	215	621	12	24	57	31	1628



15 MIN COUNTS	4:00 PM TO 6:00 PM												
PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	9	117	66	48	16	30	36	98	7	4	15	6	452
415-430	5	115	69	50	13	20	33	128	4	6	14	17	474
430-445	4	111	77	37	17	26	24	116	6	3	11	5	437
445-500	8	125	64	47	18	34	32	108	7	5	11	9	468
500-515	7	126	79	39	16	32	36	113	7	4	13	9	481
515-530	8	133	58	50	10	18	37	136	5	8	14	6	483
530-545	11	149	84	45	22	29	35	130	6	8	13	9	541
545-600	7	146	78	38	16	33	49	103	7	6	16	11	510
HOUR TOTALS													
TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	26	468	276	182	64	110	125	450	24	18	51	37	1831
415-515	24	477	289	173	64	112	125	465	24	18	49	40	1860
430-530	27	495	278	173	61	110	129	473	25	20	49	29	1869
445-545	34	533	285	181	66	113	140	487	25	25	51	33	1973
500-600	33	554	299	172	64	112	157	482	25	26	56	35	2015



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

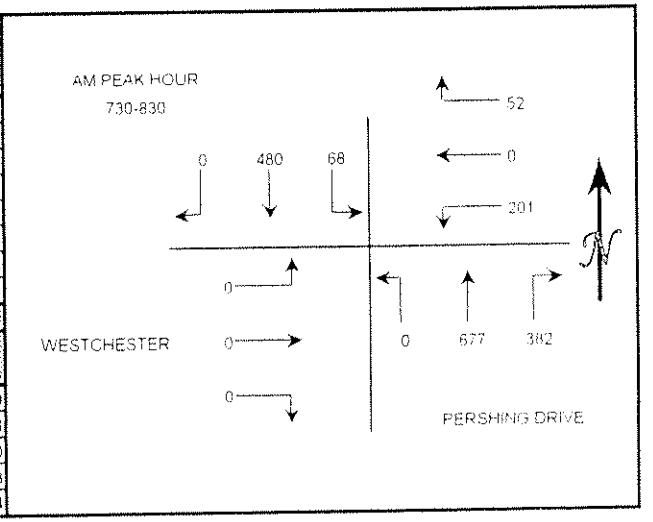
CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
DATE: TUESDAY, JULY 19TH, 2005
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S PERSHING DRIVE
E/W WESTCHESTER PARKWAY

15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	81	4	4	0	27	35	112	0	0	0	0	263
715-730	0	70	12	7	0	34	79	156	0	0	0	0	358
730-745	0	119	18	8	0	57	93	145	0	0	0	0	440
745-800	0	132	22	18	0	40	114	193	0	0	0	0	519
800-815	0	126	13	10	0	45	92	170	0	0	0	0	456
815-830	0	103	15	16	0	59	83	169	0	0	0	0	445
830-845	0	101	18	15	0	46	95	153	0	0	0	0	428
845-900	0	93	33	6	0	41	106	186	0	0	0	0	465

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	402	56	37	0	158	321	606	0	0	0	0	1580
715-815	0	447	65	43	0	176	378	664	0	0	0	0	1773
730-830	0	480	68	52	0	201	382	677	0	0	0	0	1860
745-845	0	462	68	59	0	190	384	685	0	0	0	0	1848
800-900	0	423	79	47	0	191	376	678	0	0	0	0	1794

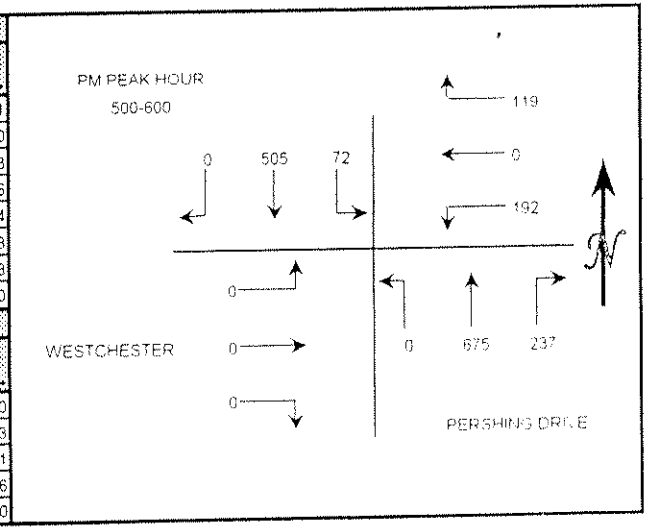


15 MIN COUNTS — 4:00 PM TO 6:00 PM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	95	20	25	0	36	73	132	0	0	0	0	381
415-430	0	97	22	33	0	49	88	161	0	0	0	0	450
430-445	0	114	18	24	0	31	73	143	0	0	0	0	403
445-500	0	116	16	24	0	33	75	142	0	0	0	0	406
500-515	0	124	16	25	0	40	58	181	0	0	0	0	444
515-530	0	111	16	27	0	60	54	170	0	0	0	0	438
530-545	0	134	17	31	0	50	60	166	0	0	0	0	458
545-600	0	136	23	36	0	42	65	158	0	0	0	0	460

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	422	76	106	0	149	309	578	0	0	0	0	1640
415-515	0	451	72	106	0	153	294	627	0	0	0	0	1703
430-530	0	465	66	100	0	164	260	636	0	0	0	0	1691
445-545	0	485	65	107	0	183	247	659	0	0	0	0	1746
500-600	0	505	72	119	0	192	237	675	0	0	0	0	1800



WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES, INC.
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: SPEEDWAY AVENUE BETWEEN FLEET STREET AND GALLEON STREET
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	2	4	2	0	8
1:00	2	0	2	1	5
2:00	0	2	2	1	5
3:00	2	1	0	0	3
4:00	0	1	0	0	1
5:00	0	1	2	2	5
6:00	2	2	6	6	16
7:00	8	4	5	10	27
8:00	10	8	12	10	40
9:00	9	16	19	12	56
10:00	6	10	11	11	38
11:00	8	15	20	20	63
12:00	16	18	19	14	67
13:00	12	14	10	15	51
14:00	17	23	12	12	64
15:00	16	16	14	19	65
16:00	10	5	12	19	46
17:00	24	14	12	10	60
18:00	14	20	16	16	66
19:00	12	19	19	9	59
20:00	10	12	14	0	36
21:00	10	15	6	6	37
22:00	5	6	7	7	25
23:00	4	6	4	4	18
				TOTAL	861

AM PEAK HOUR	1100-1200
VOLUME	63
PM PEAK HOUR	1630-1730
VOLUME	69

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	861

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: SPEEDWAY AVENUE BETWEEN PRIVATEER STREET AND QUARTERDECK STREET
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	4	6	2	16
1:00	4	1	1	0	6
2:00	1	5	1	1	8
3:00	3	0	1	0	4
4:00	0	1	1	3	5
5:00	0	0	1	1	2
6:00	2	8	4	10	24
7:00	10	12	8	12	42
8:00	11	17	8	12	48
9:00	10	18	16	16	60
10:00	16	11	8	20	55
11:00	14	13	16	16	59
12:00	20	22	18	15	75
13:00	17	14	14	14	59
14:00	16	10	13	16	55
15:00	17	18	22	26	83
16:00	18	16	10	18	62
17:00	20	26	17	16	79
18:00	20	15	12	22	69
19:00	19	20	18	10	67
20:00	12	9	18	11	50
21:00	16	9	13	11	49
22:00	16	19	14	6	55
23:00	9	12	10	1	32
				TOTAL	1064

AM PEAK HOUR	0915-1015
VOLUME	66
PM PEAK HOUR	1515-1615
VOLUME	84

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	1064

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: SPEEDWAY AVENUE BETWEEN WESTWIND STREET AND YAWL STREET
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	2	1	2	0	5
1:00	0	1	1	0	2
2:00	2	1	0	1	4
3:00	0	0	0	0	0
4:00	0	1	0	0	1
5:00	0	0	0	0	0
6:00	1	1	2	0	4
7:00	1	0	4	1	6
8:00	3	4	0	2	9
9:00	1	2	5	4	12
10:00	2	1	6	1	10
11:00	4	4	5	8	21
12:00	5	7	3	4	19
13:00	8	2	5	4	19
14:00	2	2	3	5	12
15:00	6	5	5	3	19
16:00	2	1	1	2	6
17:00	5	5	3	2	15
18:00	2	1	0	1	4
19:00	3	5	8	2	18
20:00	0	2	8	2	12
21:00	2	2	0	0	4
22:00	0	2	2	3	7
23:00	2	1	2	1	6
				TOTAL	215

AM PEAK HOUR	1100-1200
VOLUME	21
PM PEAK HOUR	1215-1315
VOLUME	22

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	215

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PACIFIC AVENUE BETWEEN FLEET STREET AND GALLEON STREET
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	8	9	4	26
1:00	7	2	6	3	18
2:00	5	2	1	4	12
3:00	1	1	6	1	9
4:00	0	1	6	4	11
5:00	6	5	14	13	38
6:00	14	22	25	40	101
7:00	41	42	49	46	178
8:00	55	47	59	71	232
9:00	65	72	62	52	251
10:00	62	52	56	61	231
11:00	54	54	49	45	202
12:00	50	33	48	43	174
13:00	46	41	45	48	180
14:00	53	49	44	50	196
15:00	40	46	48	41	175
16:00	48	46	42	46	182
17:00	36	46	43	44	169
18:00	44	41	62	52	199
19:00	41	35	37	41	154
20:00	39	41	21	24	125
21:00	22	24	21	24	91
22:00	22	28	13	12	75
23:00	10	14	12	10	46
				TOTAL	3075

AM PEAK HOUR	0845-0945
VOLUME	270
PM PEAK HOUR	1800-1900
VOLUME	199

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	21	24	14	13	72
1:00	9	10	7	16	42
2:00	8	5	3	0	16
3:00	5	3	2	1	11
4:00	1	3	0	2	6
5:00	2	2	9	7	20
6:00	9	7	16	17	49
7:00	16	20	18	28	82
8:00	37	36	34	33	140
9:00	44	37	48	51	180
10:00	38	45	44	55	182
11:00	41	64	58	65	228
12:00	67	60	60	66	253
13:00	72	66	65	72	275
14:00	74	72	60	72	278
15:00	80	86	72	81	319
16:00	80	58	78	68	284
17:00	94	84	74	86	338
18:00	96	64	76	90	326
19:00	86	94	96	60	336
20:00	79	58	64	56	257
21:00	62	56	56	44	218
22:00	49	60	52	43	204
23:00	35	35	23	16	109
				TOTAL	4225

AM PEAK HOUR	1100-1200
VOLUME	228
PM PEAK HOUR	1845-1945
VOLUME	366

TOTAL BI-DIRECTIONAL VOLUME	7300

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: MARQUESAS WAY BETWEEN VIA DOLCE AND VIA MARINA
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	EB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	8	7	3	23
1:00	3	2	2	2	9
2:00	1	2	1	2	6
3:00	2	0	2	0	4
4:00	1	2	0	2	5
5:00	1	4	5	6	16
6:00	4	13	17	15	49
7:00	23	22	26	27	98
8:00	38	44	32	40	154
9:00	35	40	26	35	136
10:00	30	25	30	28	113
11:00	19	21	20	22	82
12:00	28	35	25	39	127
13:00	31	36	34	23	124
14:00	20	19	24	25	88
15:00	44	30	32	26	132
16:00	32	28	26	25	111
17:00	38	44	42	46	170
18:00	40	33	50	41	164
19:00	44	32	27	20	123
20:00	34	24	34	22	114
21:00	26	22	14	17	79
22:00	17	19	10	13	59
23:00	5	10	5	7	27
				TOTAL	2013

AM PEAK HOUR	0800-0900
VOLUME	154
PM PEAK HOUR	1715-1815
VOLUME	172

DIRECTION:	WB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	3	2	3	0	8
1:00	0	2	1	4	7
2:00	0	0	3	0	3
3:00	1	0	1	1	3
4:00	2	1	0	1	4
5:00	1	3	2	4	10
6:00	6	10	12	11	39
7:00	20	13	24	28	85
8:00	39	25	25	16	105
9:00	30	14	26	21	91
10:00	20	26	13	20	79
11:00	19	20	20	25	84
12:00	12	20	18	20	70
13:00	17	20	22	16	75
14:00	19	14	16	12	61
15:00	19	20	15	24	78
16:00	20	16	10	32	78
17:00	19	22	18	21	80
18:00	10	21	28	20	79
19:00	19	18	18	23	78
20:00	20	12	15	14	61
21:00	10	20	13	8	51
22:00	8	14	8	5	35
23:00	11	8	4	4	27
				TOTAL	1291

AM PEAK HOUR	0745-0845
VOLUME	117
PM PEAK HOUR	1645-1745
VOLUME	91

TOTAL BI-DIRECTIONAL VOLUME	3304

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PACIFIC AVENUE BETWEEN WESTWIND STREET AND YAWL STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	6	6	4	10	26
1:00	3	0	5	6	14
2:00	3	2	0	3	8
3:00	1	2	1	0	4
4:00	0	1	2	1	4
5:00	0	3	5	2	10
6:00	6	8	10	12	36
7:00	17	14	16	14	61
8:00	14	12	21	24	71
9:00	25	22	22	26	95
10:00	23	25	24	28	100
11:00	27	28	30	26	111
12:00	24	16	33	23	96
13:00	22	28	35	30	115
14:00	34	26	30	22	112
15:00	23	24	31	32	110
16:00	16	24	39	29	108
17:00	24	39	32	19	114
18:00	21	36	34	29	120
19:00	32	28	40	26	126
20:00	36	34	20	22	112
21:00	16	18	20	15	69
22:00	25	23	12	16	76
23:00	20	13	9	7	49
				TOTAL	1747

AM PEAK HOUR	1045-1145
VOLUME	113
PM PEAK HOUR	1930-2030
VOLUME	136

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	10	4	5	23
1:00	4	4	2	6	16
2:00	8	2	0	1	11
3:00	3	2	1	0	6
4:00	2	2	1	0	5
5:00	2	2	7	3	14
6:00	6	4	8	13	31
7:00	2	8	16	16	42
8:00	12	21	22	23	78
9:00	29	20	21	22	92
10:00	30	21	22	18	91
11:00	10	35	24	34	103
12:00	30	31	32	33	126
13:00	34	40	42	40	156
14:00	41	42	40	25	148
15:00	38	46	40	40	164
16:00	38	33	27	38	136
17:00	42	28	44	40	154
18:00	44	44	46	46	180
19:00	43	52	38	32	165
20:00	46	34	30	34	144
21:00	16	21	22	16	75
22:00	20	32	21	18	91
23:00	23	18	6	7	54
				TOTAL	2105

AM PEAK HOUR	1100-1200
VOLUME	103
PM PEAK HOUR	1830-1930
VOLUME	187

TOTAL BI-DIRECTIONAL VOLUME	3852

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: ROMA COURT BETWEEN LIGHTHOUSE MALL AND OUTRIGGER MALL
DATE: TUESDAY AUGUST 2ND, 2005

DIRECTION:	TOTAL				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	3	4	2	5	14
1:00	0	1	4	2	7
2:00	2	2	2	3	9
3:00	0	2	6	1	9
4:00	0	1	4	5	10
5:00	3	0	1	2	6
6:00	2	0	2	3	7
7:00	4	8	18	6	36
8:00	8	7	6	4	25
9:00	18	10	6	8	42
10:00	8	7	6	6	27
11:00	8	2	9	4	23
12:00	10	7	8	13	38
13:00	8	4	6	10	28
14:00	12	8	8	0	28
15:00	6	8	6	8	28
16:00	12	7	5	14	38
17:00	8	3	5	5	21
18:00	5	1	5	4	15
19:00	6	6	5	5	22
20:00	4	1	4	2	11
21:00	4	6	5	1	16
22:00	4	1	7	1	13
23:00	3	2	0	0	5
				TOTAL	478

AM PEAK HOUR	0900-1000
VOLUME	42
PM PEAK HOUR	1200-1300
VOLUME	38

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	478

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA DONTE BETWEEN VOYAGE MALL AND WESTWIND MALL
DATE: TUESDAY AUGUST 2ND, 2005

DIRECTION:	TOTAL				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	1	0	0	0	1
1:00	0	0	3	1	4
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	1	1
5:00	2	2	2	1	7
6:00	2	9	2	4	17
7:00	3	4	3	11	21
8:00	6	8	7	8	29
9:00	18	8	2	11	39
10:00	8	10	8	5	31
11:00	6	10	10	8	34
12:00	4	16	10	20	50
13:00	11	10	10	5	36
14:00	10	15	6	8	39
15:00	8	11	10	20	49
16:00	20	10	12	6	48
17:00	13	10	12	12	47
18:00	6	8	14	12	40
19:00	9	4	11	7	31
20:00	12	8	4	4	28
21:00	4	6	4	4	18
22:00	4	3	2	4	13
23:00	3	0	1	0	4
				TOTAL	587

AM PEAK HOUR	0815-0915
VOLUME	41
PM PEAK HOUR	1545-1645
VOLUME	62

DIRECTION:	O				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	0	0	0	0	0
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	0	0
5:00	0	0	0	0	0
6:00	0	0	0	0	0
7:00	0	0	0	0	0
8:00	0	0	0	0	0
9:00	0	0	0	0	0
10:00	0	0	0	0	0
11:00	0	0	0	0	0
12:00	0	0	0	0	0
13:00	0	0	0	0	0
14:00	0	0	0	0	0
15:00	0	0	0	0	0
16:00	0	0	0	0	0
17:00	0	0	0	0	0
18:00	0	0	0	0	0
19:00	0	0	0	0	0
20:00	0	0	0	0	0
21:00	0	0	0	0	0
22:00	0	0	0	0	0
23:00	0	0	0	0	0
				TOTAL	0

AM PEAK HOUR	0000-0100
VOLUME	0
PM PEAK HOUR	1200-1300
VOLUME	0

TOTAL BI-DIRECTIONAL VOLUME	587

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA MARINA EAST OF PACIFIC AVENUE
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	EB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	10	5	7	27
1:00	4	5	2	8	19
2:00	6	2	1	1	10
3:00	5	2	1	0	8
4:00	1	2	4	0	7
5:00	2	2	8	5	17
6:00	7	6	10	21	44
7:00	7	12	15	19	53
8:00	16	18	26	27	87
9:00	28	21	16	27	92
10:00	16	18	25	25	84
11:00	16	32	24	30	102
12:00	28	31	36	26	121
13:00	26	38	38	27	129
14:00	22	24	34	41	121
15:00	44	46	38	40	168
16:00	37	32	50	38	157
17:00	47	50	54	56	207
18:00	46	44	46	50	186
19:00	45	46	57	33	181
20:00	49	44	36	32	161
21:00	18	22	24	24	88
22:00	30	33	22	24	109
23:00	20	26	6	5	57
				TOTAL	2235

AM PEAK HOUR	0830-0930
VOLUME	102
PM PEAK HOUR	1700-1800
VOLUME	207

DIRECTION:	WB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	8	5	4	9	26
1:00	2	1	4	1	8
2:00	6	2	0	5	13
3:00	1	2	1	0	4
4:00	0	1	3	0	4
5:00	0	8	3	3	14
6:00	6	10	10	16	42
7:00	16	13	16	13	58
8:00	13	22	20	24	79
9:00	24	22	28	27	101
10:00	17	32	23	30	102
11:00	27	31	34	22	114
12:00	24	18	33	27	102
13:00	20	30	40	32	122
14:00	36	24	34	26	120
15:00	34	26	33	31	124
16:00	20	31	46	32	129
17:00	33	50	35	26	144
18:00	26	43	34	32	135
19:00	35	35	48	40	158
20:00	38	33	23	23	117
21:00	24	17	21	19	81
22:00	24	28	19	19	90
23:00	16	12	10	4	42
				TOTAL	1929

AM PEAK HOUR	1045-1145
VOLUME	122
PM PEAK HOUR	1630-1730
VOLUME	161

TOTAL BI-DIRECTIONAL VOLUME	4164

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA DOLCE NORTH OF MARQUESAS WAY
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	2	5	2	14
1:00	0	0	2	2	4
2:00	0	0	2	0	2
3:00	4	0	1	0	5
4:00	0	1	0	3	4
5:00	2	5	9	6	22
6:00	16	17	14	17	64
7:00	35	38	48	38	159
8:00	70	44	47	51	212
9:00	39	36	46	37	158
10:00	39	42	36	47	164
11:00	32	36	36	27	131
12:00	30	34	26	34	124
13:00	35	30	21	32	118
14:00	20	42	33	25	120
15:00	33	36	26	27	122
16:00	30	21	29	24	104
17:00	25	22	30	13	90
18:00	18	29	23	27	97
19:00	24	24	28	16	92
20:00	23	16	28	10	77
21:00	16	16	10	14	56
22:00	20	9	7	6	42
23:00	6	8	5	5	24
				TOTAL	2005

AM PEAK HOUR	0800-0900
VOLUME	212
PM PEAK HOUR	1415-1515
VOLUME	133

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	8	9	10	4	31
1:00	3	4	2	0	9
2:00	1	4	1	3	9
3:00	0	0	2	0	2
4:00	0	1	0	1	2
5:00	2	0	0	4	6
6:00	7	4	12	12	35
7:00	24	10	12	16	62
8:00	17	26	24	11	78
9:00	22	15	28	28	93
10:00	23	24	21	16	84
11:00	24	18	21	20	83
12:00	24	27	28	37	116
13:00	44	44	30	27	145
14:00	25	18	20	31	94
15:00	38	38	31	16	123
16:00	31	28	28	31	118
17:00	50	46	46	44	186
18:00	64	58	72	58	252
19:00	50	41	46	26	163
20:00	51	32	28	34	145
21:00	28	21	20	24	93
22:00	26	25	11	16	78
23:00	12	16	8	6	42
				TOTAL	2049

AM PEAK HOUR	0930-1030
VOLUME	103
PM PEAK HOUR	1800-1900
VOLUME	252

TOTAL BI-DIRECTIONAL VOLUME	4054

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA DOLCE BETWEEN PRIVATEER STREET AND QUARTERDECK STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	0	1	0	5
1:00	0	2	2	1	5
2:00	0	0	1	1	2
3:00	1	0	0	0	1
4:00	1	0	0	3	4
5:00	5	0	4	0	9
6:00	2	4	4	6	16
7:00	11	6	10	14	41
8:00	14	12	10	13	49
9:00	8	8	10	12	38
10:00	4	2	4	8	18
11:00	10	2	10	2	24
12:00	6	12	4	6	28
13:00	8	6	8	14	36
14:00	9	10	2	13	34
15:00	5	4	8	7	24
16:00	6	6	10	4	26
17:00	9	12	10	9	40
18:00	3	10	6	5	24
19:00	4	6	6	12	28
20:00	2	5	1	5	13
21:00	4	4	0	0	8
22:00	4	4	4	4	16
23:00	3	0	2	0	5
				TOTAL	494

AM PEAK HOUR	0730-0830
VOLUME	50
PM PEAK HOUR	1330-1430
VOLUME	41

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	3	1	2	1	7
1:00	4	1	2	2	9
2:00	1	1	2	1	5
3:00	0	0	0	0	0
4:00	0	0	1	4	5
5:00	4	2	0	4	10
6:00	1	1	3	4	9
7:00	4	13	6	6	29
8:00	5	16	12	14	47
9:00	11	14	7	7	39
10:00	11	8	13	16	48
11:00	14	13	15	16	58
12:00	13	16	8	14	51
13:00	3	15	11	9	38
14:00	12	12	16	10	50
15:00	10	12	8	10	40
16:00	9	13	19	12	53
17:00	16	15	17	12	60
18:00	15	12	9	12	48
19:00	14	19	16	4	53
20:00	12	17	12	2	43
21:00	4	14	10	12	40
22:00	7	5	5	8	25
23:00	6	4	1	4	15
				TOTAL	782

AM PEAK HOUR	1045-1145
VOLUME	58
PM PEAK HOUR	1630-1730
VOLUME	62

TOTAL BI-DIRECTIONAL VOLUME	1276

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: MARQUESAS WAY BETWEEN VIA DOLCE AND VIA MARINA
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	EB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	8	7	3	23
1:00	3	2	2	2	9
2:00	1	2	1	2	6
3:00	2	0	2	0	4
4:00	1	2	0	2	5
5:00	1	4	5	6	16
6:00	4	13	17	15	49
7:00	23	22	26	27	98
8:00	38	44	32	40	154
9:00	35	40	26	35	136
10:00	30	25	30	28	113
11:00	19	21	20	22	82
12:00	28	35	25	39	127
13:00	31	36	34	23	124
14:00	20	19	24	25	88
15:00	44	30	32	26	132
16:00	32	28	26	25	111
17:00	38	44	42	46	170
18:00	40	33	50	41	164
19:00	44	32	27	20	123
20:00	34	24	34	22	114
21:00	26	22	14	17	79
22:00	17	19	10	13	59
23:00	5	10	5	7	27
				TOTAL	2013

AM PEAK HOUR	0800-0900
VOLUME	154
PM PEAK HOUR	1715-1815
VOLUME	172

DIRECTION:	WB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	3	2	3	0	8
1:00	0	2	1	4	7
2:00	0	0	3	0	3
3:00	1	0	1	1	3
4:00	2	1	0	1	4
5:00	1	3	2	4	10
6:00	6	10	12	11	39
7:00	20	13	24	28	85
8:00	39	25	25	16	105
9:00	30	14	26	21	91
10:00	20	26	13	20	79
11:00	19	20	20	25	84
12:00	12	20	18	20	70
13:00	17	20	22	16	75
14:00	19	14	16	12	61
15:00	19	20	15	24	78
16:00	20	16	10	32	78
17:00	19	22	18	21	80
18:00	10	21	28	20	79
19:00	19	18	18	23	78
20:00	20	12	15	14	61
21:00	10	20	13	8	51
22:00	8	14	8	5	35
23:00	11	8	4	4	27
				TOTAL	1291

AM PEAK HOUR	0745-0845
VOLUME	117
PM PEAK HOUR	1645-1745
VOLUME	91

TOTAL BI-DIRECTIONAL VOLUME	3304

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA MARINA NORTH OF MARQUESAS WAY
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	21	30	20	16	87
1:00	13	9	8	4	34
2:00	18	6	3	1	28
3:00	12	3	1	6	22
4:00	3	11	12	15	41
5:00	16	30	51	40	137
6:00	60	78	106	131	375
7:00	133	162	180	208	683
8:00	191	224	224	238	877
9:00	194	186	160	172	712
10:00	134	136	143	123	536
11:00	118	124	125	145	512
12:00	139	152	150	150	591
13:00	141	150	128	147	566
14:00	120	138	155	128	541
15:00	180	168	158	133	639
16:00	148	136	166	133	583
17:00	156	148	170	153	627
18:00	150	150	156	144	600
19:00	150	168	117	126	561
20:00	134	110	128	112	484
21:00	97	71	62	67	297
22:00	74	72	53	45	244
23:00	45	55	27	23	150
				TOTAL	9927

AM PEAK HOUR	0815-0915
VOLUME	880
PM PEAK HOUR	1500-1600
VOLUME	639

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	48	38	28	40	154
1:00	20	21	26	16	83
2:00	9	11	5	7	32
3:00	5	6	6	3	20
4:00	3	5	6	5	19
5:00	5	10	11	18	44
6:00	26	36	62	68	192
7:00	53	52	82	85	272
8:00	87	88	76	89	340
9:00	110	94	92	95	391
10:00	103	106	88	102	399
11:00	114	130	122	121	487
12:00	118	120	142	114	494
13:00	106	125	154	123	508
14:00	146	142	157	120	565
15:00	142	136	131	142	551
16:00	139	158	165	174	636
17:00	196	166	190	147	699
18:00	176	193	204	192	765
19:00	237	202	200	203	842
20:00	194	161	172	178	705
21:00	156	158	130	111	555
22:00	127	125	114	80	446
23:00	100	72	54	54	280
				TOTAL	9479

AM PEAK HOUR	1100-1200
VOLUME	487
PM PEAK HOUR	1900-2000
VOLUME	842

TOTAL BI-DIRECTIONAL VOLUME	19406

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VIA MARINA SOUTH OF TAHITI WAY
DATE: THURSDAY JULY 21ST, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	14	18	16	7	55
1:00	8	6	6	6	26
2:00	13	5	0	2	20
3:00	9	2	1	3	15
4:00	3	8	9	5	25
5:00	10	18	25	24	77
6:00	43	42	64	80	229
7:00	86	98	112	112	408
8:00	120	128	148	135	531
9:00	106	104	90	92	392
10:00	70	83	78	82	313
11:00	66	76	74	74	290
12:00	80	87	98	90	355
13:00	82	96	91	97	366
14:00	77	92	90	76	335
15:00	112	104	85	82	383
16:00	82	90	106	76	354
17:00	100	90	124	96	410
18:00	92	79	104	94	369
19:00	106	88	90	84	368
20:00	94	72	82	62	310
21:00	54	49	48	45	196
22:00	64	47	32	31	174
23:00	31	37	23	11	102
				TOTAL	6103

AM PEAK HOUR	0800-0900
VOLUME	531
PM PEAK HOUR	1700-1800
VOLUME	410

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	29	25	22	23	99
1:00	15	13	17	10	55
2:00	5	7	2	4	18
3:00	3	3	4	1	11
4:00	2	3	4	1	10
5:00	4	11	7	13	35
6:00	14	22	27	31	94
7:00	34	32	40	40	146
8:00	48	55	48	49	200
9:00	58	53	63	59	233
10:00	55	64	62	56	237
11:00	64	70	71	63	268
12:00	84	69	92	76	321
13:00	72	80	96	66	314
14:00	102	823	93	78	1096
15:00	86	88	90	78	342
16:00	82	95	108	96	381
17:00	119	114	106	102	441
18:00	128	121	116	136	501
19:00	137	122	126	132	517
20:00	124	0	108	106	338
21:00	86	109	78	70	343
22:00	85	71	68	54	278
23:00	56	45	37	28	166
				TOTAL	6444

AM PEAK HOUR	1100-1200
VOLUME	268
PM PEAK HOUR	1400-1500
VOLUME	1096

TOTAL BI-DIRECTIONAL VOLUME	12547

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PACIFIC AVENUE NORTH OF CONVOY STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:		NB			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	6	6	1	17
1:00	8	0	8	0	16
2:00	2	3	3	2	10
3:00	1	3	2	0	6
4:00	2	5	2	0	9
5:00	4	2	0	4	10
6:00	6	1	6	8	21
7:00	6	6	11	12	35
8:00	17	15	12	10	54
9:00	22	15	22	24	83
10:00	12	18	21	20	71
11:00	20	26	33	24	103
12:00	28	24	26	22	100
13:00	24	26	34	28	112
14:00	40	22	28	26	116
15:00	22	28	26	22	98
16:00	36	30	26	32	124
17:00	40	24	35	24	123
18:00	55	42	38	48	183
19:00	34	41	38	48	161
20:00	28	22	18	14	82
21:00	21	10	17	18	66
22:00	9	8	18	18	53
23:00	9	5	8	6	28
				TOTAL	1681

AM PEAK HOUR	1100-1200
VOLUME	103
PM PEAK HOUR	1800-1900
VOLUME	183

DIRECTION:		SB			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	6	5	4	20
1:00	8	0	3	4	15
2:00	1	0	1	4	6
3:00	0	3	2	0	5
4:00	0	1	2	0	3
5:00	1	0	2	5	8
6:00	8	6	5	9	28
7:00	12	14	9	16	51
8:00	18	18	20	20	76
9:00	16	13	14	20	63
10:00	16	17	13	22	68
11:00	16	28	25	16	85
12:00	16	22	15	18	71
13:00	17	28	20	21	86
14:00	15	16	17	19	67
15:00	30	22	20	22	94
16:00	24	18	18	27	87
17:00	26	21	26	16	89
18:00	21	25	27	28	101
19:00	28	18	24	23	93
20:00	40	24	20	17	101
21:00	12	4	6	15	37
22:00	5	6	10	10	31
23:00	4	4	10	2	20
				TOTAL	1305

AM PEAK HOUR	1045-1145
VOLUME	91
PM PEAK HOUR	1930-2030
VOLUME	111

TOTAL BI-DIRECTIONAL VOLUME	2986

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PERSHING DRIVE SOUTH OF WESTCHESTER DRIVEWAY
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:		NB			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	28	17	24	21	90
1:00	14	18	16	11	59
2:00	18	13	11	10	52
3:00	6	8	12	5	31
4:00	7	8	6	15	36
5:00	9	16	31	32	88
6:00	58	87	138	156	439
7:00	206	231	286	276	999
8:00	265	275	262	270	1072
9:00	238	209	184	176	807
10:00	155	136	100	110	501
11:00	136	126	110	143	515
12:00	124	134	113	124	495
13:00	125	132	124	121	502
14:00	137	116	154	150	557
15:00	136	122	162	157	577
16:00	183	200	178	172	733
17:00	214	197	218	206	835
18:00	187	190	140	200	717
19:00	136	115	108	86	445
20:00	76	91	95	91	353
21:00	81	86	64	74	305
22:00	76	70	60	46	252
23:00	52	37	42	24	155
				TOTAL	10615

AM PEAK HOUR	0730-0830
VOLUME	1102
PM PEAK HOUR	1700-1800
VOLUME	835

DIRECTION:		SB			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	18	6	12	9	45
1:00	11	9	6	10	36
2:00	8	10	4	6	28
3:00	6	10	7	12	35
4:00	17	17	44	39	117
5:00	38	57	69	83	247
6:00	71	103	128	126	428
7:00	115	130	158	178	581
8:00	172	162	156	148	638
9:00	152	102	121	121	496
10:00	100	114	84	100	398
11:00	121	102	100	100	423
12:00	122	104	134	127	487
13:00	126	137	134	98	495
14:00	92	104	94	96	386
15:00	102	118	124	118	462
16:00	136	138	132	137	543
17:00	156	175	158	164	653
18:00	143	149	158	158	608
19:00	125	132	113	92	462
20:00	94	69	62	71	296
21:00	57	58	47	56	218
22:00	39	46	34	23	142
23:00	23	27	17	11	78
				TOTAL	8302

AM PEAK HOUR	0730-0830
VOLUME	670
PM PEAK HOUR	1700-1800
VOLUME	653

TOTAL BI-DIRECTIONAL VOLUME	18917

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PERSHING DRIVE BETWEEN CULVER BOULEVARD AND NICHOLSON STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	EB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	6	4	2	3	15
1:00	0	2	1	2	5
2:00	3	2	0	1	6
3:00	0	0	1	0	1
4:00	2	0	5	0	7
5:00	1	1	5	4	11
6:00	2	5	6	12	25
7:00	10	10	10	12	42
8:00	19	9	16	22	66
9:00	17	25	18	20	80
10:00	18	8	21	18	65
11:00	12	14	30	24	80
12:00	20	16	22	28	86
13:00	34	26	26	28	114
14:00	20	22	24	24	90
15:00	28	20	18	30	96
16:00	23	24	20	28	95
17:00	31	30	28	25	114
18:00	24	34	27	29	114
19:00	35	18	20	16	89
20:00	18	28	22	21	89
21:00	15	15	16	14	60
22:00	18	16	15	9	58
23:00	14	6	5	4	29
				TOTAL	1437

AM PEAK HOUR	0845-0945
VOLUME	82
PM PEAK HOUR	1815-1915
VOLUME	125

DIRECTION:	WB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	2	14	0	2	18
1:00	1	1	2	0	4
2:00	1	0	2	1	4
3:00	2	0	0	0	2
4:00	1	3	2	0	6
5:00	0	2	3	4	9
6:00	8	6	13	20	47
7:00	8	46	24	16	94
8:00	12	12	26	18	68
9:00	12	16	13	25	66
10:00	22	14	15	15	66
11:00	14	25	32	32	103
12:00	30	12	22	30	94
13:00	25	18	14	24	81
14:00	16	20	24	17	77
15:00	25	16	18	18	77
16:00	20	20	16	28	84
17:00	21	20	16	14	71
18:00	14	16	17	22	69
19:00	29	19	22	15	85
20:00	11	21	20	18	70
21:00	12	11	8	12	43
22:00	11	6	9	6	32
23:00	12	12	4	2	30
				TOTAL	1300

AM PEAK HOUR	1100-1200
VOLUME	103
PM PEAK HOUR	1230-1330
VOLUME	95

TOTAL BI-DIRECTIONAL VOLUME	2737

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: NICHOLSON STREET BETWEEN CULVER BOULEVARD AND PERSHING DRIVE
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	16	21	16	18	71
1:00	6	6	8	4	24
2:00	5	7	6	3	21
3:00	2	4	9	4	19
4:00	4	9	4	12	29
5:00	17	29	34	48	128
6:00	56	100	178	192	526
7:00	299	320	336	300	1255
8:00	318	337	326	296	1277
9:00	280	270	231	202	983
10:00	156	179	144	134	613
11:00	128	118	126	112	484
12:00	124	110	128	102	464
13:00	97	95	126	102	420
14:00	122	116	108	102	448
15:00	126	114	105	136	481
16:00	146	154	154	134	588
17:00	166	161	169	164	660
18:00	138	136	112	136	522
19:00	112	94	74	97	377
20:00	77	53	54	50	234
21:00	51	54	54	40	199
22:00	60	42	47	44	193
23:00	35	22	30	16	103
				TOTAL	10119

AM PEAK HOUR	0730-0830
VOLUME	1291
PM PEAK HOUR	1700-1800
VOLUME	660

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	28	24	28	25	105
1:00	23	15	12	15	65
2:00	12	9	4	9	34
3:00	6	6	5	8	25
4:00	11	11	24	22	68
5:00	22	25	29	28	104
6:00	33	43	40	56	172
7:00	40	35	54	62	191
8:00	62	58	85	56	261
9:00	53	59	51	58	221
10:00	62	64	67	61	254
11:00	75	78	82	76	311
12:00	98	93	100	109	400
13:00	124	104	78	103	409
14:00	92	112	120	112	436
15:00	102	101	122	118	443
16:00	150	178	188	178	694
17:00	225	194	211	212	842
18:00	227	223	237	238	925
19:00	200	224	194	166	784
20:00	168	134	148	110	560
21:00	123	128	100	112	463
22:00	88	77	82	62	309
23:00	60	47	48	44	199
				TOTAL	8275

AM PEAK HOUR	1100-1200
VOLUME	311
PM PEAK HOUR	1800-1900
VOLUME	925

TOTAL BI-DIRECTIONAL VOLUME	18394

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: CULVER BOULEVARD EAST OF NICHOLSON STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	EB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	36	35	29	24	124
1:00	14	13	12	13	52
2:00	13	11	11	7	42
3:00	6	6	13	9	34
4:00	8	13	13	27	61
5:00	31	54	83	108	276
6:00	126	222	334	406	1088
7:00	547	625	590	606	2368
8:00	594	651	524	577	2346
9:00	513	531	448	389	1881
10:00	331	339	306	286	1262
11:00	287	266	256	254	1063
12:00	240	237	260	254	991
13:00	230	248	273	264	1015
14:00	270	258	257	242	1027
15:00	258	259	270	269	1056
16:00	296	326	308	299	1229
17:00	380	388	450	434	1652
18:00	376	424	370	368	1538
19:00	346	344	234	226	1150
20:00	171	158	152	126	607
21:00	139	104	120	104	467
22:00	112	100	90	92	394
23:00	78	55	58	39	230
				TOTAL	21953

AM PEAK HOUR	0730-0830
VOLUME	2441
PM PEAK HOUR	1730-1830
VOLUME	1684

DIRECTION:	WB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	48	42	38	39	167
1:00	24	30	16	20	90
2:00	17	8	11	12	48
3:00	9	5	8	12	34
4:00	15	15	26	26	82
5:00	33	34	46	64	177
6:00	76	78	102	110	366
7:00	98	96	145	160	499
8:00	146	179	192	172	689
9:00	156	140	130	144	570
10:00	150	144	153	153	600
11:00	181	177	192	196	746
12:00	193	226	216	256	891
13:00	224	230	230	241	925
14:00	230	273	294	264	1061
15:00	282	271	336	344	1233
16:00	358	424	470	468	1720
17:00	506	484	504	536	2030
18:00	546	533	574	542	2195
19:00	458	462	392	324	1636
20:00	324	312	264	228	1128
21:00	221	217	201	175	814
22:00	164	135	153	104	556
23:00	107	72	77	64	320
				TOTAL	18577

AM PEAK HOUR	1100-1200
VOLUME	746
PM PEAK HOUR	1800-1900
VOLUME	2195

TOTAL BI-DIRECTIONAL VOLUME	40530

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VISTA DEL MAR SOUTH OF NAPOLEON STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	19	17	10	20	66
1:00	16	12	13	6	47
2:00	5	5	2	2	14
3:00	4	4	3	3	14
4:00	3	4	8	7	22
5:00	17	17	32	61	127
6:00	68	117	144	200	529
7:00	232	256	248	296	1032
8:00	278	330	264	284	1156
9:00	240	222	206	196	864
10:00	154	147	148	142	591
11:00	128	152	126	152	558
12:00	144	126	110	129	509
13:00	134	112	127	116	489
14:00	128	132	145	144	549
15:00	156	146	146	138	586
16:00	140	162	144	141	587
17:00	168	194	197	200	759
18:00	186	201	160	177	724
19:00	129	128	110	108	475
20:00	94	106	55	79	334
21:00	72	60	52	60	244
22:00	62	56	48	52	218
23:00	38	34	42	28	142
				TOTAL	10636

AM PEAK HOUR	0745-0845
VOLUME	1168
PM PEAK HOUR	1730-1830
VOLUME	784

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	29	22	23	25	99
1:00	22	8	11	8	49
2:00	9	10	8	6	33
3:00	3	2	1	5	11
4:00	1	3	2	4	10
5:00	12	8	24	31	75
6:00	44	42	46	59	191
7:00	50	60	72	89	271
8:00	82	97	90	110	379
9:00	76	80	69	27	252
10:00	58	56	72	74	260
11:00	74	74	96	96	340
12:00	82	96	100	110	388
13:00	99	113	124	108	444
14:00	116	156	120	132	524
15:00	150	170	171	195	686
16:00	208	214	206	236	864
17:00	233	300	260	242	1035
18:00	252	218	258	232	960
19:00	280	254	232	216	982
20:00	197	165	134	138	634
21:00	117	97	91	114	419
22:00	98	106	90	81	375
23:00	53	20	46	34	153
				TOTAL	9434

AM PEAK HOUR	0800-0900
VOLUME	379
PM PEAK HOUR	1715-1815
VOLUME	1054

TOTAL BI-DIRECTIONAL VOLUME	20070

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: VISTA DEL MAR BETWEEN PACIFIC AVENUE AND SURF STREET
DATE: THURSDAY JULY 28TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	21	20	15	21	77
1:00	15	15	18	12	60
2:00	10	5	4	0	19
3:00	2	2	8	4	16
4:00	1	2	12	4	19
5:00	22	22	21	68	133
6:00	64	121	140	212	537
7:00	229	259	244	302	1034
8:00	300	320	300	300	1220
9:00	241	200	212	300	953
10:00	159	141	148	149	597
11:00	130	156	122	151	559
12:00	144	130	100	130	504
13:00	132	129	123	121	505
14:00	122	130	140	148	540
15:00	160	141	141	130	572
16:00	129	168	148	140	585
17:00	164	200	200	220	784
18:00	200	200	168	200	768
19:00	121	121	100	104	446
20:00	100	102	52	78	332
21:00	70	62	52	62	246
22:00	64	52	42	52	210
23:00	32	31	44	30	137
				TOTAL	10853

AM PEAK HOUR	0745-0845
VOLUME	1222
PM PEAK HOUR	1715-1815
VOLUME	820

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	30	21	24	25	100
1:00	21	4	14	14	53
2:00	12	8	14	8	42
3:00	8	4	2	2	16
4:00	2	1	4	15	22
5:00	6	14	22	30	72
6:00	48	48	50	62	208
7:00	56	62	78	100	296
8:00	100	100	100	122	422
9:00	77	121	100	62	360
10:00	121	100	79	78	378
11:00	77	70	100	100	347
12:00	100	71	100	121	392
13:00	100	121	121	100	442
14:00	121	156	120	141	538
15:00	162	171	178	200	711
16:00	205	200	200	230	835
17:00	233	302	268	242	1045
18:00	262	220	259	230	971
19:00	301	258	200	200	959
20:00	200	168	130	150	648
21:00	139	100	58	121	418
22:00	121	100	68	68	357
23:00	62	22	42	32	158
				TOTAL	9790

AM PEAK HOUR	0800-0900
VOLUME	422
PM PEAK HOUR	1715-1815
VOLUME	1074

TOTAL BI-DIRECTIONAL VOLUME	20643

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PACIFIC AVENUE NORTH OF CONVOY STREET
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	4	6	6	1	17
1:00	8	0	8	0	16
2:00	2	3	3	2	10
3:00	1	3	2	0	6
4:00	2	5	2	0	9
5:00	4	2	0	4	10
6:00	6	1	6	8	21
7:00	6	6	11	12	35
8:00	17	15	12	10	54
9:00	22	15	22	24	83
10:00	12	18	21	20	71
11:00	20	26	33	24	103
12:00	28	24	26	22	100
13:00	24	26	34	28	112
14:00	40	22	28	26	116
15:00	22	28	26	22	98
16:00	36	30	26	32	124
17:00	40	24	35	24	123
18:00	55	42	38	48	183
19:00	34	41	38	48	161
20:00	28	22	18	14	82
21:00	21	10	17	18	66
22:00	9	8	18	18	53
23:00	9	5	8	6	28
				TOTAL	1681

AM PEAK HOUR	1100-1200
VOLUME	103
PM PEAK HOUR	1800-1900
VOLUME	183

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	5	6	5	4	20
1:00	8	0	3	4	15
2:00	1	0	1	4	6
3:00	0	3	2	0	5
4:00	0	1	2	0	3
5:00	1	0	2	5	8
6:00	8	6	5	9	28
7:00	12	14	9	16	51
8:00	18	18	20	20	76
9:00	16	13	14	20	63
10:00	16	17	13	22	68
11:00	16	28	25	16	85
12:00	16	22	15	18	71
13:00	17	28	20	21	86
14:00	15	16	17	19	67
15:00	30	22	20	22	94
16:00	24	18	18	27	87
17:00	26	21	26	16	89
18:00	21	25	27	28	101
19:00	28	18	24	23	93
20:00	40	24	20	17	101
21:00	12	4	6	15	37
22:00	5	6	10	10	31
23:00	4	4	10	2	20
				TOTAL	1305

AM PEAK HOUR	1045-1145
VOLUME	91
PM PEAK HOUR	1930-2030
VOLUME	111

TOTAL BI-DIRECTIONAL VOLUME	2986

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

24-HOUR ADT COUNT SUMMARY

CLIENT: KAKU ASSOCIATES
PROJECT: VENICE PUMPING PLANT DUAL FORCE MAIN PROJECT
LOCATION: PACIFIC AVENUE BETWEEN 63rd AVENUE AND 64th AVENUE
DATE: TUESDAY JULY 26TH, 2005

DIRECTION:	NB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	3	1	1	2	7
1:00	2	0	4	0	6
2:00	0	2	1	2	5
3:00	1	2	1	0	4
4:00	1	2	1	0	4
5:00	0	0	0	2	2
6:00	3	1	3	5	12
7:00	3	1	6	3	13
8:00	6	9	6	3	24
9:00	10	3	13	7	33
10:00	10	10	9	14	43
11:00	10	16	11	16	53
12:00	6	9	12	7	34
13:00	6	12	12	11	41
14:00	8	14	14	14	50
15:00	15	12	6	14	47
16:00	9	6	12	16	43
17:00	17	17	14	10	58
18:00	20	20	12	21	73
19:00	8	18	14	20	60
20:00	9	16	6	8	39
21:00	6	6	3	6	21
22:00	6	2	13	12	33
23:00	3	3	5	3	14
				TOTAL	719

AM PEAK HOUR	1100-1200
VOLUME	53
PM PEAK HOUR	1800-1900
VOLUME	73

DIRECTION:	SB				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
0:00	1	3	1	1	6
1:00	0	0	0	0	0
2:00	0	0	0	2	2
3:00	1	2	1	0	4
4:00	0	2	1	1	4
5:00	0	0	1	2	3
6:00	3	3	1	6	13
7:00	2	4	2	7	15
8:00	9	14	4	6	33
9:00	7	4	4	6	21
10:00	6	4	8	10	28
11:00	6	14	6	4	30
12:00	12	10	9	10	41
13:00	4	7	2	7	20
14:00	4	8	6	12	30
15:00	4	10	3	9	26
16:00	10	6	7	12	35
17:00	12	10	6	10	38
18:00	6	12	15	10	43
19:00	7	8	6	8	29
20:00	8	12	10	7	37
21:00	4	2	5	2	13
22:00	6	6	5	4	21
23:00	3	1	3	0	7
				TOTAL	499

AM PEAK HOUR	1030-1130
VOLUME	38
PM PEAK HOUR	1815-1915
VOLUME	44

TOTAL BI-DIRECTIONAL VOLUME	1218

APPENDIX E-2

EXISTING STREET CHARACTERISTICS, BIKEWAYS AND ON-STREET PARKING SUPPLY

APPENDIX E-2-1

EXISTING SURFACE STREET CHARACTERISTICS

Segment	From	To	Functional Classification	Lane		Median Type	Parking Restrictions		Speed Limit
				NB/EB	SB/WB		NB/EB	SB/WB	
Speedway Ave	Fleet St	Galleon St	Local	1	n/a	UD	NSAT	NSAT	15
	Privateer St	Quarterdeck St.	Local	1	n/a	UD	NSAT	NSAT	15
	Westwind St	Yawl St	Local	1	n/a	UD	NSAT	NSAT	15
Pacific Ave	Fleet St	Galleon St	Local	1	1	SDY	PA	NPAT	30
	Privateer St	Quarterdeck St	Local	1	1	SDY	PA	NPAT	30
	Westwind St	Yawl St	Local	1	1	SDY	PA	NPAT	30
Pacific Ave	North of Convoy St		Local	1	1	UD	PA	PA	25
	63rd Ave and 64th Ave		Local	1	1	UD	PA	PA	25
Roma Court	Lighthouse Mall	Outrigger Mall	Local	1	1	UD	NPAT	NPAT	15
Via Donte	Union Jack Mall	Voyage Mall	Local	1	1	UD	PA	PA	15
Via Marina	East of Pacific Ave		Collector	1	1	SDY	PA	NSAT	30
	North of Marquesas Way		Secondary	3	3	RM	NPAT	NPAT	30
	South of Tahiti Way		Secondary	2	2	RM	NSAT	NSAT	30
	North of Harbor Lane		Secondary	2	2	RM	NSAT	NSAT	30
Via Dolce	North of Marquesas Way		Secondary	2	2	2LT	PA	PA	30
	Privateer St	Quarterdeck St	Collector	1	1	SDY	PA	PA	25
Marquesas Way	Via Dolce	Via Marina	Secondary	2	2	2LT	PA	PA	35
Pershing Dr	South of Westchester Parkway		Major Hwy Class II	3	3	DY/2LT/RM	NPAT	NPAT	55
	Culver Blvd	Nicholson St	Local	1	1	DY	PA	PA	25
Cabora Drive	Culver Blvd	Pershing Dr	Local	1	1	DY	NPAT	NPAT	25
Culver Blvd	East of Nicholson St		Secondary	2	2	DY	NSAT	NSAT	35
Vista del Mar	South of Napoleon St		Major Hwy Class II	2	2	DY	PA/NP 10pm-6am	PA/NP 10pm-6am	35
	Pacific Ave	Surf St	Major Hwy Class II	2	2	DY	NSAT	NSAT	35

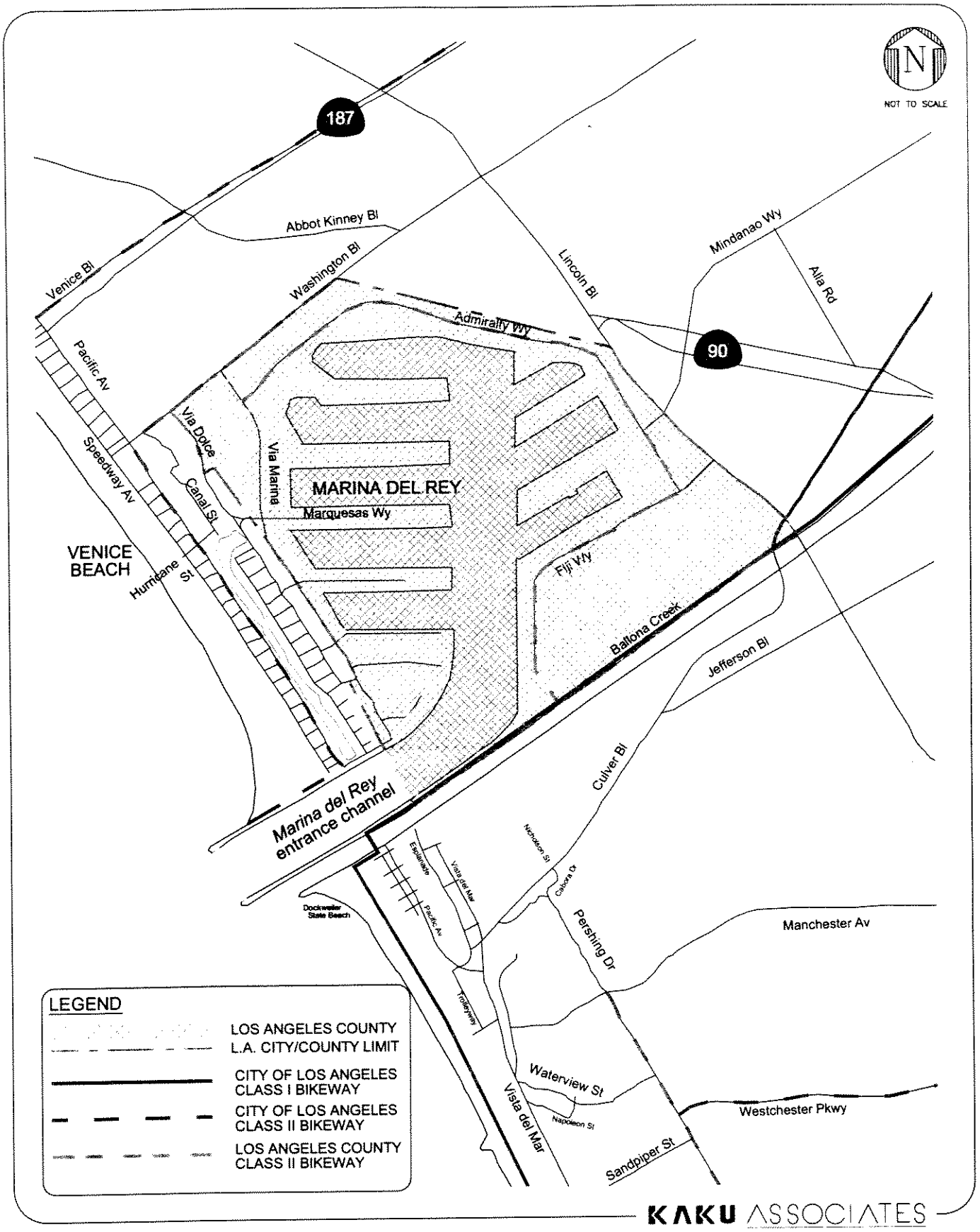
Notes:

Median Type:
- DY = Double Yellow Centerline
- SDY = Single Dashed Yellow Centerline
- 2LT = Dual Left Turn Centerline
- RM = Raised Median
- UD = Undivided Lane

Speed Limit: miles per hour

Parking: PA = Parking Allowed
- NSAT = No Stopping Anytime
- GZ = Green zone - Passenger loading and unloading
- RZ = Red zone - No parking allowed

Lanes: # = Number of lanes



APPENDIX E-2-2
EXISTING BIKEWAYS

APPENDIX E-2-3
EXISTING ON-STREET PARKING SUPPLY IN STUDY AREA

Street	From	To	Approximate Distance (feet)	Number of Parking Spaces*	
				SB/WB	NB/EB
Speedway	Venice Bl North	Via Marina	--	0	0
North Pacific Av	Via Marina	Westwind St	500	10	0
	Westwind St	Union Jack St	500	6	0
	Union Jack St	Reef St	740	21	0
	Reef St	Outrigger St	740	24	0
	Outrigger St	Lighthouse St	740	20	0
	Lighthouse St	Jib St	500	12	0
	Jib St	Hurricane St	500	17	0
	Hurricane St	Fleet St	500	10	0
	Fleet St	Driftwood St	500	13	0
	Driftwood St	Catamaran St	210	5	
	Catamaran St	Washington Bl	690	13	26
	Washington Bl	29th Av	500	6	
	29th Av	27th Av	500	6	
	27th Av	25th Av	500	7	
	25th Av	Venice Bl South	740	11	70
Via Dolce	Via Donte	Spinnaker Ct	500	11	19
	Spinnaker Ct	Quarterdeck Ct	500	8	
	Quarterdeck Ct	Northstar Ct	690	29	31
	Northstar Ct	Lighthouse Ct	500	11	
	Lighthouse Ct	Roma Ct	370	7	
	Roma Ct	Marquesas Wy	630	7	37
	Marquesas Wy	Washington Bl	1,850	51	61
Strongs Dr	Washington Bl	Driftwood St	1,050	21	37
Hurricane St	Esplanade	Pacific Av	420	17	10
	Pacific Av	Ocean Front Walk	320	11	5
Washington Bl	Ocean Front Walk	Pacific Av	500	22	28
	Pacific Av	Via Dolce	780	13	15
	Via Dolce	Via Marina	900	18	20
Via Marina	Washington Bl	Channel Walk	--	0	0
	Channel Walk	Pacific Av	800	0	60
Culver Bl	Jefferson Bl	Nicholson St	--	0	0
	Nicholson St	Pershing Dr	1,160	22	10
	Pershing Dr	Esplanade	500	3	5
	Esplanade	street end	500	5	1

APPENDIX E-2-3 (Continued)
EXISTING ON-STREET PARKING SUPPLY IN STUDY AREA

Street	From	To	Approximate Distance (feet)	Number of Parking Spaces*	
				SB/WB	NB/EB
Vista del Mar	63rd Av	66th Av	630	9	8
	66th Av	Argonaut St	680	9	8
	Argonaut St	Culver Bl	260	2	3
Culver Pl	Vista del Mar	Culver Bl	--	2	0
Esplanade	Culver Bl	Convoy St	200	4	5
	Convoy St	63rd St	1,470	5	13
South Pacific Av	62nd Av	64th Av	500	9	0
	64th Av	66th Av	500	8	13
	66th Av	Culver Bl	1,150	37	39
Trolleyway	Culver Bl	Surf St	950	0	32
Waterview	Vista del Mar	Whitlock	500	11	10
	Whitlock	Ringe Av	500	16	3
Napoleon St	Vista del Mar	Ringe Av	680	9	28
Vista del Mar	Waterview	Napoleon St	370	9	1
Pershing Dr	Culver Bl	Cabora Dr	900	16	19
	Cabora Dr	Fowling St	500	11	12
	Fowling St	Sunridge St	500	21	10
	Sunridge St	Manchester Av	740	4	18

Note:

*Where parking stalls were not marked, the number of parking spaces was estimated by measuring the distance and dividing by 22.5 feet per space.

APPENDIX E-3

LEVEL OF SERVICE DEFINITIONS

APPENDIX E-3-1
ROADWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE	DEFINITION	DESCRIPTION
A	$V/C \leq 0.6$	Describes primarily free flow operations at average travel speeds usually about 90% of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	$0.6 < V/C \leq 0.7$	Represents reasonably unimpeded operations at average travel speeds usually about 70% of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome.
C	$0.7 < V/C \leq 0.8$	Represents stable operations, however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50% of the average free flow speed for the arterial class.
D	$0.8 < V/C \leq 0.9$	Borders on a range on which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40% of free flow speed.
E	$0.9 < V/C \leq 1.0$	Is characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	$V/C > 1.0$	Characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

Source: Urban and Suburban Arterials", Highway Capacity Manual, Transportation Research Board (1985).

APPENDIX E-3-2
LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	VOLUME/CAPACITY RATIO (V/C)	DEFINITION
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	$> 0.600 \leq 0.700$	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	$> 0.700 \leq 0.800$	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	$> 0.800 \leq 0.900$	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	$> 0.900 \leq 1.000$	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: Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway C*

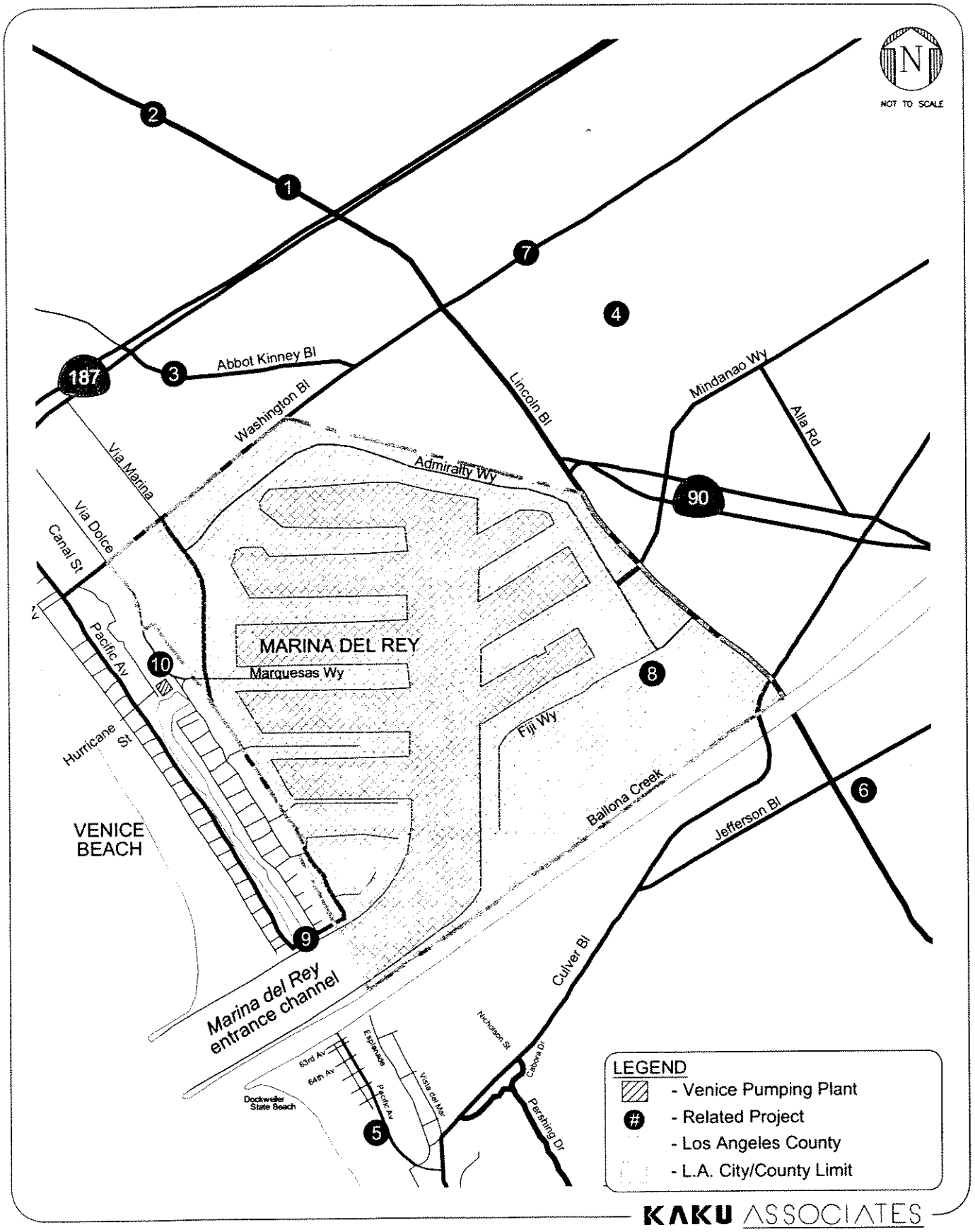
APPENDIX E-3-3
LEVEL OF SERVICE DEFINITIONS FOR
STOP-CONTROLLED INTERSECTIONS

Level of Service	Average Total Delay (seconds/vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

Source: Transportation Research Board, *Highway Capacity Manual, Special Report 209, 2000.*

APPENDIX E-4

LOCATION OF RELATED PROJECTS AND TRIP GENERATION ESTIMATES



KAKU ASSOCIATES

APPENDIX E-4-1
LOCATION OF RELATED PROJECTS

APPENDIX E-4-2
TRIP GENERATION ESTIMATES FOR RELATED PROJECTS

Index	Project Name	Project Description	City	Project Location	Daily Trips	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
1	Gas Station / Mini Market [a]	0.72 ksf mini market w/ 6 fueling stations	Los Angeles	2005 Lincoln Bl	1,953	61	61	121	81	81	161
2	Apartments & Retail [a]	197 ksf retail and 280-unit apartment	Los Angeles	1430 Lincoln Bl	7,251	86	167	253	323	265	588
3	General Commercial Office [a]	Renovate existing manufacturing building into 15.180 ksf general commercial office with 36 parking spaces	Los Angeles	2100 Abbot Kinney Bl (at Victoria Av)	122	13	2	15	6	27	33
4	Condominiums [a]	Construct 118 dwelling unit condominiums	Los Angeles	4155 Redwood Av	575	5	25	30	40	19	59
5	Townhouse, Specialty Retail & Restaurant [a]	Mixed use with 35-du townhouse, 2 ksf special retail and 2 ksf restaurant	Los Angeles	6719 Pacific Av	548	15	25	40	34	22	56
6	Playa Vista Phase I [b]	3,246 residential units, 2,077 ksf office space, 35 ksf of retail space, 1,129.9 ksf of production and staging support uses and 120 ksf of community serving uses	Los Angeles	Jefferson Bl	29,447	2,579	246	2,825	796	2,359	3,155
7	Commercial Retail Development [b]	Two-story 4,257 sf commercial building	Culver City	13322 Washington Bl	896	15	9	24	38	41	79
8	Marina del Rey Development [b]	Development incorporated in Local Coastal Plan	County of Los Angeles	Marina del Rey	N/A	785	1,625	2,410	1,096	1,277	2,373
9	Tide Gates [c]	Tide Gates Rehabilitation	County of Los Angeles	Marina del Rey	N/A	N/A			N/A		
10	Venice Pumping Plant Sluice Gate Replacement [d]	Wastewater collection system rehabilitation project, involving temporarily bypassing the Venice Sewage Pumping Plant while the existing sluice gate within it is replaced. Sewer pumps and an above-ground bypass pipeline would be temporarily installed along the Grand Canal Esplanade between Driftwood Street and Hurricane Street to conduct the diversion.	Los Angeles	North of Grand Canal	N/A	N/A			N/A		
	Total				**40,792**	**2,774**	**535**	**3,308**	**1,318**	**2,814**	**4,131**

Sources:

[a] Trip generation estimates were provided by LADOT (including daily trips and total peak hour trips), June 23, 2005. Directional distribution is based on ITE *Trip Generation, 7th Edition*.

[b] Source of trip generation estimates: *Traffic Impact Study for the Symantec Office Development Project,* Kaku Associates, June 2004

[c] Source: County of Los Angeles, Department of Public Works. Trip generation for this project would be negligible during both construction and operations.

[d] Source: *Mitigated Negative Declaration and Initial Study for the Venice Pumping Plant Sluice Gate Replacement*, City of Los Angeles & Los Angeles County Bureau of Engineering, November 10, 2005. This project would not coincide with the proposed Venice Pumping Plant Dual Force Main Project. Trip generation estimates for this project would be negligible during both construction phase and operations.

APPENDIX E-5

BASELINE INTERSECTION IMPROVEMENTS

APPENDIX E-5
BASELINE INTERSECTION BASE IMPROVEMENTS

Intersection	Approach	Improvement [a]	Source [b]
CITY OF LOS ANGELES			
CULVER BL/JEFFERSON BL			1
Culver Bl	Northbound	Add second RT lane.	
CULVER BL/MARINA EXPWY EB RAMPS			1,2
Culver Bl	Southbound	Add third TH lane.	
	Northbound	Restripe shared TH and RT lane to TH lane, add RT lane	
Marina Expwy EB ramps	Eastbound	Restripe TH lane to shared LT and TH lane.	
CULVER BL/MARINA EXPWY WB RAMPS			1,2
Culver Bl	Southbound	Restripe shared RT lane to shared TH and RT lane.	
Marina Expwy WB ramps	Westbound	Restripe TH lane to shared TH and LT lane.	
CULVER BL/VISTA DEL MAR			1
Culver Bl	Southbound	Add LT lane.	
CULVER BL (SOUTHEAST)/LINCOLN BL RAMP			1
Lincoln Bl Ramp	Northbound	Add RT lane.	
Culver Bl (Southeast)	Eastbound	Add TH lane, add RT lane.	
	Westbound	Add TH lane, add LT lane.	
JEFFERSON BL/LINCOLN BL			1,2
Lincoln Bl	Southbound	Restripe RT lane to shared RT and TH lane.	
	Northbound	Add shared RT and TH lane.	
Jefferson Bl	Westbound	Add second RT lane.	
JEFFERSON BL/PLAYA VISTA ST			1
Playa Vista St	Southbound	Add RT lane, add two TH lanes, add LT lane.	
	Northbound	Add LT lane, add TH lane, add shared RT and TH lane.	
Jefferson Bl	Eastbound	Add LT lane, add three TH lanes, add shared RT and TH lane.	
	Westbound	Add LT lane, add three TH lanes, add shared RT and TH lane.	
MARINA EXPWY EB RAMPS/MINDANAO WY			1,2
Mindanao Way	Southbound	Add second LT lane.	
MARINA EXPWY WB RAMPS/MINDANAO WY			1,2
Mindanao Way	Southbound	Restripe shared RT and TH lane to TH lane, add third TH lane, add RT lane.	
	Northbound	Remove LT lane, restripe TH lane to shared LT and TH lane.	
COUNTY OF LOS ANGELES			
FIJI WAY/LINCOLN BL			3
Lincoln Bl	Northbound	Restripe shared RT and TH lane to TH lane, add	
LINCOLN BL/MINDANAO WAY			1,2
Lincoln Bl	Northbound	Add fourth TH lane.	

Notes:

[a] TH is a through lane, LT is a left-turn lane, RT is a right-turn lane.

[b] Improvements listed are from the following sources, unless otherwise noted, the documents:

1. Playa Vista First Phase Project
2. California Department of Transportation (CALTRANS)
3. Los Angeles Department of Transportation files

APPENDIX E-6-1

EXISTING ROADWAY PEAK HOUR TRAFFIC VOLUMES AND LEVEL OF SERVICE ANALYSIS

APPENDIX E-6-1
EXISTING STUDY ROADWAY SEGMENT VOLUMES AND LEVELS OF SERVICE

				EXISTING (2005) PEAK HOUR TRAFFIC VOLUMES				EXISTING ROADWAY CAPACITY					EXISTING ROADWAY PEAK HOUR LEVEL OF SERVICE							
				NB/WB		SB/EB			NB/WB		SB/EB		NB/EB				SB/EB			
													AM		PM		AM		PM	
Segment #	Location	From	To	AM	PM	AM	PM	Roadway Class.	No. of Lanes	Capacity	No. of Lanes	Capacity	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Speedway Av	Fleet St	Galleon St	63	69	0	0	L	1	600	--	--	0.105	A	0.115	A	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	66	84	0	0	L	1	600	--	--	0.110	A	0.140	A	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	21	22	0	0	L	1	600	--	--	0.035	A	0.037	A	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	270	199	228	366	S	1	750	1	750	0.360	A	0.265	A	0.304	A	0.488	A
5	Pacific Av	Privateer St	Quarterdeck St	123	127	160	253	S	1	750	1	750	0.164	A	0.169	A	0.213	A	0.337	A
6	Pacific Av	Westwind St	Yawl St	113	136	103	187	S	1	750	1	750	0.151	A	0.181	A	0.137	A	0.249	A
7	Roma Court	Lighthouse Mall	Outrigger Mall	42	38	0	0	L	1	600	1	600	0.070	A	0.063	A	0.000	A	0.000	A
8	Via Donte	Voyage Mall	Westwind Mall	41	62	0	0	L	1	600	1	600	0.068	A	0.103	A	0.000	A	0.000	A
9	Via Marina	East of Pacific Av		122	161	102	207	C	1	650	1	650	0.188	A	0.248	A	0.157	A	0.318	A
10	Via Dolce	North of Marquesas Wy		212	133	103	252	S	2	1,500	2	1,500	0.141	A	0.089	A	0.069	A	0.168	A
11	Via Dolce	Privateer St	Quarterdeck St	50	41	58	62	C	1	650	1	650	0.077	A	0.063	A	0.089	A	0.095	A
12	Marquesas Way	Via Dolce	Via Marina	117	91	154	172	S	2	1,500	2	1,500	0.078	A	0.061	A	0.103	A	0.115	A
13	Via Marina	North of Marquesas Wy		880	639	487	842	S	3	2,250	3	2,250	0.391	A	0.284	A	0.216	A	0.374	A
14	Via Marina	South of Tahiti Wy		531	410	268	1,096	S	2	1,500	2	1,500	0.354	A	0.273	A	0.179	A	0.731	C
15	Via Marina	North of Harbor Ln		117	188	132	154	S	2	1,500	2	1,500	0.078	A	0.125	A	0.088	A	0.103	A
16	Pershing Dr	South of Westchester Pkwy		1,102	835	670	653	HWY II	3	2,400	3	2,400	0.459	A	0.348	A	0.279	A	0.272	A
17	Pershing Dr	Culver Bl	Nicholson St	103	95	82	125	L	1	600	1	600	0.172	A	0.158	A	0.137	A	0.208	A
18	Nicholson St	Culver Bl	Pershing Dr	1,291	660	311	925	L	1	600	1	600	2.152	F	1.100	F	0.518	A	1.542	F
19	Culver Blvd	East of Nicholson St		746	2,195	2,441	1,684	S	2	1,500	2	1,500	0.497	A	1.463	F	1.627	F	1.123	F
20	Vista del Mar	South of Napoleon St		1,168	784	379	1,054	HWY II	2	1,600	2	1,600	0.730	C	0.490	A	0.237	A	0.659	B
21	Vista del Mar	Pacific Av	Surf St	1,222	820	422	1,074	HWY II	2	1,600	2	1,600	0.764	C	0.513	A	0.264	A	0.671	B
22	Pacific Av	North of Convoy St		103	183	91	111	L	1	600	1	600	0.172	A	0.305	A	0.152	A	0.185	A
23	Pacific Av	63rd Av	64th Av	53	73	38	44	L	1	600	1	600	0.088	A	0.122	A	0.063	A	0.073	A

Source: Kaku Associates, Inc
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-6-2

CUMULATIVE BASE ROADWAY PEAK HOUR TRAFFIC VOLUMES AND LEVEL OF SERVICE ANALASIS

APPENDIX E-6-2

FUTURE (YEAR 2011) CUMULATIVE BASE STUDY ROADWAY SEGMENT VOLUMES AND LEVEL OF SERVICE ANALYSIS

				FUTURE CUMULATIVE BASE PEAK HOUR TRAFFIC VOLUMES				FUTURE CUMULATIVE BASE ROADWAY CAPACITY					DIRECTION							
													NB/EB				SB/EB			
				NB/WB		SB/EB			NB/WB		SB/EB		AM		PM		AM		PM	
Segment #	Location	From	To	AM	PM	AM	PM	Roadway Class.	No. of Lanes	Capacity	No. of Lanes	Capacity	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	L	1	600	--	--	0.112	A	0.122	A	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	L	1	600	--	--	0.117	A	0.148	A	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	L	1	600	--	--	0.037	A	0.038	A	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	S	1	750	1	750	0.381	A	0.281	A	0.323	A	0.517	A
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	S	1	750	1	750	0.173	A	0.180	A	0.227	A	0.357	A
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	S	1	750	1	750	0.160	A	0.192	A	0.145	A	0.264	A
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	L	1	600	1	600	0.075	A	0.067	A	0.000	A	0.000	A
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	L	1	600	1	600	0.072	A	0.110	A	0.000	A	0.000	A
9	Via Marina	East of Pacific Av		129	171	108	219	C	1	650	1	650	0.198	A	0.263	A	0.166	A	0.337	A
10	Via Dolce	North of Marquesas		225	141	109	267	S	2	1,500	2	1,500	0.150	A	0.094	A	0.073	A	0.178	A
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	C	1	650	1	650	0.082	A	0.066	A	0.094	A	0.102	A
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	S	2	1,500	2	1,500	0.083	A	0.064	A	0.109	A	0.121	A
13	Via Marina	North of Marquesas		933	677	516	893	S	3	2,250	3	2,250	0.415	A	0.301	A	0.229	A	0.397	A
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	S	2	1,500	2	1,500	0.375	A	0.290	A	0.189	A	0.775	C
15	Via Marina	North of Harbor Ln		124	199	140	163	S	2	1,500	2	1,500	0.083	A	0.133	A	0.093	A	0.109	A
16	Pershing Dr	South of Westchester		1,184	918	732	718	HWY II	3	2,400	3	2,400	0.493	A	0.383	A	0.305	A	0.299	A
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	L	1	600	1	600	0.250	A	0.218	A	0.220	A	0.280	A
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	L	1	600	1	600	2.307	F	1.222	F	0.587	A	1.678	F
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	S	2	1,500	2	1,500	0.577	A	1.582	F	1.772	F	1.228	F
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	HWY II	2	1,600	2	1,600	0.799	C	0.569	A	0.292	A	0.739	C
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	HWY II	2	1,600	2	1,600	0.823	D	0.569	A	0.300	A	0.732	C
22	Pacific Av	North of Convoy St		124	219	130	140	L	1	600	1	600	0.207	A	0.365	A	0.217	A	0.233	A
23	Pacific Av	63rd Av	64th Av	56	77	40	47	L	1	600	1	600	0.093	A	0.128	A	0.067	A	0.078	A

Source: Kaku Associates

HWYII = Major Hwy Class II

S = Secondary

C = Collector

L = Local

APPENDIX E-6-3

PROJECT ONLY AND FUTURE WITH PROJECT ROADWAY PEAK HOUR TRAFFIC VOLUMES

APPENDIX E-6-3A
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
MARQUESAS WAY/VIA MARINA - SOUTH PACIFIC AVENUE

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	0	23	23	0	286	234	265	388
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	23	0	0	23	147	96	163	205
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	46	46	0	933	723	562	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	45	45	0	563	480	329	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	45	45	0	124	244	185	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	2	0	0	2	1,186	918	732	720
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	25	0	0	25	175	131	132	193
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	25	0	0	25	890	2,373	2,658	1,867
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	11	0	0	11	1,290	911	467	1,193
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	14	0	0	14	1,330	910	480	1,185
22	Pacific Av	North of Convoy St		124	219	130	140	45	0	0	45	169	219	130	185
23	Pacific Av	63rd Av	64th Av	56	77	40	47	45	0	0	45	101	77	40	92

APPENDIX E-6-31
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
VPP TO LAX SHAFT VIA DOCKWEILER BEACH

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	9	62	62	9	295	273	304	397
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	0	0	0	933	677	516	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	0	0	0	563	435	284	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	0	0	0	124	199	140	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	0	0	0	0	1,184	918	732	718
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	16	3	3	16	166	134	135	184
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	16	3	3	16	881	2,376	2,661	1,858
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	15	20	20	15	1,294	931	487	1,197
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	3	16	16	3	1,319	926	496	1,174
22	Pacific Av	North of Convoy St		124	219	130	140	0	0	0	0	124	219	130	140
23	Pacific Av	63rd Av	64th Av	56	77	40	47	0	0	0	0	56	77	40	47

APPENDIX E-6-3C
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH PACIFIC AVENUE

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av [a]	Privateer St	Quarterdeck St	70	89	0	0	130	155	0	0	200	244	0	0
3	Speedway Av [a]	Westwind St	Yawl St	22	23	0	0	120	164	0	0	142	187	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	0	20	20	0	286	231	262	388
5	Pacific Av [a]	Privateer St	Quarterdeck St	130	135	170	268	-130	-135	20	0	0	0	190	268
6	Pacific Av [a]	Westwind St	Yawl St	120	144	109	198	-120	-144	20	0	0	0	129	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	25	0	0	25	154	171	108	244
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	26	26	0	933	703	542	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	25	25	0	563	460	309	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	25	25	0	124	224	165	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	2	0	0	2	1,186	918	732	720
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	25	0	0	25	175	131	132	193
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	25	0	0	25	890	2,373	2,658	1,867
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	11	0	0	11	1,290	911	467	1,193
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	14	0	0	14	1,330	910	480	1,185
22	Pacific Av	North of Convoy St		124	219	130	140	45	0	0	45	169	219	130	185
23	Pacific Av	63rd Av	64th Av	56	77	40	47	45	0	0	45	101	77	40	92

NOTE:

[a] Analysis assumes NB traffic (including project traffic) on Pacific Avenue to be detoured to Speedway.

APPENDIX E-6-3D
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH DOCKWEILER BEACH

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av [a]	Privateer St	Quarterdeck St	70	89	0	0	130	155	0	0	200	244	0	0
3	Speedway Av [a]	Westwind St	Yawl St	22	23	0	0	120	164	0	0	142	187	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	0	20	20	0	286	231	262	388
5	Pacific Av [a]	Privateer St	Quarterdeck St	130	135	170	268	-130	-135	20	0	0	0	190	268
6	Pacific Av [a]	Westwind St	Yawl St	120	144	109	198	-120	-144	20	0	0	0	129	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	25	0	0	25	154	171	108	244
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	26	26	0	933	703	542	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	25	25	0	563	460	309	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	25	25	0	124	224	165	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	2	0	0	2	1,186	918	732	720
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	25	0	0	25	175	131	132	193
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	25	0	0	25	890	2,373	2,658	1,867
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	11	0	0	11	1,290	911	467	1,193
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	14	0	0	14	1,330	910	480	1,185
22	Pacific Av	North of Convoy St		124	219	130	140	45	0	0	45	169	219	130	185
23	Pacific Av	63rd Av	64th Av	56	77	40	47	45	0	0	45	101	77	40	92

NOTE:

[a] Analysis assumes NB traffic (including project traffic) on Pacific Avenue to be detoured to Speedway

APPENDIX E-6-3E
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH PACIFIC AVENUE

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	N Pacific Av	Fleet St	Galleon St	286	211	242	388	0	19	19	0	286	230	261	388
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	19	19	0	130	154	189	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	19	19	0	120	163	128	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	26	0	0	26	155	171	108	245
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	26	26	0	933	703	542	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	26	26	0	563	461	310	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	26	26	0	124	225	166	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	2	0	0	2	1,186	918	732	720
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	25	0	0	25	175	131	132	193
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	25	0	0	25	890	2,373	2,658	1,867
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	11	0	0	11	1,290	911	467	1,193
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	14	0	0	14	1,330	910	480	1,185
22	Pacific Av	North of Convoy St		124	219	130	140	45	0	0	45	169	219	130	185
23	Pacific Av	63rd Av	64th Av	56	77	40	47	45	0	0	45	101	77	40	92

APPENDIX E-6-3F
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH DOCKWEILER BEACH

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	0	19	19	0	286	230	261	388
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	19	19	0	130	154	189	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	19	19	0	120	163	128	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	26	0	0	26	155	171	108	245
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	26	26	0	933	703	542	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	26	26	0	563	461	310	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	26	26	0	124	225	166	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	2	0	0	2	1,186	918	732	720
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	25	0	0	25	175	131	132	193
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	25	0	0	25	890	2,373	2,658	1,867
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	11	0	0	11	1,290	911	467	1,193
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	14	0	0	14	1,330	910	480	1,185
22	Pacific Av	North of Convoy St		124	219	130	140	45	0	0	45	169	219	130	185
23	Pacific Av	63rd Av	64th Av	56	77	40	47	45	0	0	45	101	77	40	92

APPENDIX E-6-3G
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	9	62	62	9	295	273	304	397
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	0	0	0	933	677	516	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	0	0	0	563	435	284	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	0	0	0	124	199	140	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	3	0	0	3	1,187	918	732	721
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	30	3	3	30	180	134	135	198
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	30	3	3	30	895	2,376	2,661	1,872
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	21	5	5	21	1,300	916	472	1,203
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	3	30	30	3	1,319	940	510	1,174
22	Pacific Av	North of Convoy St		124	219	130	140	0	0	0	0	124	219	130	140
23	Pacific Av	63rd Av	64th Av	56	77	40	47	0	0	0	0	56	77	40	47

APPENDIX E-6-3H
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH SHAFT TO LAX SHAFT

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	9	62	62	9	295	273	304	397
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	0	0	0	933	677	516	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	0	0	0	563	435	284	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	0	0	0	124	199	140	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	0	0	0	0	1,184	918	732	718
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	16	3	3	16	166	134	135	184
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	16	3	3	16	881	2,376	2,661	1,858
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	15	20	20	15	1,294	931	487	1,197
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	3	16	16	3	1,319	926	496	1,174
22	Pacific Av	North of Convoy St		124	219	130	140	0	0	0	0	124	219	130	140
23	Pacific Av	63rd Av	64th Av	56	77	40	47	0	0	0	0	56	77	40	47

APPENDIX E-6-31

FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES

VPP TO LAX SHAFT VIA DOCKWEILER BEACH

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	9	62	62	9	295	273	304	397
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	0	0	0	933	677	516	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	0	0	0	563	435	284	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	0	0	0	124	199	140	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	0	0	0	0	1,184	918	732	718
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	16	3	3	16	166	134	135	184
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	16	3	3	16	881	2,376	2,661	1,858
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	15	20	20	15	1,294	931	487	1,197
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	3	16	16	3	1,319	926	496	1,174
22	Pacific Av	North of Convoy St		124	219	130	140	0	0	0	0	124	219	130	140
23	Pacific Av	63rd Av	64th Av	56	77	40	47	0	0	0	0	56	77	40	47

APPENDIX E-6-3J
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR TRAFFIC VOLUMES
VPP TO LAX SHAFT VIA INLAND

				CUMULATIVE BASE				PROJECT CONSTRUCTION				CUMULATIVE PLUS PROJECT			
				DIRECTION				DIRECTION				DIRECTION			
				NB/WB		SB/EB		NB/WB		SB/EB		NB/WB		SB/EB	
Segment #	LOCATION	FROM	TO	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Speedway Av	Fleet St	Galleon St	67	73	0	0	0	0	0	0	67	73	0	0
2	Speedway Av	Privateer St	Quarterdeck St	70	89	0	0	0	0	0	0	70	89	0	0
3	Speedway Av	Westwind St	Yawl St	22	23	0	0	0	0	0	0	22	23	0	0
4	Pacific Av	Fleet St	Galleon St	286	211	242	388	9	62	62	9	295	273	304	397
5	Pacific Av	Privateer St	Quarterdeck St	130	135	170	268	0	0	0	0	130	135	170	268
6	Pacific Av	Westwind St	Yawl St	120	144	109	198	0	0	0	0	120	144	109	198
7	Roma Court	Lighthouse Mall	Outrigger Mall	45	40	0	0	0	0	0	0	45	40	0	0
8	Via Donte	Voyage Mall	Westwind Mall	43	66	0	0	0	0	0	0	43	66	0	0
9	Via Marina	East of Pacific Av		129	171	108	219	0	0	0	0	129	171	108	219
10	Via Dolce	North of Marquesas Wy		225	141	109	267	0	0	0	0	225	141	109	267
11	Via Dolce	Privateer St	Quarterdeck St	53	43	61	66	0	0	0	0	53	43	61	66
12	Marquesas Way	Via Dolce	Via Marina	124	96	163	182	0	0	0	0	124	96	163	182
13	Via Marina	North of Marquesas Wy		933	677	516	893	0	0	0	0	933	677	516	893
14	Via Marina	South of Tahiti Wy		563	435	284	1,162	0	0	0	0	563	435	284	1,162
15	Via Marina	North of Harbor Ln		124	199	140	163	0	0	0	0	124	199	140	163
16	Pershing Dr	South of Westchester Pkwy		1,184	918	732	718	0	0	0	0	1,184	918	732	718
17	Pershing Dr	Culver Bl	Nicholson St	150	131	132	168	16	3	3	16	166	134	135	184
18	Nicholson St	Culver Bl	Pershing Dr	1,384	733	352	1,007	0	0	0	0	1,384	733	352	1,007
19	Culver Blvd	East of Nicholson St		865	2,373	2,658	1,842	16	3	3	16	881	2,376	2,661	1,858
20	Vista del Mar	South of Napoleon St		1,279	911	467	1,182	15	20	20	15	1,294	931	487	1,197
21	Vista del Mar	Pacific Av	Surf St	1,316	910	480	1,171	3	16	16	3	1,319	926	496	1,174
22	Pacific Av	North of Convoy St		124	219	130	140	0	0	0	0	124	219	130	140
23	Pacific Av	63rd Av	64th Av	56	77	40	47	0	0	0	0	56	77	40	47

APPENDIX E-6-4

FUTURE ROADWAY PEAK HOUR TRAFFIC LEVEL OF SERVICE ANALAYSIS

APPENDIX E-6-4A
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
MARQUESAS WAY/VIA MARINA - SOUTH PACIFIC AVENUE

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.112	A	0.122	A	--	--	--	--	0.007	NO	0.007	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.117	A	0.148	A	--	--	--	--	0.007	NO	0.008	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.037	A	0.038	A	--	--	--	--	0.002	NO	0.002	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.381	A	0.312	A	0.353	A	0.517	A	0.021	NO	0.047	NO	0.049	NO	0.029	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.173	A	0.180	A	0.227	A	0.357	A	0.009	NO	0.011	NO	0.013	NO	0.020	NO
6	Pacific Av	Westwind St	Yawl St	S	0.160	A	0.192	A	0.145	A	0.264	A	0.009	NO	0.011	NO	0.008	NO	0.015	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.075	A	0.067	A	0.000	A	0.000	A	0.005	NO	0.003	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.072	A	0.110	A	0.000	A	0.000	A	0.003	NO	0.007	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.198	A	0.263	A	0.166	A	0.337	A	0.011	NO	0.015	NO	0.009	NO	0.018	NO
10	Via Dolce	North of Marquesas Wy		S	0.150	A	0.094	A	0.073	A	0.178	A	0.009	NO	0.005	NO	0.004	NO	0.010	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.082	A	0.066	A	0.094	A	0.102	A	0.005	NO	0.003	NO	0.005	NO	0.006	NO
12	Marquesas Way [a]	Via Dolce	Via Marina	S	0.098	A	0.064	A	0.217	A	0.273	A	0.020	NO	0.003	NO	0.115	NO	0.159	NO
13	Via Marina	North of Marquesas Wy		S	0.415	A	0.321	A	0.250	A	0.397	A	0.024	NO	0.037	NO	0.033	NO	0.023	NO
14	Via Marina [b]	South of Tahiti Wy		S	0.375	A	0.320	A	0.439	A	1.549	F	0.021	NO	0.047	NO	0.260	NO	0.819	**YES**
15	Via Marina [c]	North of Harbor Ln		S	0.083	A	0.163	A	0.247	A	0.217	A	0.005	NO	0.037	NO	0.159	NO	0.115	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.494	A	0.383	A	0.305	A	0.300	A	0.028	NO	0.021	NO	0.017	NO	0.017	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.292	A	0.218	A	0.220	A	0.322	A	0.052	NO	0.010	NO	0.008	NO	0.055	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.307	F	1.222	F	0.587	A	1.678	F	0.128	**YES**	0.067	**YES**	0.032	NO	0.093	**YES**
19	Culver Blvd	East of Nicholson St		S	0.593	A	1.582	F	1.772	F	1.245	F	0.047	NO	0.088	**YES**	0.097	**YES**	0.084	**YES**
20	Vista del Mar	South of Napolcon St		HWY II	0.806	D	0.569	A	0.292	A	0.746	C	0.051	**YES**	0.029	NO	0.014	NO	0.046	NO
21	Vista del Mar [d]	Pacific Av	Surf St	HWY II	1.663	F	1.138	F	0.300	A	0.741	C	0.886	**YES**	0.599	**YES**	0.016	NO	0.049	NO
22	Pacific Av	North of Convoy St		L	0.282	A	0.365	A	0.217	A	0.308	A	0.085	NO	0.018	NO	0.008	NO	0.087	NO
23	Pacific Av	63rd Av	64th Av	L	0.168	A	0.128	A	N/A	N/A	N/A	N/A	0.080	NO	0.007	NO	N/A	**YES**	N/A	**YES**

NOTE:
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

Source: Kaku Associates, Inc
[a] Analysis assumed temporary closure of one lane EB on Marquesas Way between Via Dolce and Via Marina.
[b] Analysis assumed temporary closure of one lane SB on Via Marina south of Tahiti Way.
[c] Analysis assumed temporary closure of one lane SB on Via Marina north of Harbor Lane.
[d] Analysis assumed temporary closure of one lane WB on Vista del Mar between Pacific Avenue and Surf Street.

APPENDIX E-6-4I
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
VPP TO LAX SHAFT VIA DOCKWEILER BEACH

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.372	A	0.348	A	0.387	A	0.500	A	0.012	NO	0.083	NO	0.083	NO	0.012	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.169	A	0.213	A	0.337	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.181	A	0.137	A	0.249	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.188	A	0.248	A	0.157	A	0.318	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.284	A	0.216	A	0.374	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.273	A	0.179	A	0.731	C	0.000	NO	0.000	NO	0.000	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.125	A	0.088	A	0.103	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.466	A	0.362	A	0.288	A	0.283	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.267	A	0.213	A	0.217	A	0.293	A	0.027	NO	0.005	NO	0.005	NO	0.027	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.557	A	1.496	F	1.677	F	1.171	F	0.011	NO	0.002	NO	0.002	NO	0.011	NO
20	Vista del Mar	South of Napolcon St		HWY II	0.765	C	0.553	A	0.290	A	0.709	C	0.009	NO	0.013	NO	0.013	NO	0.009	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.779	C	0.548	A	0.294	A	0.694	B	0.002	NO	0.010	NO	0.010	NO	0.002	NO
22	Pacific Av	North of Convoy St		L	0.197	A	0.347	A	0.208	A	0.222	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
23	Pacific Av	63rd Av	64th Av	L	0.088	A	0.122	A	0.063	A	0.073	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-6-4C
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
PACIFIC AVENUE - SOUTH PACIFIC AVENUE

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.327	A	0.398	A	--	--	--	--	0.217	NO	0.258	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.235	A	0.310	A	--	--	--	--	0.200	NO	0.273	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.360	A	0.292	A	0.331	A	0.488	A	0.000	NO	0.027	NO	0.027	NO	0.000	NO
5	Pacific Av [a]	Privateer St	Quarterdeck St	S	N/A	N/A	N/A	N/A	0.240	A	0.337	A	N/A	YES	N/A	YES	0.027	NO	0.000	NO
6	Pacific Av [b]	Westwind St	Yawl St	S	N/A	N/A	N/A	N/A	0.164	A	0.249	A	N/A	YES	N/A	YES	0.027	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.226	A	0.248	A	0.157	A	0.357	A	0.038	NO	0.000	NO	0.000	NO	0.038	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.296	A	0.228	A	0.374	A	0.000	NO	0.012	NO	0.012	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.290	A	0.195	A	0.731	C	0.000	NO	0.017	NO	0.017	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.142	A	0.105	A	0.103	A	0.000	NO	0.017	NO	0.017	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.467	A	0.362	A	0.288	A	0.284	A	0.001	NO	0.000	NO	0.000	NO	0.001	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.282	A	0.208	A	0.212	A	0.308	A	0.042	NO	0.000	NO	0.000	NO	0.042	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.563	A	1.494	F	1.675	F	1.177	F	0.017	NO	0.000	NO	0.000	NO	0.017	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.763	C	0.540	A	0.278	A	0.706	C	0.007	NO	0.000	NO	0.000	NO	0.007	NO
21	Vista del Mar [c]	Pacific Av	Surf St	HWY II	1.571	F	1.076	F	0.284	A	0.701	C	0.794	YES	0.538	YES	0.000	NO	0.009	NO
22	Pacific Av	North of Convoy St		L	0.272	A	0.347	A	0.208	A	0.297	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO
23	Pacific Av	63rd Av	64th Av	L	0.163	A	0.122	A	N/A	N/A	N/A	N/A	0.075	NO	0.000	NO	N/A	YES	N/A	YES

NOTE:
CLASS: Roadway Classification
HWY II = Major Hwy Class II
S = Secondary
C = Collector
L = Local

Source: Kaku Associates, Inc

[a] Analysis assumed temporary closure of one lane NB on Pacific Avenue between Privateer Street and Quarterdeck Street.
[b] Analysis assumed temporary closure of one lane NB on Pacific Avenue between Westwind Street and Yawl Street
[c] Analysis assumed temporary closure of one lane WB on Vista del Mar between Pacific Avenue and Surf Street.

APPENDIX E-6-4D
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
PACIFIC AVENUE - SOUTH DOCKWEILER BEACH

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.327	A	0.398	A	--	--	--	--	0.217	NO	0.258	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.235	A	0.310	A	--	--	--	--	0.200	NO	0.273	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.450	A	0.365	A	0.331	A	0.488	A	0.090	NO	0.100	NO	0.027	NO	0.000	NO
5	Pacific Av [a]	Privateer St	Quarterdeck St	S	N/A	N/A	N/A	N/A	0.240	A	0.337	A	N/A	YES	N/A	YES	0.027	NO	0.000	NO
6	Pacific Av [b]	Westwind St	Yawl St	S	N/A	N/A	N/A	N/A	0.164	A	0.249	A	N/A	YES	N/A	YES	0.027	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.226	A	0.248	A	0.157	A	0.357	A	0.038	NO	0.000	NO	0.000	NO	0.038	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.296	A	0.228	A	0.374	A	0.000	NO	0.012	NO	0.012	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.290	A	0.195	A	0.731	C	0.000	NO	0.017	NO	0.017	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.142	A	0.105	A	0.103	A	0.000	NO	0.017	NO	0.017	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.467	A	0.362	A	0.288	A	0.284	A	0.001	NO	0.000	NO	0.000	NO	0.001	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.282	A	0.208	A	0.212	A	0.308	A	0.042	NO	0.000	NO	0.000	NO	0.042	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.563	A	1.494	F	1.675	F	1.177	F	0.017	NO	0.000	NO	0.000	NO	0.017	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.763	C	0.540	A	0.278	A	0.706	C	0.007	NO	0.000	NO	0.000	NO	0.007	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.786	C	0.538	A	0.284	A	0.701	C	0.009	NO	0.000	NO	0.000	NO	0.009	NO
22	Pacific Av	North of Convoy St		L	0.272	A	0.347	A	0.208	A	0.297	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO
23	Pacific Av	63rd Av	64th Av	L	0.163	A	0.122	A	0.063	A	0.148	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO

NOTE:
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

Source: Kaku Associates, Inc

[a] Analysis assumed temporary closure of one lane NB on Pacific Avenue between Privateer Street and Quarterdeck Street.
[b] Analysis assumed temporary closure of one lane NB on Pacific Avenue between Westwind Street and Yawl Street.

APPENDIX E-6-4E
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
DOCKWEILER BEACH - SOUTH PACIFIC AVENUE

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.360	A	0.291	A	0.329	A	0.488	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.195	A	0.239	A	0.337	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.207	A	0.163	A	0.249	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.228	A	0.248	A	0.157	A	0.358	A	0.040	NO	0.000	NO	0.000	NO	0.040	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.296	A	0.228	A	0.374	A	0.000	NO	0.012	NO	0.012	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.291	A	0.196	A	0.731	C	0.000	NO	0.017	NO	0.017	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.143	A	0.105	A	0.103	A	0.000	NO	0.017	NO	0.017	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.467	A	0.362	A	0.288	A	0.284	A	0.001	NO	0.000	NO	0.000	NO	0.001	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.282	A	0.208	A	0.212	A	0.308	A	0.042	NO	0.000	NO	0.000	NO	0.042	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.563	A	1.494	F	1.675	F	1.177	F	0.017	NO	0.000	NO	0.000	NO	0.017	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.763	C	0.540	A	0.278	A	0.706	C	0.007	NO	0.000	NO	0.000	NO	0.007	NO
21	Vista del Mar [a]	Pacific Av	Surf St	HWY II	1.571	F	1.076	F	0.284	A	0.701	C	0.794	YES	0.538	YES	0.000	NO	0.009	NO
22	Pacific Av	North of Convoy St		L	0.272	A	0.347	A	0.208	A	0.297	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO
23	Pacific Av	63rd Av	64th Av	L	0.163	A	0.122	A	N/A	N/A	N/A	N/A	0.075	NO	0.000	NO	N/A	YES	N/A	YES

NOTE:
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

Source: Kaku Associates, Inc

[a] Analysis assumed temporary closure of one lane WB on Vista del Mar between Pacific Avenue and Surf Street.

APPENDIX E-6-4F
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
DOCKWEILER BEACH - SOUTH DOCKWEILER BEACH

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.360	A	0.291	A	0.329	A	0.488	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.195	A	0.239	A	0.337	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.207	A	0.163	A	0.249	A	0.000	NO	0.025	NO	0.025	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.228	A	0.248	A	0.157	A	0.358	A	0.040	NO	0.000	NO	0.000	NO	0.040	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.296	A	0.228	A	0.374	A	0.000	NO	0.012	NO	0.012	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.291	A	0.196	A	0.731	C	0.000	NO	0.017	NO	0.017	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.143	A	0.105	A	0.103	A	0.000	NO	0.017	NO	0.017	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.467	A	0.362	A	0.288	A	0.284	A	0.001	NO	0.000	NO	0.000	NO	0.001	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.282	A	0.208	A	0.212	A	0.308	A	0.042	NO	0.000	NO	0.000	NO	0.042	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.563	A	1.494	F	1.675	F	1.177	F	0.017	NO	0.000	NO	0.000	NO	0.017	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.763	C	0.540	A	0.278	A	0.706	C	0.007	NO	0.000	NO	0.000	NO	0.007	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.786	C	0.538	A	0.284	A	0.701	C	0.009	NO	0.000	NO	0.000	NO	0.009	NO
22	Pacific Av	North of Convoy St		L	0.272	A	0.347	A	0.208	A	0.297	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO
23	Pacific Av	63rd Av	64th Av	L	0.163	A	0.122	A	0.063	A	0.148	A	0.075	NO	0.000	NO	0.000	NO	0.075	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWY II = Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-6-4G
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
LARGE TUNNEL - DOCKWEILER BEACH

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.372	A	0.348	A	0.387	A	0.500	A	0.012	NO	0.083	NO	0.083	NO	0.012	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.169	A	0.213	A	0.337	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.181	A	0.137	A	0.249	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.188	A	0.248	A	0.157	A	0.318	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.284	A	0.216	A	0.374	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.273	A	0.179	A	0.731	C	0.000	NO	0.000	NO	0.000	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.125	A	0.088	A	0.103	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.467	A	0.362	A	0.288	A	0.284	A	0.001	NO	0.000	NO	0.000	NO	0.001	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.290	A	0.213	A	0.217	A	0.317	A	0.050	NO	0.005	NO	0.005	NO	0.050	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.567	A	1.496	F	1.677	F	1.181	F	0.020	NO	0.002	NO	0.002	NO	0.020	YES
20	Vista del Mar	South of Napoleon St		HWY II	0.769	C	0.543	A	0.281	A	0.713	C	0.013	NO	0.003	NO	0.003	NO	0.013	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.779	C	0.557	A	0.303	A	0.694	B	0.002	NO	0.019	NO	0.019	NO	0.002	NO
22	Pacific Av	North of Convoy St		L	0.197	A	0.347	A	0.208	A	0.222	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
23	Pacific Av	63rd Av	64th Av	L	0.088	A	0.122	A	0.063	A	0.073	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWY II - Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-6-4H
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
LARGE TUNNEL - DOCKWEILER BEACH SHAFT TO LAX SHAFT

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.372	A	0.348	A	0.387	A	0.500	A	0.012	NO	0.083	NO	0.083	NO	0.012	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.169	A	0.213	A	0.337	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.181	A	0.137	A	0.249	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.188	A	0.248	A	0.157	A	0.318	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.284	A	0.216	A	0.374	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.273	A	0.179	A	0.731	C	0.000	NO	0.000	NO	0.000	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.125	A	0.088	A	0.103	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.466	A	0.362	A	0.288	A	0.283	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.267	A	0.213	A	0.217	A	0.293	A	0.027	NO	0.005	NO	0.005	NO	0.027	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.557	A	1.496	F	1.677	F	1.171	F	0.011	NO	0.002	NO	0.002	NO	0.011	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.765	C	0.553	A	0.290	A	0.709	C	0.009	NO	0.013	NO	0.013	NO	0.009	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.779	C	0.548	A	0.294	A	0.694	B	0.002	NO	0.010	NO	0.010	NO	0.002	NO
22	Pacific Av	North of Convoy St		L	0.197	A	0.347	A	0.208	A	0.222	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
23	Pacific Av	63rd Av	64th Av	L	0.088	A	0.122	A	0.063	A	0.073	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWY II = Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-6-41
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
VPP TO LAX SHAFT VIA DOCKWEILER BEACH

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.372	A	0.348	A	0.387	A	0.500	A	0.012	NO	0.083	NO	0.083	NO	0.012	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.169	A	0.213	A	0.337	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.181	A	0.137	A	0.249	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.188	A	0.248	A	0.157	A	0.318	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.284	A	0.216	A	0.374	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.273	A	0.179	A	0.731	C	0.000	NO	0.000	NO	0.000	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.125	A	0.088	A	0.103	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.466	A	0.362	A	0.288	A	0.283	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.267	A	0.213	A	0.217	A	0.293	A	0.027	NO	0.005	NO	0.005	NO	0.027	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.155	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.557	A	1.496	F	1.677	F	1.171	F	0.011	NO	0.002	NO	0.002	NO	0.011	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.765	C	0.553	A	0.290	A	0.709	C	0.009	NO	0.013	NO	0.013	NO	0.009	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.779	C	0.548	A	0.294	A	0.694	B	0.002	NO	0.010	NO	0.010	NO	0.002	NO
22	Pacific Av	North of Convoy St		L	0.197	A	0.347	A	0.208	A	0.222	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
23	Pacific Av	63rd Av	64th Av	L	0.088	A	0.122	A	0.063	A	0.073	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

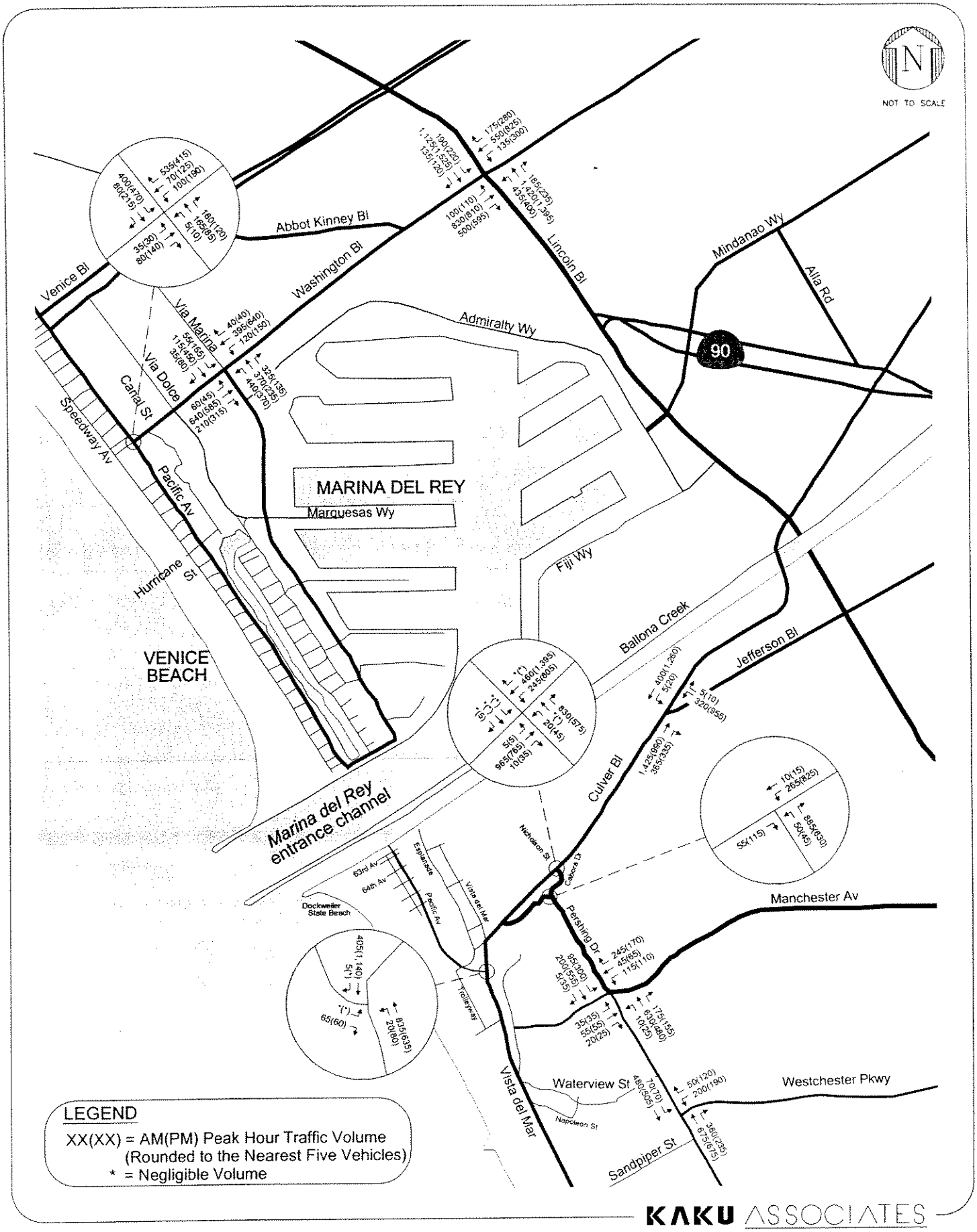
APPENDIX E-6-4J
FUTURE (2011) CUMULATIVE ROADWAY PEAK HOUR LEVELS OF SERVICE
VPP TO LAX SHAFT VIA INLAND

					CUMULATIVE PLUS PROJECT CONSTRUCTION								DIFFERENCE IN V/C							
					DIRECTION								DIRECTION							
					NB/WB				SB/EB				NB/WB				SB/EB			
					AM		PM		AM		PM		AM		PM		AM		PM	
SEGMENT#	LOCATION	FROM	TO	CLASS.	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?	V/C	Adverse Impact?
1	Speedway Av	Fleet St	Galleon St	L	0.105	A	0.115	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
2	Speedway Av	Privateer St	Quarterdeck St	L	0.110	A	0.140	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
3	Speedway Av	Westwind St	Yawl St	L	0.035	A	0.037	A	--	--	--	--	0.000	NO	0.000	NO	--	--	--	--
4	Pacific Av	Fleet St	Galleon St	S	0.372	A	0.348	A	0.387	A	0.500	A	0.012	NO	0.083	NO	0.083	NO	0.012	NO
5	Pacific Av	Privateer St	Quarterdeck St	S	0.164	A	0.169	A	0.213	A	0.337	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
6	Pacific Av	Westwind St	Yawl St	S	0.151	A	0.181	A	0.137	A	0.249	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
7	Roma Court	Lighthouse Mall	Outrigger Mall	L	0.070	A	0.063	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
8	Via Donte	Voyage Mall	Westwind Mall	L	0.068	A	0.103	A	0.000	A	0.000	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
9	Via Marina	East of Pacific Av		C	0.188	A	0.248	A	0.157	A	0.318	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
10	Via Dolce	North of Marquesas Wy		S	0.141	A	0.089	A	0.069	A	0.168	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
11	Via Dolce	Privateer St	Quarterdeck St	C	0.077	A	0.063	A	0.089	A	0.095	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
12	Marquesas Way	Via Dolce	Via Marina	S	0.078	A	0.061	A	0.103	A	0.115	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
13	Via Marina	North of Marquesas Wy		S	0.391	A	0.284	A	0.216	A	0.374	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
14	Via Marina	South of Tahiti Wy		S	0.354	A	0.273	A	0.179	A	0.731	C	0.000	NO	0.000	NO	0.000	NO	0.000	NO
15	Via Marina	North of Harbor Ln		S	0.078	A	0.125	A	0.088	A	0.103	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
16	Pershing Dr	South of Westchester Pkwy		HWY II	0.466	A	0.362	A	0.288	A	0.283	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
17	Pershing Dr	Culver Bl	Nicholson St	L	0.267	A	0.213	A	0.217	A	0.293	A	0.027	NO	0.005	NO	0.005	NO	0.027	NO
18	Nicholson St	Culver Bl	Pershing Dr	L	2.178	F	1.355	F	0.555	A	1.585	F	0.000	NO	0.000	NO	0.000	NO	0.000	NO
19	Culver Blvd	East of Nicholson St		S	0.557	A	1.496	F	1.677	F	1.171	F	0.011	NO	0.002	NO	0.002	NO	0.011	NO
20	Vista del Mar	South of Napoleon St		HWY II	0.765	C	0.553	A	0.290	A	0.709	C	0.009	NO	0.013	NO	0.013	NO	0.009	NO
21	Vista del Mar	Pacific Av	Surf St	HWY II	0.779	C	0.548	A	0.294	A	0.694	B	0.002	NO	0.010	NO	0.010	NO	0.002	NO
22	Pacific Av	North of Convoy St		L	0.197	A	0.347	A	0.208	A	0.222	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO
23	Pacific Av	63rd Av	64th Av	L	0.088	A	0.122	A	0.063	A	0.073	A	0.000	NO	0.000	NO	0.000	NO	0.000	NO

NOTE:
Source: Kaku Associates, Inc
CLASS: Roadway Classification
HWYII = Major Hwy Class II
S = Secondary
C = Collector
L = Local

APPENDIX E-7-1

EXISTING PEAK HOUR INTERSECTION TRAFFIC VOLUMES

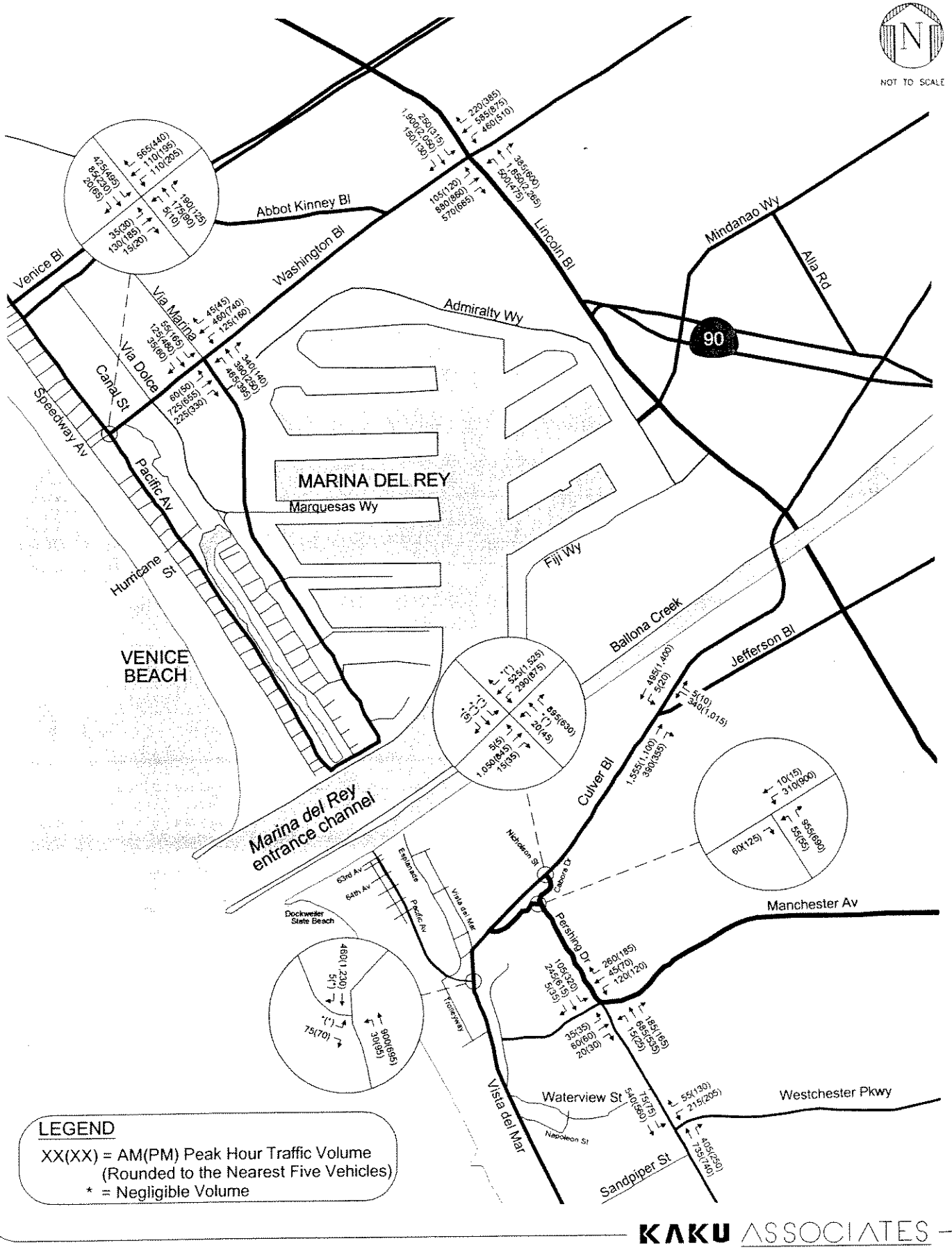


KAKU ASSOCIATES

APPENDIX E-7-1
EXISTING (2005) INTERSECTION PEAK HOUR TRAFFIC VOLUMES

APPENDIX E-7-2

CUMULATIVE BASE INTERSECTION PEAK HOUR TRAFFIC VOLUMES

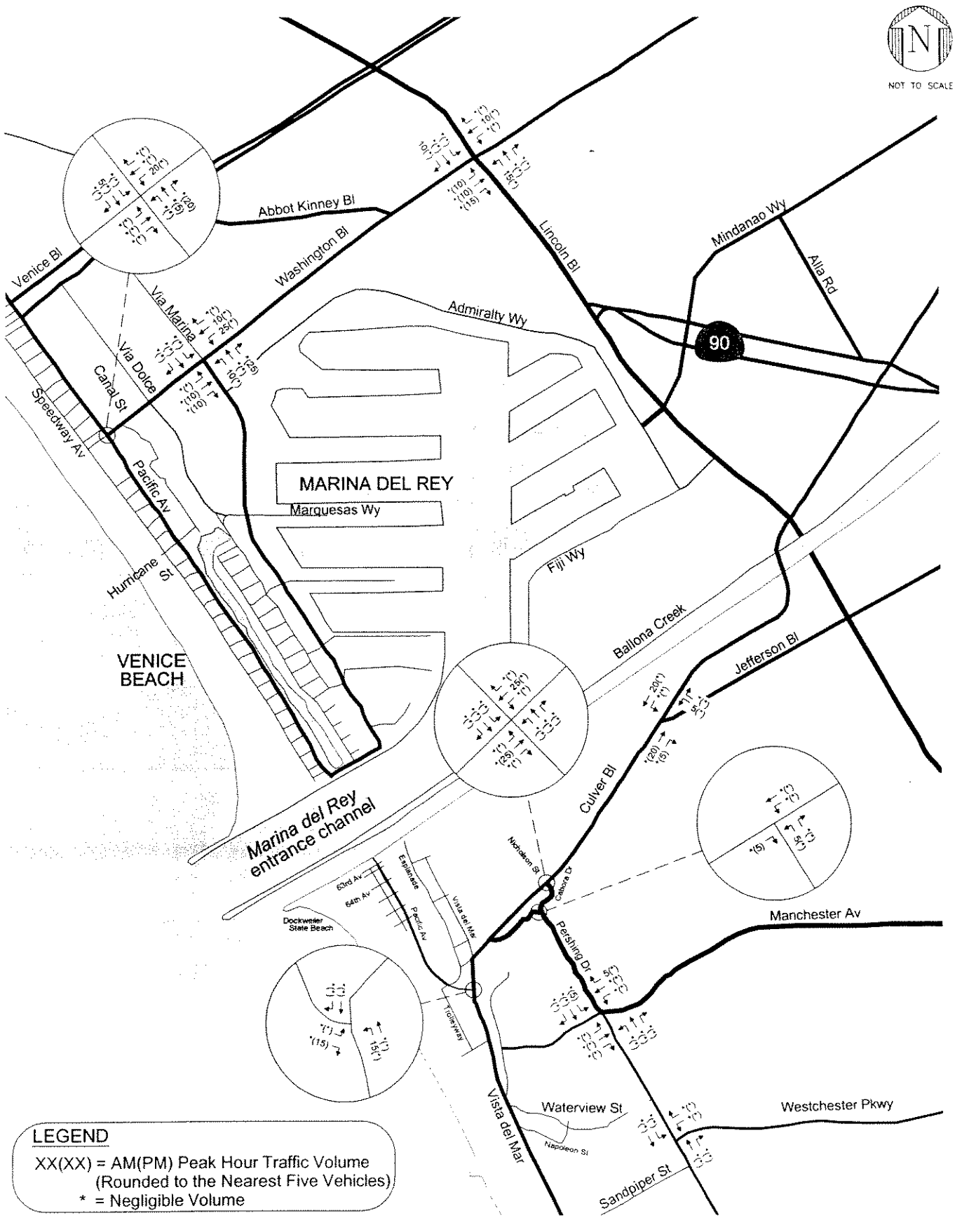


KAKU ASSOCIATES

APPENDIX E-7-2
CUMULATIVE BASE (2011) PEAK HOUR TRAFFIC VOLUMES

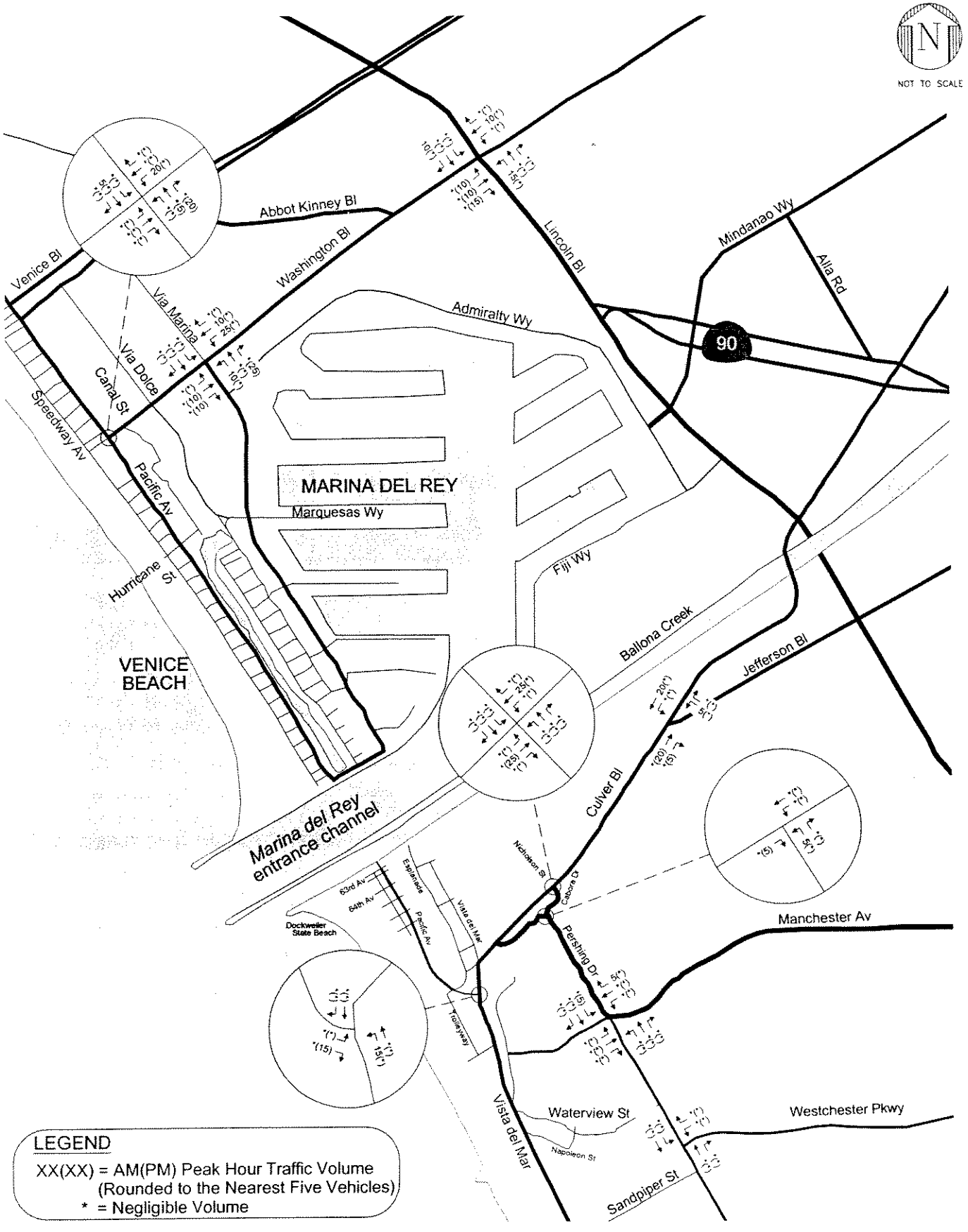
APPENDIX E-7-3

PROJECT ONLY PEAK HOUR INTERSECTION TRAFFIC VOLUMES



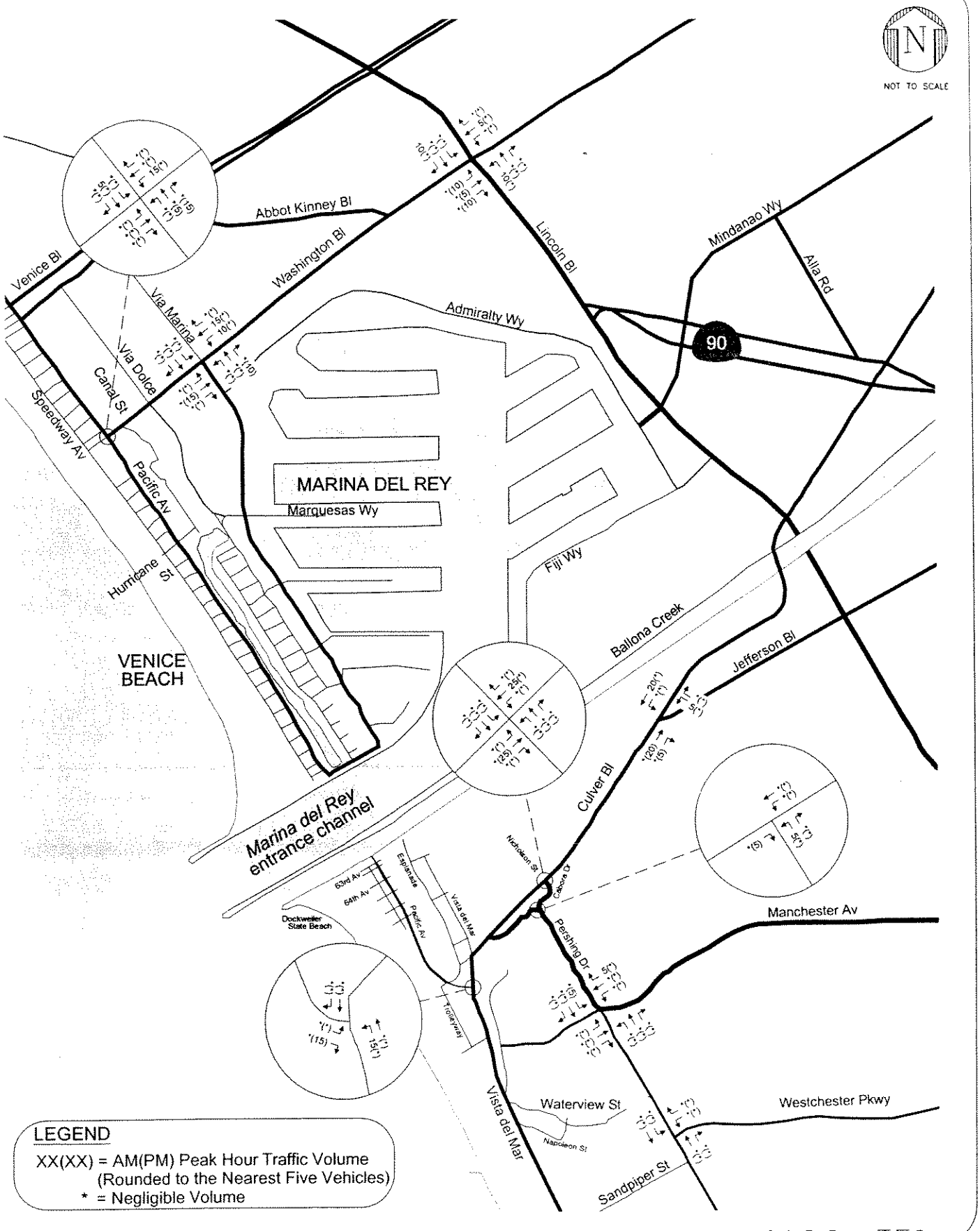
KAKU ASSOCIATES

APPENDIX E-7-3A
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
MARQUESAS WAY/VIA MARINA - SOUTH PACIFIC AVENUE



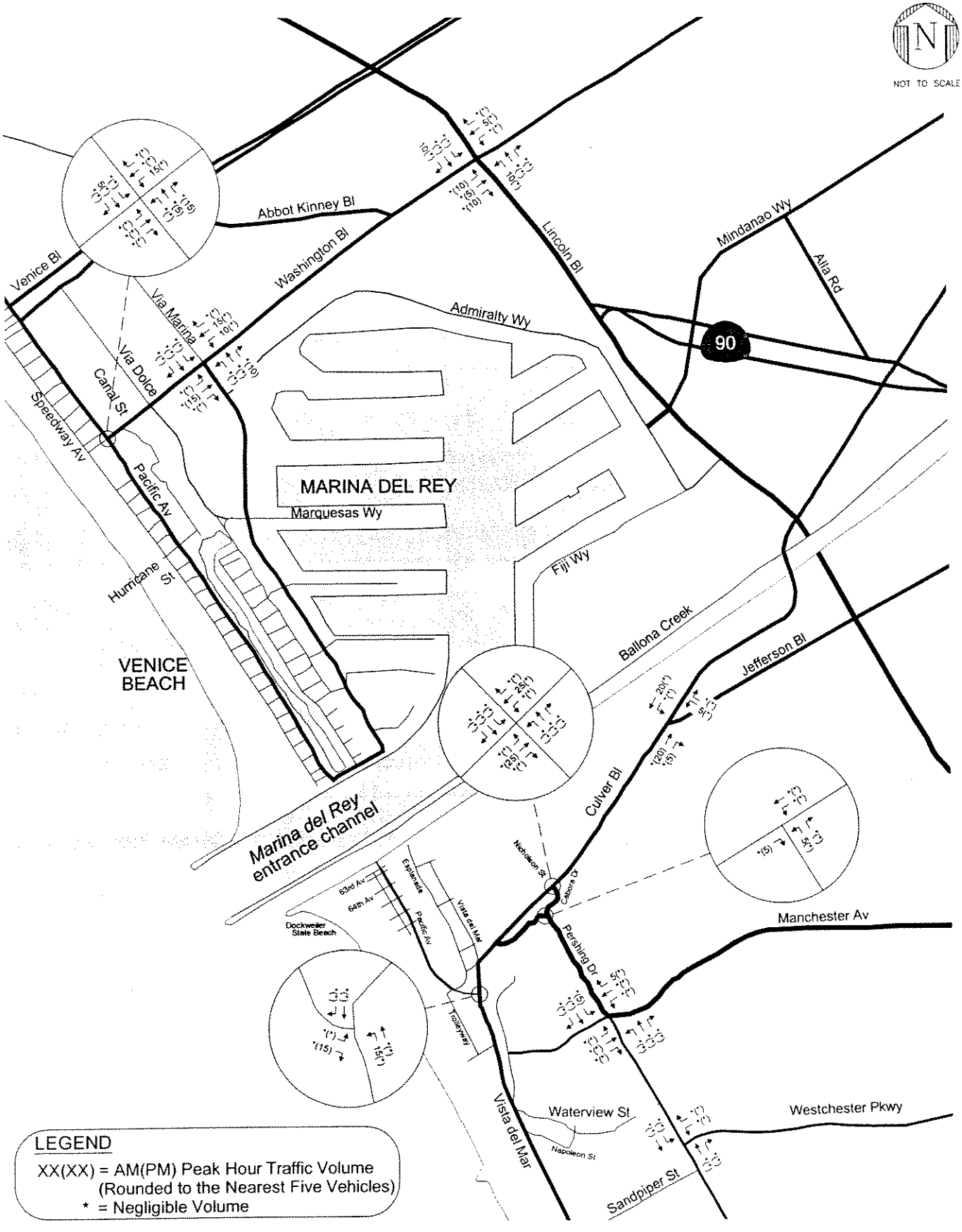
KAKU ASSOCIATES

APPENDIX E-7-3B
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
MARQUESAS WAY/VIA MARINA - DOCKWEILER BEACH



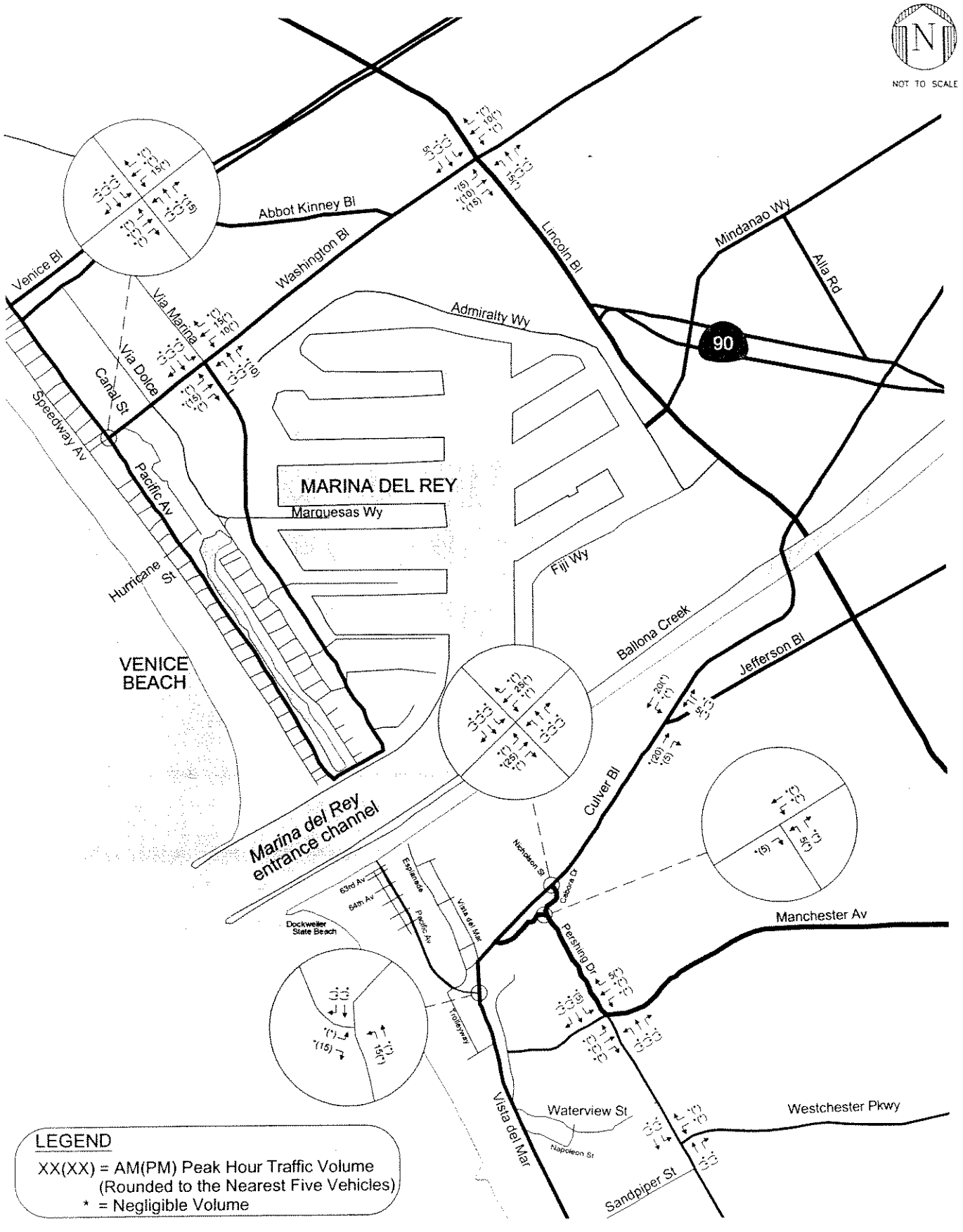
KAKU ASSOCIATES

APPENDIX E-7-3C
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH PACIFIC AVENUE



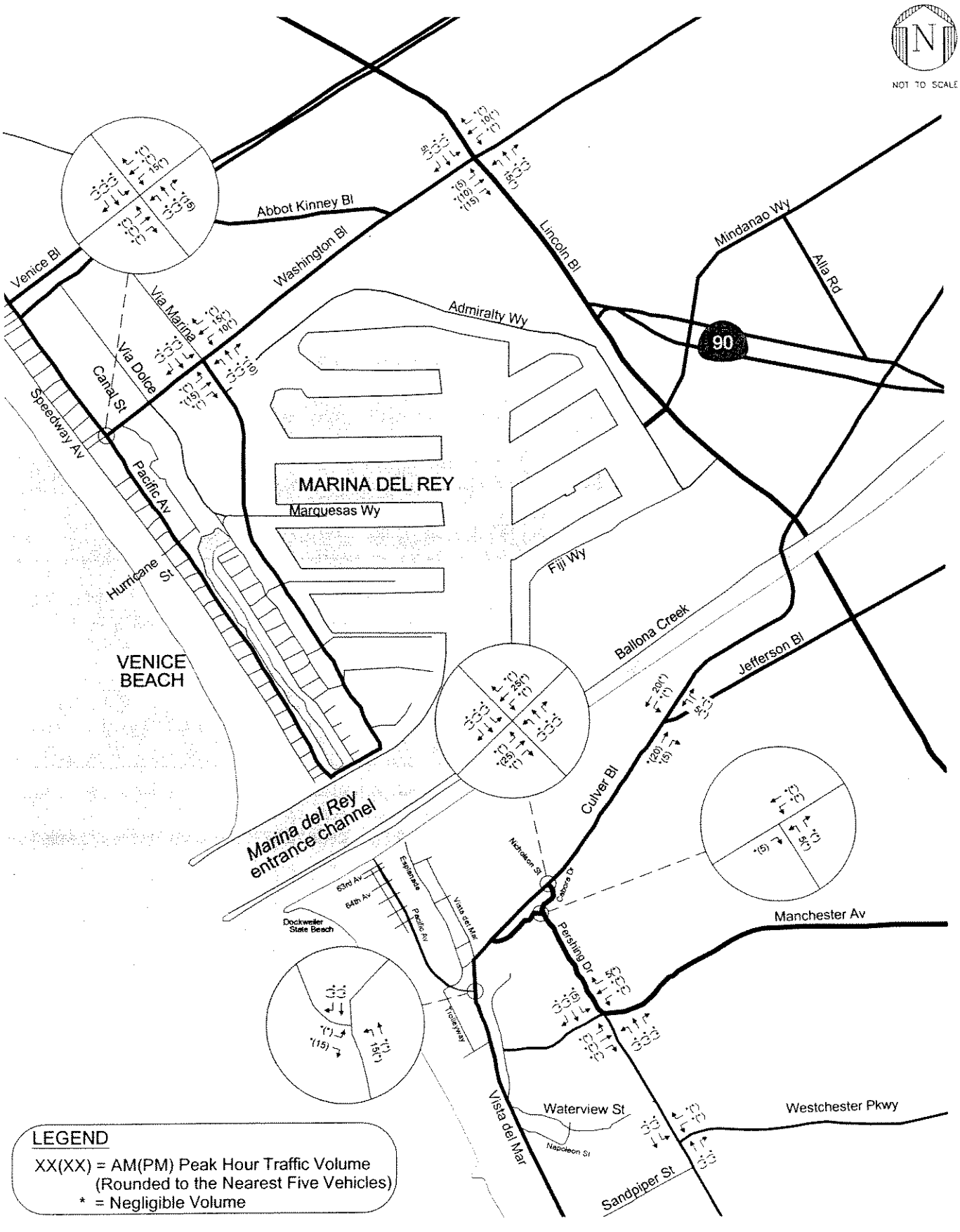
KAKU ASSOCIATES

APPENDIX E-7-3D
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH DOCKWEILER BEACH



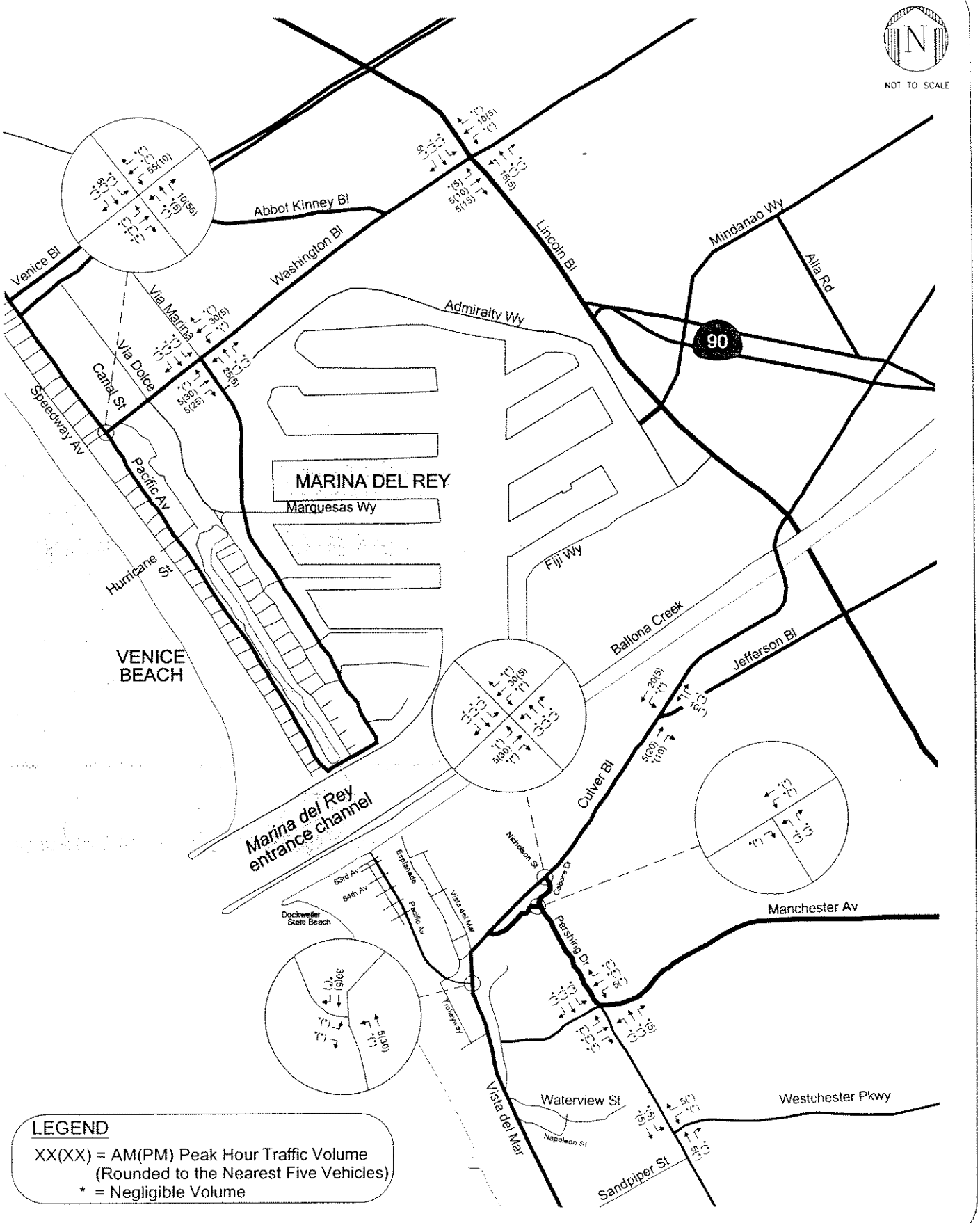
KAKU ASSOCIATES

APPENDIX E-7-3E
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH PACIFIC AVENUE



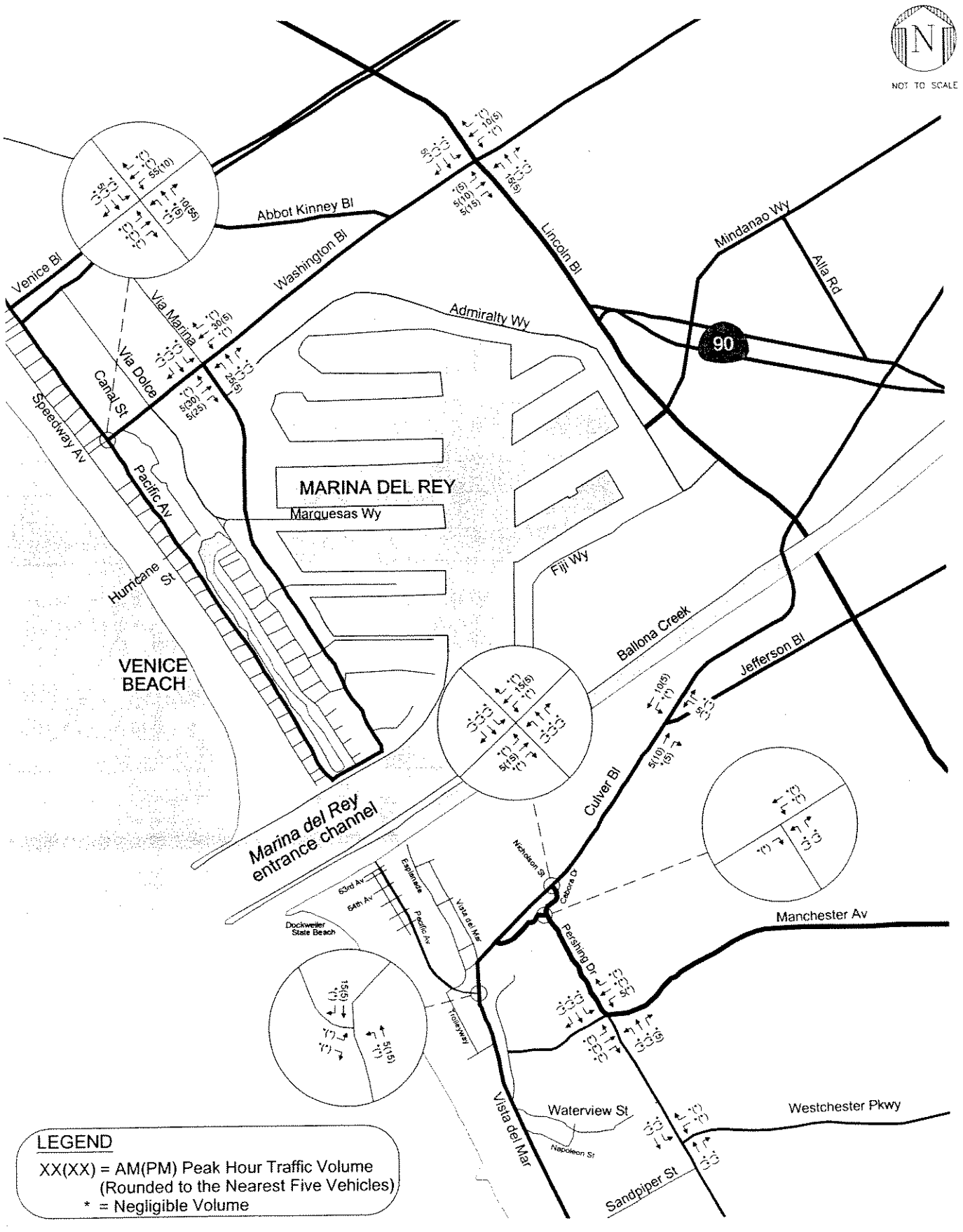
KAKU ASSOCIATES

APPENDIX E-7-3F
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH DOCKWEILER BEACH



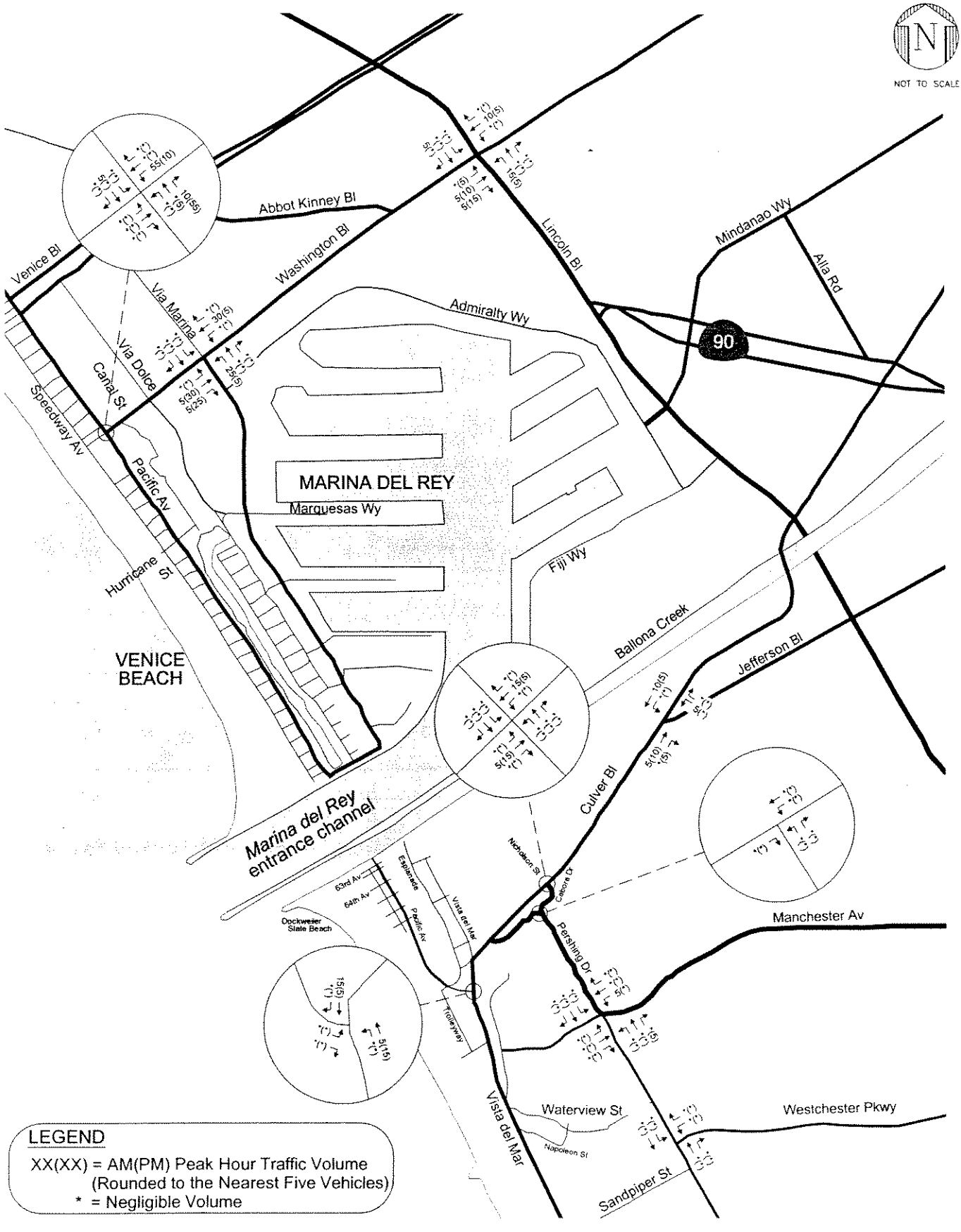
KAKU ASSOCIATES

APPENDIX E-7-3G
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH



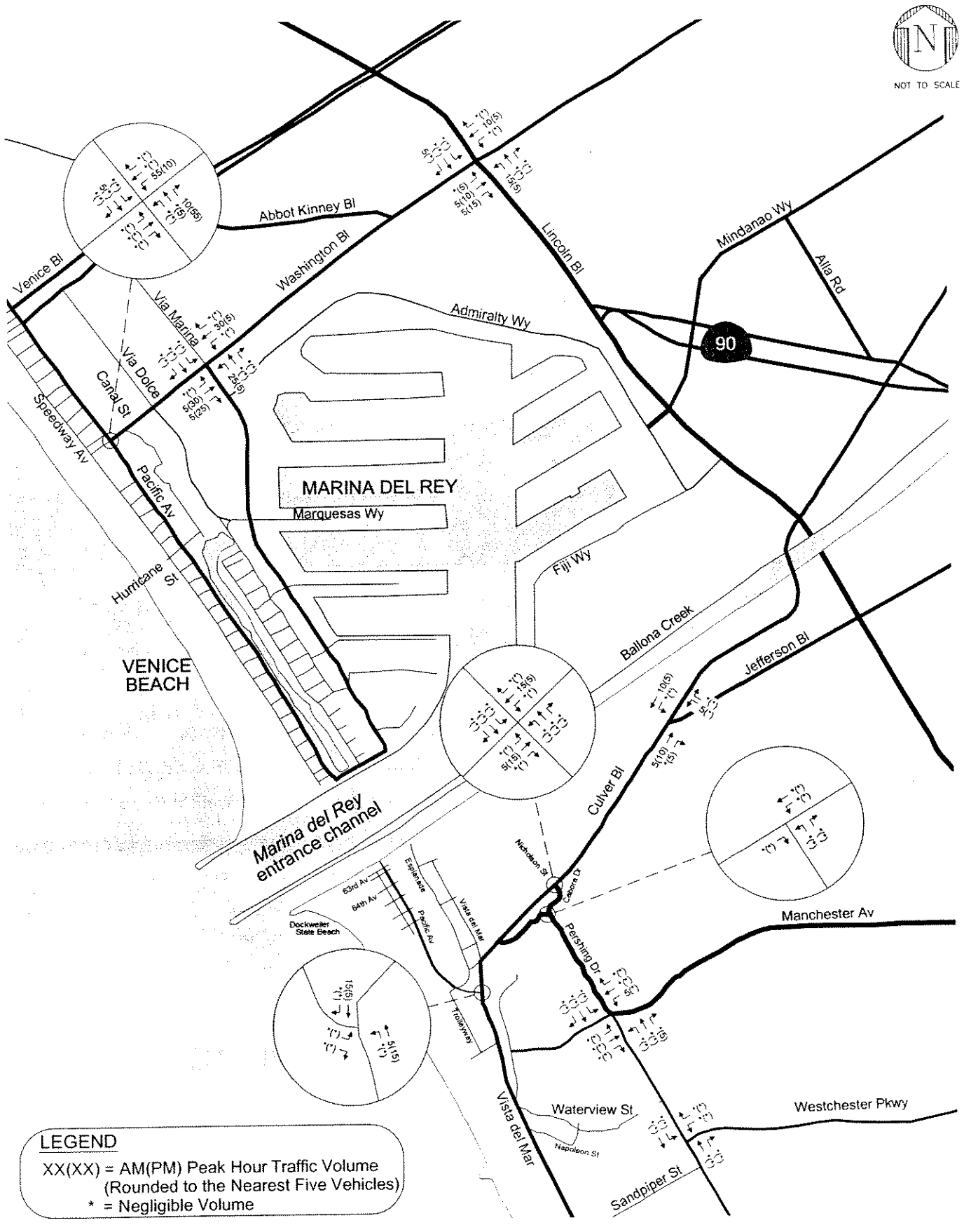
KAKU ASSOCIATES

APPENDIX E-7-3H
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH SHAFT TO LAX SHAFT



KAKU ASSOCIATES

APPENDIX E-7-3I
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - VPP TO LAX SHAFT VIA DOCKWEILER BEACH

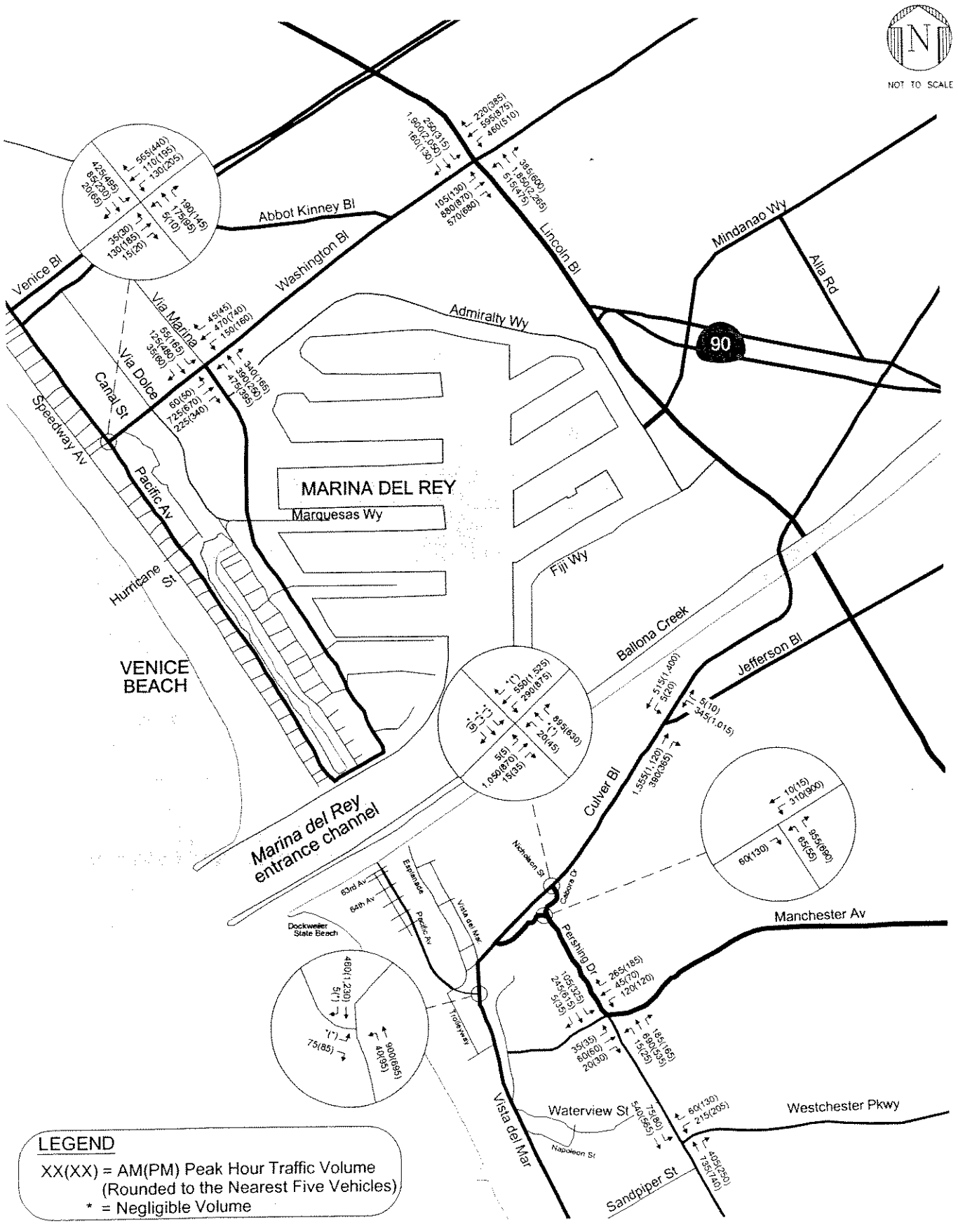


KAKU ASSOCIATES

APPENDIX E-7-3J
PROJECT ONLY PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - VPP TO LAX SHAFT VIA INLAND

APPENDIX E-7-4

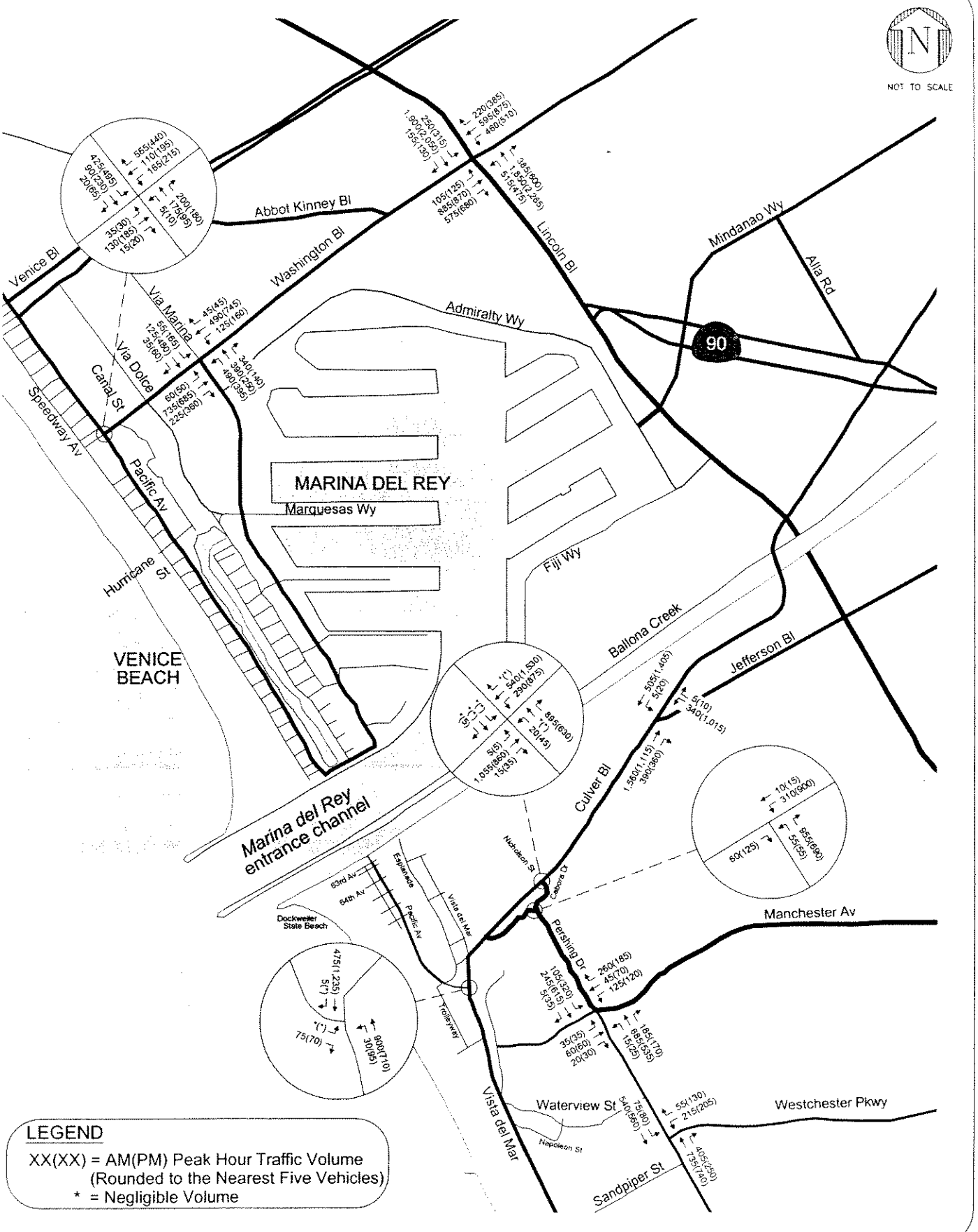
FUTURE WITH PROJECT INTERSECTION PEAK HOUR TRAFFIC VOLUMES



KAKU ASSOCIATES

APPENDIX E-7-4A

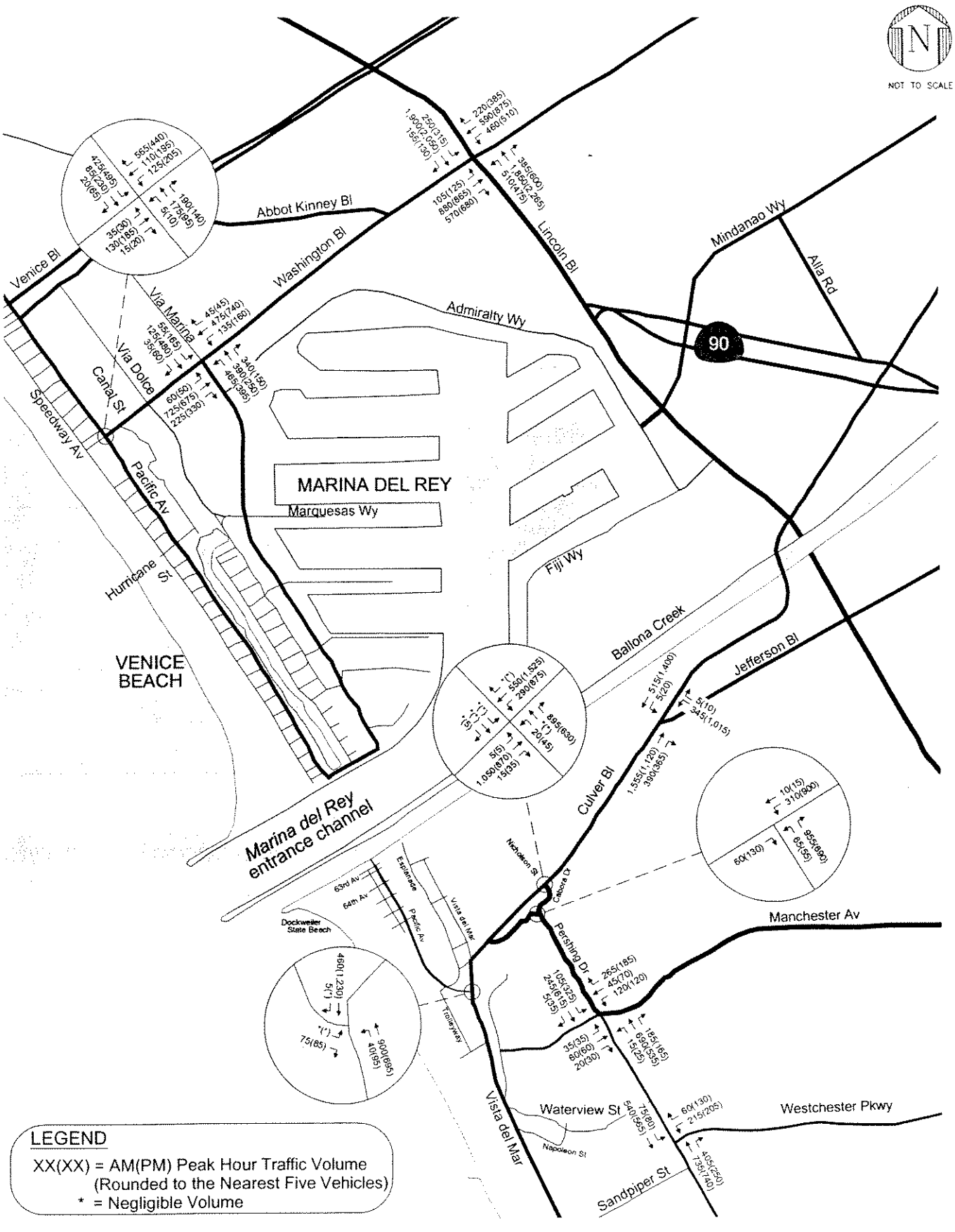
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES MARQUESAS WAY/VIA MARINA - SOUTH PACIFIC AVENUE



KAKU ASSOCIATES

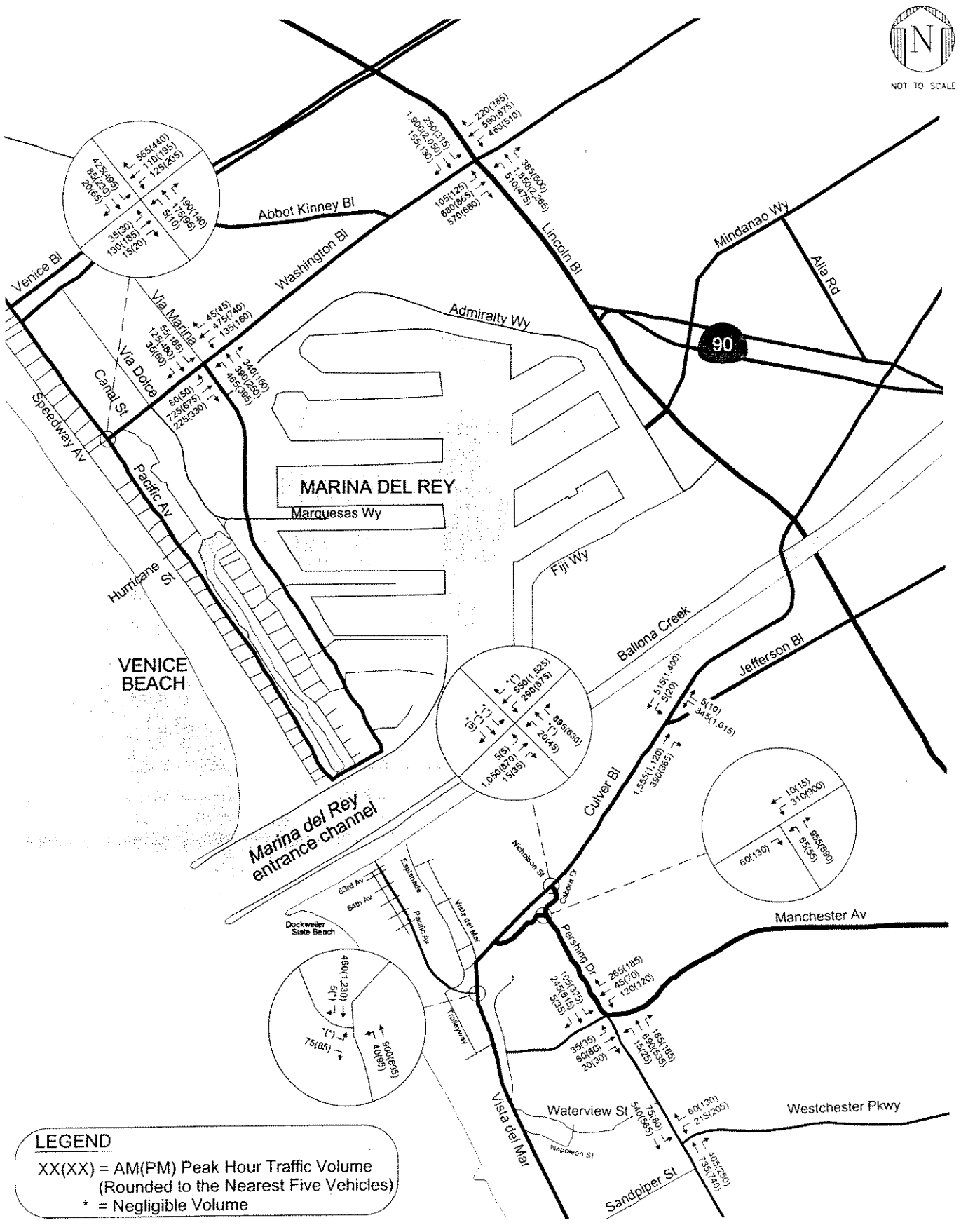
APPENDIX E-7-4I

FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - VPP TO LAX SHAFT VIA DOCKWEILER BEACH



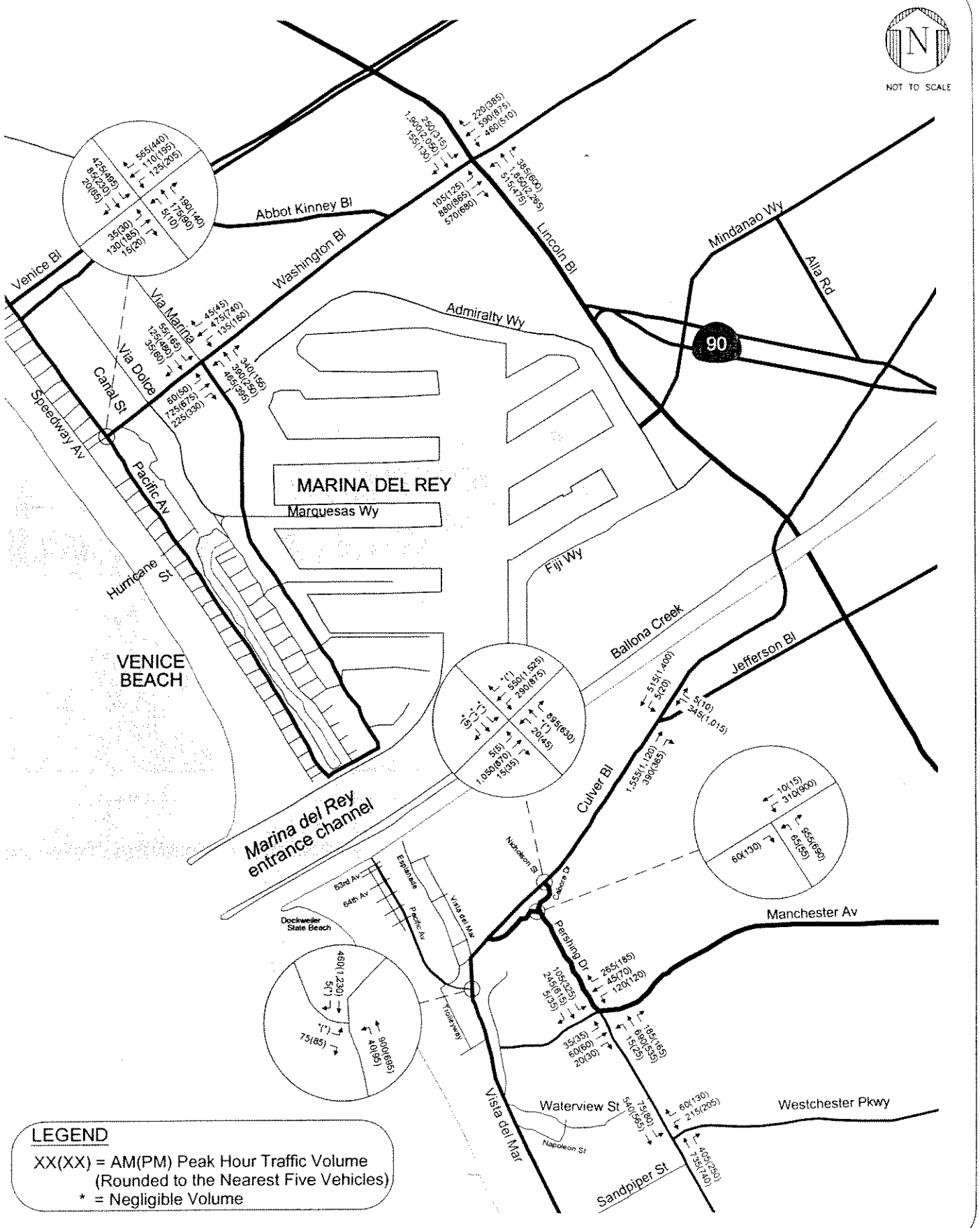
KAKU ASSOCIATES

APPENDIX E-7-4C
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH PACIFIC AVENUE



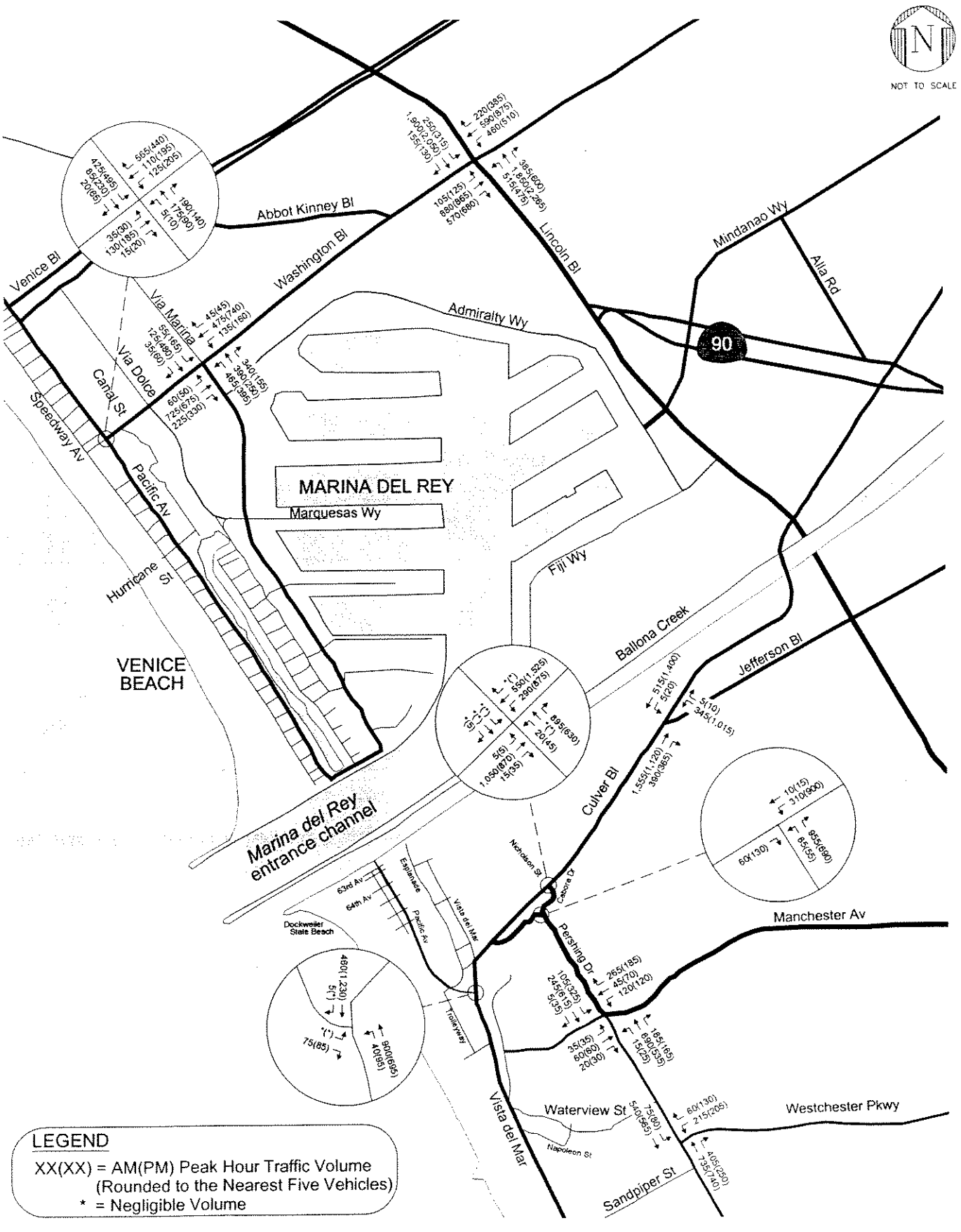
KAKU ASSOCIATES

APPENDIX E-7-4D
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
PACIFIC AVENUE - SOUTH DOCKWEILER BEACH



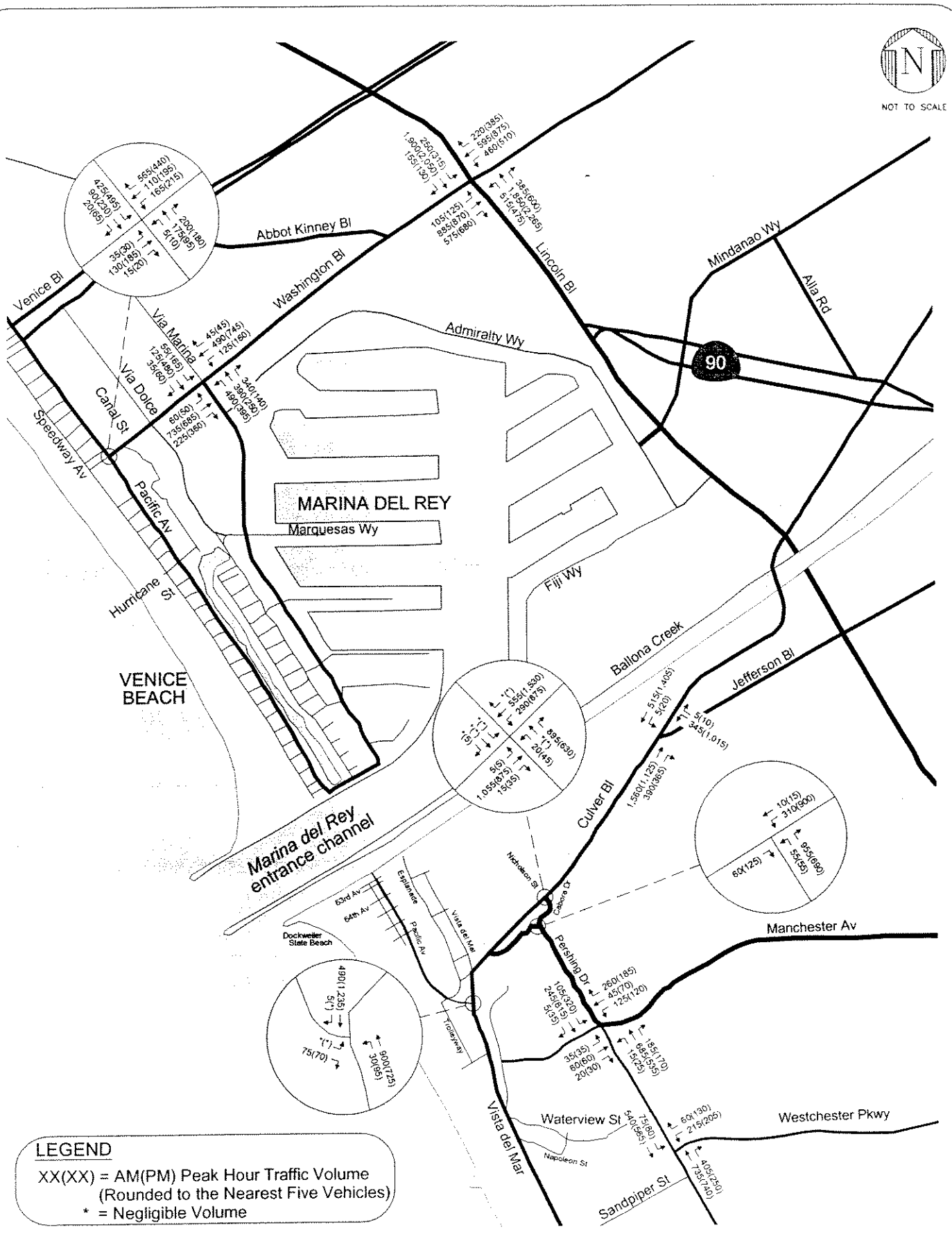
KAKU ASSOCIATES

APPENDIX E-7-4E
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH PACIFIC AVENUE



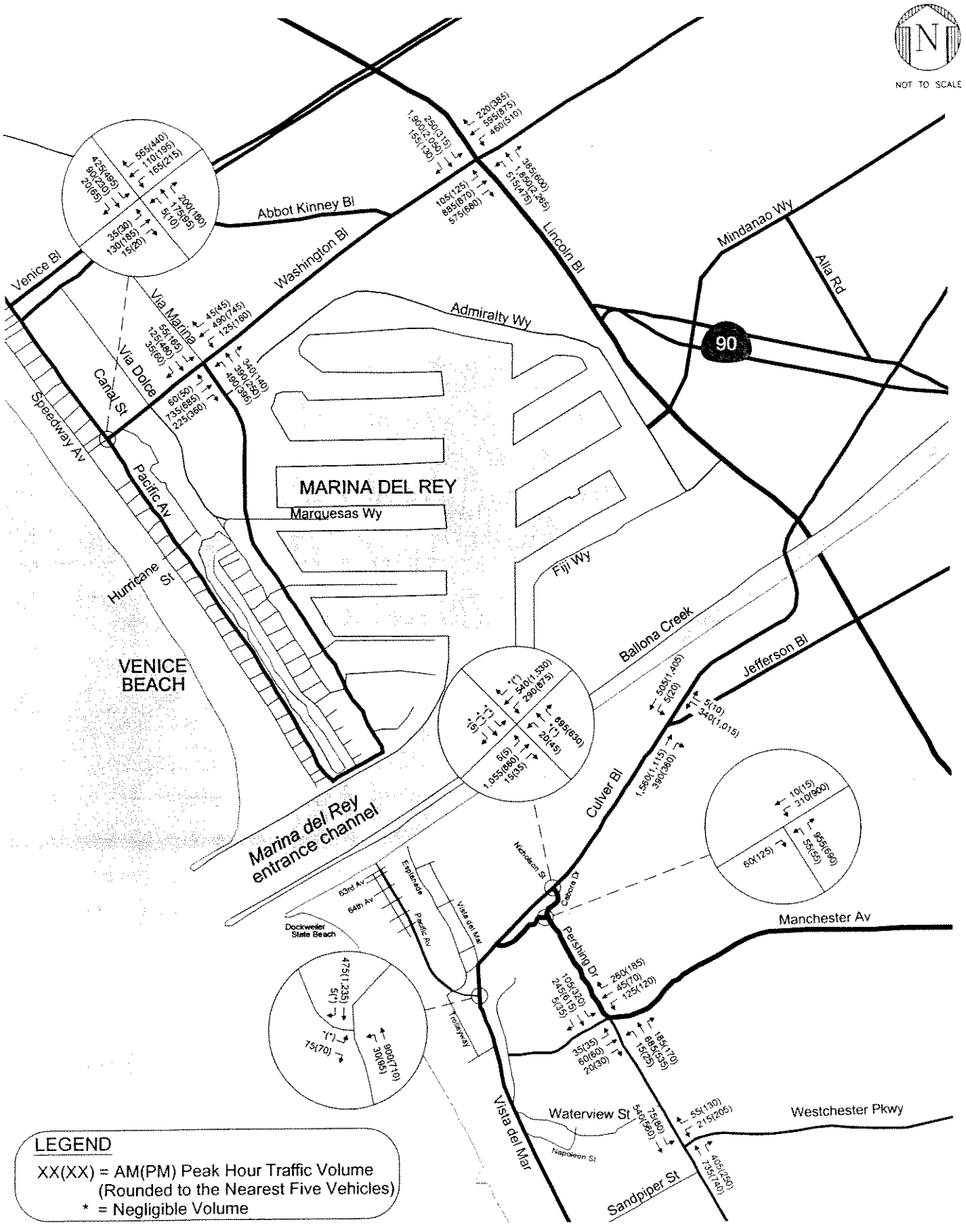
KAKU ASSOCIATES

APPENDIX E-7-4F
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
DOCKWEILER BEACH - SOUTH DOCKWEILER BEACH



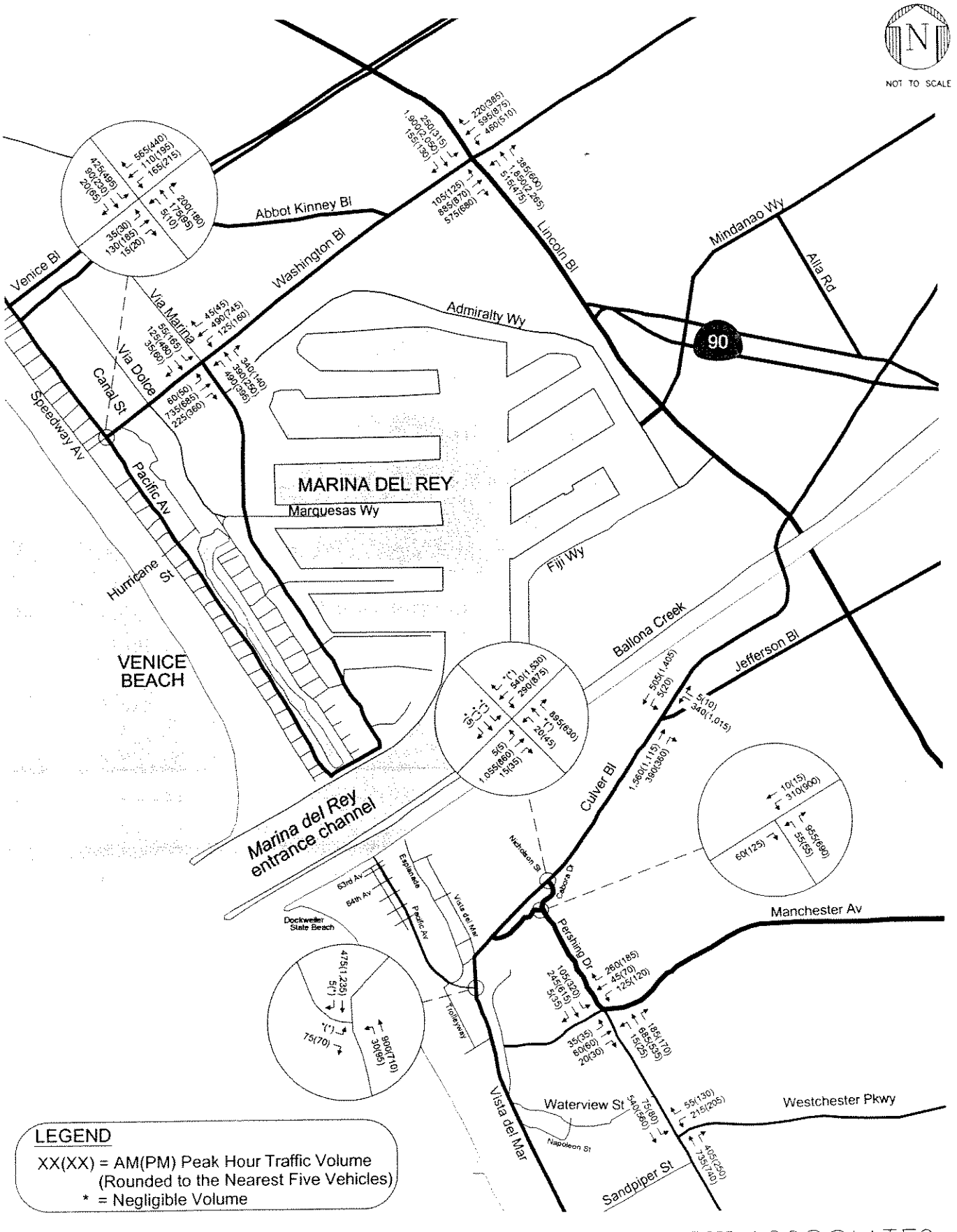
KAKU ASSOCIATES

APPENDIX E-7-4G
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH



KAKU ASSOCIATES

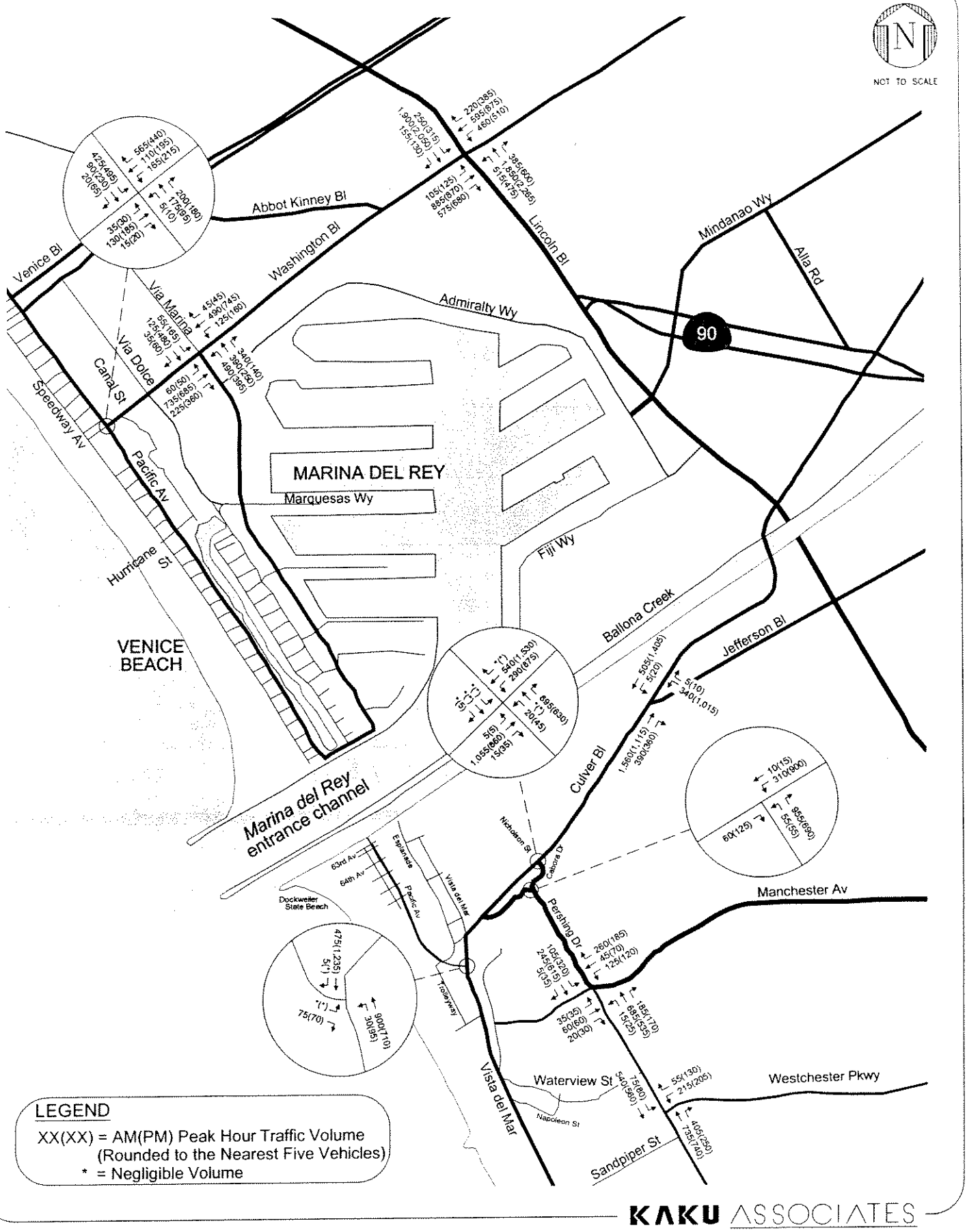
APPENDIX E-7-4H
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - DOCKWEILER BEACH SHAFT TO LAX SHAFT



KAKU ASSOCIATES

APPENDIX E-7-4I

FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - VPP TO LAX SHAFT VIA DOCKWEILER BEACH



KAKU ASSOCIATES

APPENDIX E-7-4J
FUTURE WITH PROJECT PEAK HOUR TRAFFIC VOLUMES
LARGE TUNNEL - VPP TO LAX SHAFT VIA INLAND

APPENDIX E-7-5

INTERSECTION PEAK HOUR TRAFFIC LEVEL OF SERVICE ANALYSIS

APPENDIX E-7-5A
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Existing (2005) V/C or Delay	LOS
*1 . Pacific Avenue & Washington Boulevard	AM PM	0.495 0.606	A B
*2 . Via Marina & Washington Boulevard	AM PM	0.602 0.762	B C
*3 . Lincoln Boulevard & Washington Boulevard	AM PM	0.767 0.960	C E
4 . Vista del Mar & Pacific Avenue [a]	AM PM	10 15	A B
*5 . Pershing Drive/Nicholson Street & Culver Boulevard	AM PM	0.942 0.895	E D
*6 . Culver Boulevard & Jefferson Boulevard	AM PM	0.647 0.739	B C
7 . Pershing Drive & Cabora Drive [a]	AM PM	45 **	E F
*8 . Pershing Drive & Manchester	AM PM	0.401 0.434	A A
*9 . Pershing Drive & Westchester Parkway	AM PM	0.280 0.280	A A

Notes:

Source: Kaku Associates, Inc.

* Intersection is currently operating under ATSAC system.

[a] Intersection is one-way stop controlled. Average vehicular delay in seconds per vehicle is reported for the worst-case approach rather than V/C ratio.

APPENDIX E-7-5B
FUTURE (YEAR 2011) CUMULATIVE BASE INTERSECTION
LEVEL OF SERVICE ANALYSIS

Intersection	Peak Hour	Cumulative Base	
		V/C or Delay	LOS
*1 . Pacific Avenue & Washington Boulevard	**AM**	0.562	A
	PM	0.672	B
*2 . Via Marina & Washington Boulevard	**AM**	0.659	B
	PM	0.824	D
*3 . Lincoln Boulevard & Washington Boulevard	**AM**	1.130	F
	PM	1.346	F
4 . Vista del Mar & Pacific Avenue [a]	**AM**	10	B
	PM	16	C
*5 . Nicholson Street & Culver Boulevard	**AM**	1.035	F
	PM	0.990	E
*6 . Jefferson Boulevard & Culver Boulevard	**AM**	0.705	C
	PM	0.811	D
7 . Pershing Drive & Cabora Drive [a]	**AM**	65	F
	PM	**	F
*8 . Pershing Drive & Manchester	**AM**	0.438	A
	PM	0.475	A
*9 . Pershing Drive & Westchester Parkway	**AM**	0.280	A
	PM	0.280	A

Notes:

Source: Kaku Associates, Inc.

* Intersection is currently operating under ATSA

[a] Intersection is one-way stop controlled. Average intersection vehicular delay in seconds per vehicle is reported rather than V/C ratio.

APPENDIX E-7-5C
FUTURE (2011) INTERSECTION LEVEL OF SERVICE ANALYSIS

Intersection	Peak Hour	Cumulative Base V/C or Delay	LOS	CP [N1-S1] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [N1-S2] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [N2-S1] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [N2-S2] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [N3-S1] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [N3-S2] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?
*1 Pacific Avenue & Washington Boulevard	AM	0.562	A	0.576	A	0.014	NO	0.576	A	0.014	NO	0.574	A	0.012	NO	0.574	A	0.012	NO	0.574	A	0.012	NO	0.574	A	0.012	NO
	PM	0.672	B	0.686	B	0.014	NO	0.686	B	0.014	NO	0.684	B	0.012	NO	0.684	B	0.012	NO	0.684	B	0.012	NO	0.684	B	0.012	NO
*2 Via Marina & Washington Boulevard	AM	0.659	B	0.675	B	0.016	NO	0.675	B	0.016	NO	0.665	B	0.006	NO	0.665	B	0.006	NO	0.667	B	0.008	NO	0.667	B	0.008	NO
	PM	0.824	D	0.828	D	0.004	NO	0.828	D	0.004	NO	0.830	D	0.006	NO	0.830	D	0.006	NO	0.830	D	0.006	NO	0.830	D	0.006	NO
*3 Lincoln Boulevard & Washington Boulevard	AM	1.130	F	1.138	F	0.008	NO	1.138	F	0.008	NO	1.136	F	0.006	NO	1.136	F	0.006	NO	1.137	F	0.007	NO	1.137	F	0.007	NO
	PM	1.346	F	1.355	F	0.009	NO	1.355	F	0.009	NO	1.354	F	0.008	NO	1.354	F	0.008	NO	1.355	F	0.009	NO	1.355	F	0.009	NO
4 Vista del Mar & Pacific Avenue [a]	AM	10	B	10	B	0	-	10	B	0	-	10	B	0	-	10	B	0	-	10	B	0	-	10	B	0	-
	PM	16	C	15	B	-1	-	16	C	0	-	15	B	-1	-	16	C	0	-	15	B	-1	-	16	C	0	-
If signalized	AM	0.369	-	0.677	-	0.308	NO	0.377	-	0.008	NO	0.677	-	0.308	NO	0.377	-	0.008	NO	0.677	-	0.308	NO	0.377	-	0.008	NO
If signalized	PM	0.521	-	0.581	-	0.060	NO	0.530	-	0.009	NO	0.581	-	0.060	NO	0.530	-	0.009	NO	0.581	-	0.060	NO	0.530	-	0.009	NO
*5 Nicholson Street & Culver Boulevard	AM	1.035	F	1.035	F	0.000	NO	1.035	F	0.000	NO	1.035	F	0.000	NO	1.035	F	0.000	NO	1.035	F	0.000	NO	1.035	F	0.000	NO
	PM	0.990	E	0.999	E	0.009	NO	0.999	E	0.009	NO	0.999	E	0.009	NO	0.999	E	0.009	NO	0.999	E	0.009	NO	0.999	E	0.009	NO
*6 Culver Boulevard & Jefferson Boulevard [b]	AM	0.705	C	0.708	C	0.003	NO	0.708	C	0.003	NO	0.708	C	0.003	NO	0.708	C	0.003	NO	0.708	C	0.003	NO	0.708	C	0.003	NO
	PM	0.811	D	0.811	D	0.000	NO	0.811	D	0.000	NO	0.811	D	0.000	NO	0.811	D	0.000	NO	0.811	D	0.000	NO	0.811	D	0.000	NO
7 Pershing Drive & Cabora Drive [a]	AM	65	F	65	F	0	-	65	F	0	-	65	F	0	-	65	F	0	-	65	F	0	-	65	F	0	-
	PM	**	F	**	F	N/A	-	**	F	N/A	-	**	F	N/A	-	**	F	N/A	-	**	F	N/A	-	**	F	N/A	-
If signalized	AM	0.251	-	0.255	-	0.004	NO	0.255	-	0.004	NO	0.255	-	0.004	NO	0.255	-	0.004	NO	0.255	-	0.004	NO	0.255	-	0.004	NO
If signalized	PM	0.646	-	0.646	-	0.000	NO	0.646	-	0.000	NO	0.646	-	0.000	NO	0.646	-	0.000	NO	0.646	-	0.000	NO	0.646	-	0.000	NO
*8 Pershing Drive & Manchester Avenue	AM	0.438	A	0.441	A	0.003	NO	0.441	A	0.003	NO	0.441	A	0.003	NO	0.441	A	0.003	NO	0.441	A	0.003	NO	0.441	A	0.003	NO
	PM	0.475	A	0.478	A	0.003	NO	0.478	A	0.003	NO	0.478	A	0.003	NO	0.478	A	0.003	NO	0.478	A	0.003	NO	0.478	A	0.003	NO
*9 Pershing Drive & Westchester Parkway	AM	0.280	A	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO
	PM	0.280	A	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO
Total Number of Impacts							0				0				0				0				0				0

Intersection	Peak Hour	Cumulative Base V/C or Delay	LOS	CP [M1] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [M2] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [M3] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?	CP [M4] V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact?
*1 Pacific Avenue & Washington Boulevard	AM	0.562	A	0.608	B	0.046	NO	0.608	B	0.046	NO	0.608	B	0.046	NO	0.608	B	0.046	NO
	PM	0.672	B	0.719	C	0.047	YES	0.719	C	0.047	YES	0.719	C	0.047	YES	0.719	C	0.047	YES
*2 Via Marina & Washington Boulevard	AM	0.659	B	0.661	B	0.002	NO	0.661	B	0.002	NO	0.661	B	0.002	NO	0.661	B	0.002	NO
	PM	0.824	D	0.835	D	0.011	NO	0.835	D	0.011	NO	0.835	D	0.011	NO	0.835	D	0.011	NO
*3 Lincoln Boulevard & Washington Boulevard	AM	1.130	F	1.137	F	0.007	NO	1.137	F	0.007	NO	1.137	F	0.007	NO	1.137	F	0.007	NO
	PM	1.346	F	1.355	F	0.009	NO	1.355	F	0.009	NO	1.355	F	0.009	NO	1.355	F	0.009	NO
4 Vista del Mar & Pacific Avenue [a]	AM	10	B	10	B	0	-	10	B	0	-	10	B	0		10	B	0	-
	PM	16	C	16	C	0	-	16	C	0		16	C	0	-	16	C	0	-
If signalized	AM	0.369	-	0.369	-	0.000	NO	0.369	-	0.000	NO	0.369	-	0.000	NO	0.369	-	0.000	NO
If signalized	PM	0.521	-	0.522	-	0.001	NO	0.522	-	0.001	NO	0.522	-	0.001	NO	0.522	-	0.001	NO
*5 Nicholson Street & Culver Boulevard	AM	1.035	F	1.037	F	0.002	NO	1.037	F	0.002	NO	1.037	F	0.002	NO	1.037	F	0.002	NO
	PM	0.990	E	1.000	E	0.010	YES	0.995	E	0.005	NO	0.995	E	0.005	NO	0.995	E	0.005	NO
*6 Culver Boulevard & Jefferson Boulevard [b]	AM	0.705	C	0.710	C	0.005	NO	0.708	C	0.003	NO	0.708	C	0.003	NO	0.708	C	0.003	NO
	PM	0.811	D	0.813	D	0.002	NO	0.813	D	0.002	NO	0.813	D	0.002	NO	0.813	D	0.002	NO
7 Pershing Drive & Cabora Drive [a]	AM	65	F	65	F	0	-	65	F	0	-	65	F	0		65	F	0	
	PM	**	F	**	F	N/A	-	**	F	N/A	-	**	F	N/A	-	**	F	N/A	
If signalized	AM	0.251	-	0.251	-	0.000	NO	0.251	-	0.000	NO	0.251	A	0.000	NO	0.251		0.000	NO
If signalized	PM	0.646	-	0.646	-	0.000	NO	0.646	-	0.000	NO	0.646	B	0.000	NO	0.646	-	0.000	NO
*8 Pershing Drive & Manchester Avenue	AM	0.438	A	0.438	A	0.000	NO	0.438	A	0.000	NO	0.438	A	0.000	NO	0.438	A	0.000	NO
	PM	0.475	A	0.475	A	0.000	NO	0.475	A	0.000	NO	0.475	A	0.000	NO	0.475	A	0.000	NO
*9 Pershing Drive & Westchester Parkway	AM	0.280	A	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO
	PM	0.280	A	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO	0.280	A	0.000	NO
Total Number of Impacts							2				1				1				1

Notes:

Source: Kaku Associates, Inc.

CP Cumulative Plus Project Condition

[N3-S1] Mariposas Way/Via Marina - Pacific Av

[N1-N3] Mariposas Way/Via Marina - South Dockweiler Beach

[N2-S1] Pacific Avenue

[N2-S2] Pacific Avenue - South Dockweiler Beach

[N3-N1] Dockweiler Beach - Pacific Avenue

[N3-N2] Dockweiler Beach - South Dockweiler Beach

[M1] Large Transit - Dockweiler Beach

[M2] Large Transit - Dockweiler Beach Shuttle to LAX Shuttle

[M3]

Large Transit - Vehicle Pumping Plant to LAX Shuttle via Dockweiler Beach

[M4] Large Transit - Vehicle Pumping Plant to LAX Shuttle via Inland

[a]

Intersection is two-way stop-controlled. Its operations have been analyzed using *Highway Capacity Manual* stop-controlled methodology for the purpose of evaluating the operating condition of the intersection. Average intersection vehicular delay in seconds per vehicle is reported rather than V/C ratio. The bottom rows show analysis using the LADOT shuttle strategy for the purpose of application of City of Los Angeles significance criteria. V/C ratio is reported.

[b] Lane configuration different from existing condition

* Intersection is currently operating under ATSAC system

** Overflow condition indicating over-saturated conditions for which average vehicle delay cannot be calculated

08-0504

BPW 005-08

APPENDICES **PART TWO**
VENICE PUMPING PLANT
DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

Prepared for

City of Los Angeles
Bureau of Engineering
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December 20, 2005

URS

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APPENDIX **F**

CULTURAL AND PALEONTOLOGICAL RESOURCES

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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INTRODUCTION

Greenwood and Associates has conducted an archaeological investigation for the proposed construction of the Venice Pumping Plant Dual Force Main Project in the community of Marina del Rey (MDR) in the City of Los Angeles.

PROJECT DESCRIPTION

The City of Los Angeles, Department of Public Works has identified a need to prepare California Environmental Quality Act (CEQA) documentation in support of advancing the final engineering design and construction of the Venice Pumping Plant (VPP) No. 646 located at 140 Hurricane Avenue in the community of Venice to an existing junction structure to the North Outfall Sewer (NOS) located near the intersection of Pacific Avenue and Waterview Street in the community of Playa del Rey (Figure 1).

The VPP Dual Force Main Project is proposed as a solution to expanding existing capacity of the 48-inch diameter Coastal Interceptor Sewer (CIS) force main by constructing an additional 54-inch diameter dual force main. The proposed 54-inch sewer will be constructed in a 76-inch steel casing. Given an ever-increasing need to accommodate wastewater flows, three distinct site-location alternatives are identified for CEQA assessment (Figure 2). They are:

1. The approximately 10,000-foot VPP-Pacific Avenue-Waterview Street junction structure;

2. The approximately 10,000-foot VPP-Marquesas Way-Via Marina-Pacific Avenue/Waterview Street junction structure; and

3. The approximately 10,000-foot VPP-Venice Beach/Dockweiler State Beach existing 20-foot wide sewer easement-Waterview Street junction structure. This alignment will be located within the existing 20-foot easement for the existing line and offset to the east by an as-yet undetermined number of feet.

Since all three alternatives include crossing the Marina del Rey Channel and Ballona Creek, micro-tunneling is the only construction method being considered. The two tunnel boring locations situated in the south side of the MDR Channel/Ballona Creek will be launching sites; the three boring locations situated on the north side of the MDR Channel will be receiving sites. Site Alternative 2 also includes crossing the Venice Grand Canal. Micro-tunneling is the only construction method being considered for obvious environmental protection reasons. Three boring locations will flank the Grand Canal crossing from the VPP to and including the intersection of Via Dolce and Via Marina in MDR.

The method of construction to be utilized for all land portions of the project will be open excavation (cut-and-cover).

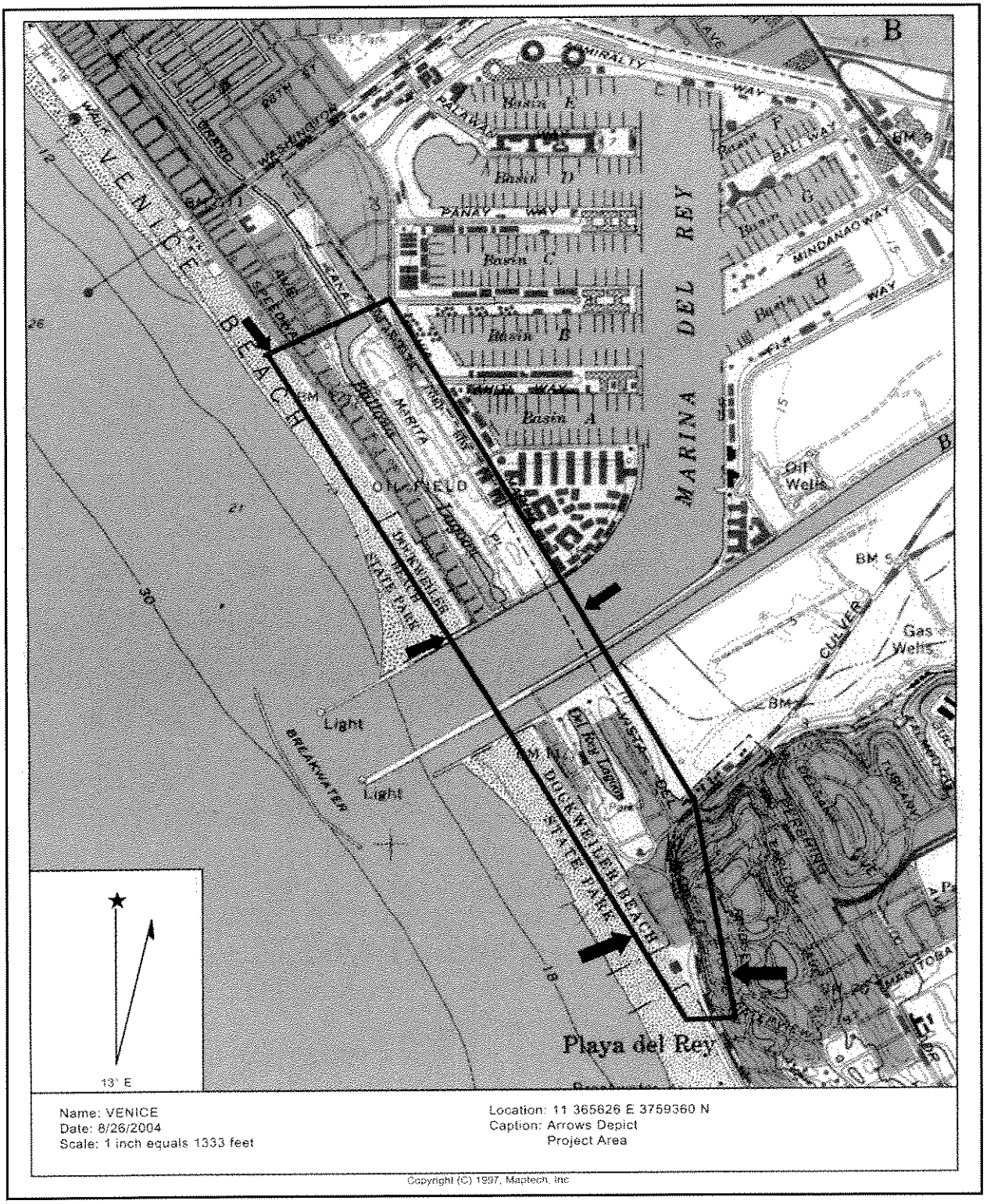

Figure 1. Vicinity Map (USGS Venice Quadrangle).

GENERAL LOCATION OF CULTURAL FINDINGS

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	Figure 2

The alignment along Dockweiler Beach is open beach with residential units, apartments, condos, and single family residences on the east side (Figure 3). The housing is on the beach with some areas of sidewalk meeting the sand. The beach extends outward 900 feet west to the ocean. The Least Tern nesting area is present just north of the Marina del Rey Channel. The nesting area is rectangular and fenced with chainlink and barbed wire with clumps of vegetation present. The rest of the beach is manicured and contains volleyball courts, drainage pipes, and trash containers at selected points. The Dockweiler Beach alignment is covered with sand.

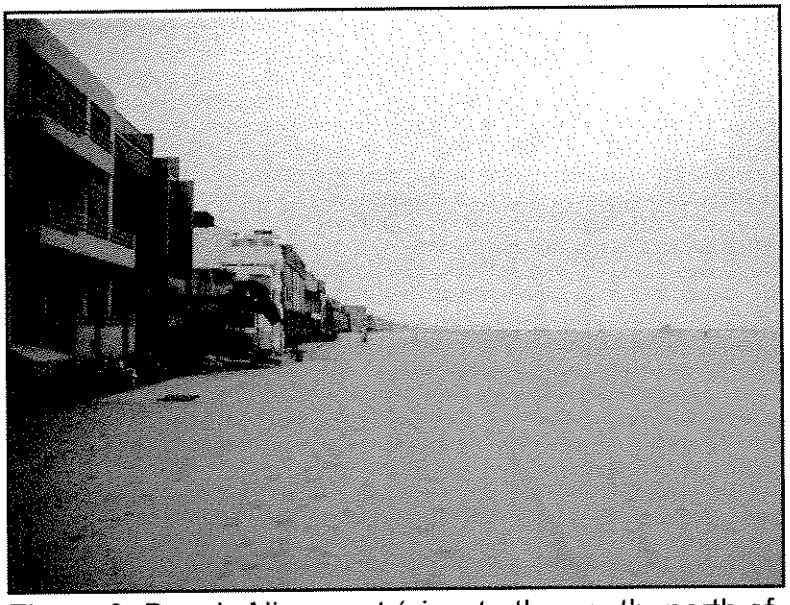

Figure 3. Beach Alignment (view to the south, north of the Channel).

South of the Channel

The combined alternatives south of the Marina del Rey channel include residential units, park areas, parking areas, sand dunes, commercial structures, and eroded bluffs near the southern terminus. The alignment follows Pacific Avenue which turns northeast at Culver Boulevard and transitions to Vista del Mar. A large residential unit is currently being constructed west of Vista del Mar near Surf Street. The beach area alignment is sand, two cement curvilinear paths, and sand dunes.

BACKGROUND

The following summary is based on the literature search conducted at the South Central Coastal Information Center, California State University, Fullerton for the Venice Dual Force Main project. It is designed both to indicate the potential for the presence of cultural resources within the project area, and to provide a context for any cultural data that may be present within the study area.

Prehistory

The archaeological record indicates that sedentary populations occupied the coastal and inland regions of California more than 9,000 years ago. Early periods were characterized by processing of hard seeds with the mano and milling stone and the use of the atlatl (dart throwers) to bring down large game, e.g., deer. Villages were typically around permanent water sources that allowed exploitation of a variety of different habitats for food. In the later periods, prior to the arrival of Europeans, the bow and arrow was in use, beads were being

used as money, trade and social networks had evolved, and the mortar and pestle were used to process acorns.

For the Ballona Lagoon area, one of the more significant research questions was the seeming lack of permanent village sites in the resource rich environment. Excavations at the Admiralty Site, CA-LAN-47, near the northeastern edge of Marina del Rey harbor, revealed that the Ballona area "appears to have been visited by small groups on short-term forays that targeted a wide spectrum of the region's abundant resources" (Altschul et al. 1992:376). It was theorized that "the dynamic nature of the ecosystem may have been so volatile that long-term dependence on the resources of the Ballona may have been perceived as too risky to base a sedentary subsistence strategy" and "exploited only on an opportunistic basis" (Altschul et al. 1992:375).

The Admiralty site is only one of several prehistoric sites located along the lower reaches of Ballona and Centinela creeks. Analysis of dated components suggests that a distinct break in settlement patterns occurs between Middle and Late Periods. During the Middle Period, settlement was restricted to bluff tops while Late Period usage appears to be limited and confined to the margin of the wetlands. This shift was probably triggered by environmental causes. As sedimentation increased in the Ballona, the open lagoon was transformed into a resource-rich estuary and marsh (Altschul et al. 1992:416).

Significant excavations have been carried out in the search area along the bluffs of Ballona Creek. Van Horn and his associates conducted a number of excavations at a series of sites (CA-LAN-59, -61, -63, -64, and -206) in the Del Rey Hills (Murray and Van Horn 1983;Van Horn 1984, 1987; Van Horn and Murray 1984, 1985). Brian Dillon conducted excavations in the Del Rey Hills at CA-LAN-61 and LAN-1018 (1982). In 1961 Keith Johnson investigated a portion of CA-LAN-47 and found numerous artifacts including harpoons, bone tools, choppers, hammerstones, and other items. Multiple burials were also encountered. Dillon (et al. 1988) did additional excavations on another part of CA-LAN-47 and found dense concentrations of artifactual and faunal materials. Statistical Research conducted data recovery where Dillon worked and recovered significant archaeological data, which led researchers to believe that the site was a series of temporary camps that were established along the lagoon at various times throughout the year when resources became available (Grenda et al. 1994:35). Excavation of a major burial ground (>300 individuals) is on-going in the area north of Lincoln Boulevard at the site of the Playa Vista housing development. These investigations serve to highlight the sensitivity of the area for archaeological materials.

Ethnography

Based on their association with the Spanish Mission establishment of San Gabriel Archangel, the Native American people described as inhabiting the region surrounding the project area are known as Gabrielino. These people were hunters and gatherers with permanent villages, specialized processing sites, formal cemeteries, and trade networks with local and non-local groups. It is believed that initially they practiced a seasonal

strategy, moving from location to location exploiting various food resources, but with technological advances they were able to maintain permanent year round villages with reliance on acorns and marine resources. At the time of European contact, the Gabrielino occupied an area that included the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers, the Los Angeles Basin, the coast from Orange County's Aliso Creek north to Topanga Canyon, and the Channel Islands of Santa Catalina, San Clemente, and San Nicholas (Bean and Smith 1978: Kroeber 1953; McCawley 1996). Several chronological frameworks have been developed for the Gabrielino region including those by Wallace (1955) and Warren (1968) and later, McCawley (1996).

Spanish Period

The Spanish Period of American history witnessed exploration of the New World from 1541 to 1769. Spanish explorers were searching for wealth, conquest, and adventure. After conquering the Aztecs in Central America, sailing expeditions undertaken by Hernando Cortes and his men surveyed and roughly recorded the coastlines of the western shores of the Pacific Ocean and the Gulf of California. Inland expeditions were undertaken by Coronado, de Alarcón, and Diaz through Arizona, New Mexico, Texas, and Kansas. Diaz explored the east side of the Colorado River in 1541, entering California in what is now Imperial County (Whitehead 1978). In 1542, Juan Rodrigues Cabrillo undertook a voyage along the Pacific coastline from Puerto de Navidad in Mexico to San Diego, reaching the Channel Islands and as far north as Monterey. Cabrillo met with the Native Americans living along the coast and ventured inland for a short distance. Native Americans related stories to Cabrillo that other contact with Spanish explorers along the Colorado River had resulted in violence and they were afraid of him and his men. Cabrillo died in 1543 and was buried on San Miguel Island. Bartolome Ferrelo continued the voyage to Gold Beach, Oregon and returned to Navidad when his ships needed repairs. Sebastian Vizcaino, backed by the Crown and Church, repeated much of Cabrillo's journey 60 years later. He brought with him four priests, who accurately recorded the coastline and bays and noted all aspects of the land and its peoples. Exploration ceased until Gaspar de Portolá's arrival in the area in 1769 (Whitehead 1978).

California had been claimed by Spain during the sixteenth century as part of the empire it was establishing in the New World. Fearing an invasion of the territory by Russians, Carlos III, King of Spain, ordered that settlements be made in Alta California (Whitehead 1978). To solidify their claims, the Spanish government fortified San Diego and Monterey and started to establish Mission outposts. In conjunction with the founding of the Missions, the Spanish governor of California, Felipe de Neve, ordered the establishment of several pueblos to provide food and goods to the presidios that would protect Alta California. One of these locations was Los Angeles, founded by colonists from Sinaloa and Sonora on September 4, 1781. With abundant good land, the town prospered and grew and by 1840, it was the largest settlement in California (Costello and Wilcoxon 1978:18). Grants of land were made to individuals who had made contributions to the Crown through service in the government or army or through other means. The lands granted, referred to as ranchos, really represented grazing rights for cattle. These individuals also purchased land around the center of the pueblo to establish homes to use when in town.

San Gabriel Mission was founded in September 1771. Padres baptized Native American Indians, calling them neophytes, and used their labor to produce items for trade and provide food. "San Gabriel Mission was recognized as the richest of the missions" (Black 1975:xvii), trading in hides and cattle. Records were kept by each Mission for all baptisms and marriages and it is from these records that we learn much of what occurred.

Mexican Period

Mexico declared independence from Spain in 1821, and the Los Angeles City Council was formed in 1822. Mission lands during the Mexican period were to be held in trust for the Indians. "The missions had never held title to the land" (Black 1975:190). Political maneuvering by the Spanish grantees, men like Tiburcio Tapia and Antonio Maria Lugo, forced a weak Governor Figueroa to issue "Provisional Regulations" allowing them to occupy the land (Black 1975).

The project area is in the southwest corner of the Rancho La Ballona that stretched inland from the ocean into what is now Palms and Culver City. The rancho contained 13,920 acres and was a land grant issued by the Mexican governor in 1839 to Ygnacio and Augustin Machado and Felipe and Tomas Talamantes (Cowan 1977:18). The early landowners who had accumulated great tracts of land to graze cattle were known as "Beef Barons" (Whitehead 1987:315). They grew quite rich and supported large families and large numbers of employees, many of them Native Americans. Commonly, they hired a majordomo to oversee the daily operations of the rancho. At the conclusion of the Mexican period, the Treaty of Guadalupe in 1848 specified "that Mexican citizens in the territory were guaranteed their property rights" (Black 1975:215).

American Period

Alta California became a state in 1850 with Monterey as the capital. It was during the American Period that men from the eastern and midwestern states settling in California found the means to acquire great wealth in a relatively short time, often by marrying the daughters of the Beef Barons. During the 1860s, the population grew rapidly, partly because many of the old rancho families lost title to their land, leaving a vacuum which was promptly filled by settlers from central and eastern United States. At Ballona Lagoon in the 1860s, squatters had set up a shack and supplied food, drink, and boats to duck hunters.

Moses Wicks, a land speculator believed the area had investment potential and purchased the property around the inlet of Ballona Lagoon. His intentions were to develop a harbor site that would compete with the Southern Pacific's monopoly on coastal traffic through San Pedro, Wilmington, and Santa Monica. The Santa Fe Railroad saw promise in this scheme and agreed to run track to the development. Wicks raised $300,000 and started dredging the harbor (Altschul et al. 1992:68). The first train arrived at Port Ballona on August 24, 1887 (Figure 4). Round the clock dredging, massive tides that swept the sand back into the harbor, storms, and hard soils eventually bankrupted the company and the plan failed (Playadelrey.com 2004).

In 1902, another investment firm announced the formation of the Beach Land Company which had teamed with Henry Barbour. Barbour owned 1,000 acres around the lagoon and renamed the community Playa del Rey (Figure 5). The intent was to develop a Venetian style resort. Sherman and Clark, who owned the Los Angeles Pacific Electric trolley line, extended it to the new resort. This led to an increase in lot sales but it never became a viable enterprise. The trolley company built the $200,000 Hotel del Rey with 50 guest rooms and a restaurant. A fishing pier, an incline railroad, boat course, a motordrome, grandstands, and other amenities drew in the crowds. In the early 1900s, a combination of natural and man-made disasters destroyed these attractions and the area settled into decline (Playadelrey.com 2004).

The Ohio Oil Company hit a wildcat well east of Venice's Grand Canal in 1929, and drilling began throughout the area south of Washington Boulevard and west of Lincoln Boulevard. By the end of 1930, Playa del Rey, with more than 50 wells, was the fourth largest oil field in California (naid.sppsr.ucla.edu/venice/articles 2004) and by the end of 1931, there were 325 active oil wells in the Ballona Lagoon area. The 1923(1940) USGS Venice 7.5' quadrangle map depicts many of these wells (Altschul et al. 1991:69). At first, wells were located on artificially constructed islands in the wetlands, but increasing production led to the demand for channelization of the lower course of Ballona Creek,

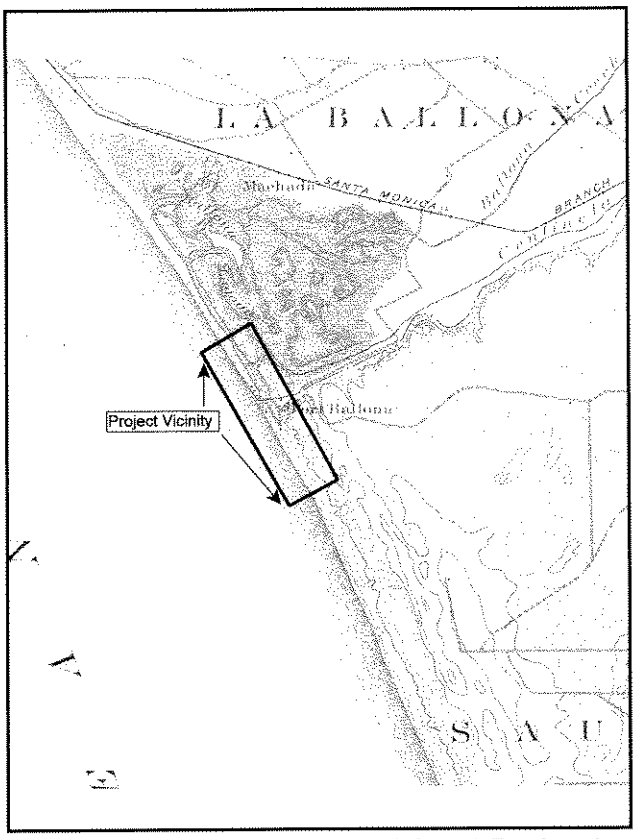

Figure 4. Port Ballona (USGS 15' Redondo Quadrangle, 1896).

Figure 5. Playa del Rey, ca. 1929 (Los Angeles Public Library).

completed by 1935. Otherwise, the area was subjected to little development by its primarily oil company owners.

A California State Division of Mines map (Gay and Hoffman 1954:Plates 5 and 6) shows the Playa del Rey oilfield extending southeast from Santa Monica Bay across the southern part of the city of Venice and into the Del Rey Hills. As of May 1, 1953, the Del Rey field had produced more than 56 million barrels of oil and 56 million cubic feet of gas since its inception in 1929 (Gay and Hoffman 1954:578-579).

The oil demands of World War II depleted most of the Playa del Rey wells, and they were dismantled during the 1950s and 1960s (Altschul et al. 1991:76). By 1953, there were 103 wells remaining (Gay and Hoffman 1954:578-579). Since 1942, natural gas has been piped into the depleted oil fields. Southern California Gas records indicate that billions of cubic feet of natural gas are being stored at pressures of 1700 pounds psi and above (www.saveballona.org).

In 1938 the Army Corps of Engineers channelized Ballona Creek which resulted in a loss of much of the lagoon. Dredging for the yacht harbor at Marina del Rey began in 1961. More of the lagoon was lost in the early 1960s when the entrance channel was cut for Marina del Rey.

Moses Wicks' dream of a harbor was studied several times and eventually revived by Chamber of Commerce President, Larry Norman. The problem of storms causing severe wave action was corrected by the construction of a breakwater at the channel mouth in January 1965 (Marinadelrey.com). Norman secured the funds and approvals, and the harbor was dedicated in April of 1965. After its official dedication in 1965, the marina became a huge success, raising property values and attracting residential and commercial development (Altschul et al. 1992:87-88). The character of the area changed from industrial to resort/residential.

The most current USGS Venice 7.5' quadrangle map [1964(1981)] depicts a remaining oil field within the Ballona Lagoon portion of the project area, as well as a few oil and gas wells on either side of Ballona Creek less than 1 mile inland from Dockweiler State Beach.

LITERATURE AND ARCHIVAL REVIEW

A review of available literature, archaeological site archives, and relevant historical maps was conducted at the South Central Coastal Information Center on July 14, 2004 by Linda Rehberger of Greenwood and Associates. The search area for the archival research was one-half mile around the boundaries of the project area to encompass any potential minor changes in design and provide a broader context to evaluate the sensitivity of any cultural resources encountered (Tables 1 and 2). Some of the sites in Table 1 were encountered in surveys that overlap the VPP but which are not located in this project area.

One archaeological site, CA-LAN-66, was recorded within or adjacent to the project area. It is located at the south end of Trolley Way, near Surf Street under what was the Westport Beach Club. The site was originally located by R. F. Van Valkenburgh and then informally recorded by Malcolm Farmer in 1936. Rozaire and Belous completed an archaeological site record in 1950 and the site was designated as CA-LAN-66. The record indicates that the "grounds of the Westport Beach Club are completely covered so that it is impossible to locate any signs of Indian occupation there" (Rozaire and Belous 1950). Vista del Mar is noted as being on the east side, possibly obscuring the remains. Van Valkenburgh was a noted archaeologist and it is probable that the site was of prehistoric origin. In 1980, another survey was conducted at the Westport Beach Club and no archaeological materials were observed (Singer 1980a). The Singer investigation focused on finding the site and confidence was high that it was destroyed sometime before 1950. It was reported that "the buildings and facilities which exist today are not the same as those which stood on the grounds in 1936, or in 1950 for that matter" (Singer 1980a:5). Monitoring was recommended if any ground disturbing activities were initiated. A State Parks archaeologist did a survey along Dockweiler State Beach and mapped the site location, as previously recorded, but made no comments about it (Woodward 1987). No follow-up reports were on file at the South Central Coastal Information Center.

Table 1. Summary of Archaeological Investigations, Venice Pumping Station Project Area.

Reference Number	Name of Project	Type of Investigation	Author/Date	Results
L-27	Del Rey/ Strand	EIR	Engineering Service Corp.	No impact
L-188	Evaluation of the area known as Tentative Tract 31351	EIR	Kaufman 1976	No impact
L-442	Silver Strand Tract, Marina Del Rey	Records search and survey	Clewlow 1979	No impact
L-630	Silver Strand Tract, Marina Del Rey	Record search and survey	Singer 1979	Negative
L-751	La Ballona Creek Area	Survey, EIR	Rozaire and Belous 1950	19-000066
L-798	Westpoint Beach Club in Playa Del Rey	Phase I report and excavation	Singer 1980a	19-000066 could not be located.
L-839	Baldwin Hills Campsites, Ballona Creek area	Survey	Farmer 1936	19-000068
L-1282	Playa Sol Project	Survey	Padon 1983	Negative

Table 1. Summary of Archaeological Investigations, Venice Pumping Station Project Area.				
Reference Number	Name of Project	Type of Investigation	Author/Date	Results
L-1626	Dockweiler State Beach	Survey	Woodward 1987	Negative, photos of historic buildings
L-3583	Compilation of Archaeological Site Information	Special study/ analysis - standardization report of all sites in the Los Angeles Basin	Bucknam 1974	All known sites listed by quadrangle
L-4865	Cultural Resource Assessment Facility No. SM 018-01	Records search	Duke 2001	Negative
L-4868	Sempra Energy Gas	Record search	Shepard, Mason, Lander 2000	19-000064, 19-000065, 19-000203, 19-000204, 19-000206
L-5556	Vista Del Mar, Culver Boulevard to Napoleon Street	Survey	Tillman 1977	Nothing historic, mentions an archaeological site

Table 2. Summary of Archaeological Investigations, Venice Pumping Station, Search Area.				
Reference Number	Name of Project	Type of Investigation	Author/Date	Results
L-436	Summa Corp.	Record search and survey	Pence 1979	19-000054, 19-000059, 19-000060, 19-000061, 19-000062, 19-000063, 19-000064, 19-000065, 19-000193, 19-000203, 19-000211, 19-000212, 19-000212, 19-000213, 19-000216, 19-001018
L-624	Corner of Via Dulce and Topsail	Records search and survey	Rosen 1979	No impact
L-682	120-126 Driftwood Street	Records search and survey	Greenwood 1980	Negative
L-846	3312 Pacific Avenue	Records search and survey	Singer 1980b	Negative

Table 2. Summary of Archaeological Investigations, Venice Pumping Station, Search Area.				
Reference Number	Name of Project	Type of Investigation	Author/Date	Results
L-873	373-375 Fowling Street	Records search and survey	Singer 1980c	No impact
L-1157	Job. No. 1GOL0601	Records search and survey	Dillon 1982	Negative
L-4868	Sempra Energy Gas	Record search	Shepard, Mason, Lander 2000	CA-LAN-64, -65, -203, -204, -206
L-4910	LAX	Survey	Raschke, Stadum and Bissell 1995	19-000202, 19-000214, 19-000691, 19-001118; NR#9200095, 74000522, 86001666
L-5556	Vista Del Mar, Culver Boulevard to Napoleon Street	Historic survey	Tillman 1977	Nothing historic, mentions an archaeological site
L-5559	AT & T Wireless Services Facility Number R319	Records search and survey	Lapin 2000a	19-001716, 19-000066
L-5561	Pacific Bell Wireless Facility	Records search and phase I survey	Lapin 2000b	Negative
L-5563	Request for Determination of Effect, 07-LA-187, P.M. 2.0/3.5	Road construction	US Department of the Interior, National Park Service	19-167308, 19-167310
L-5761	Facility No. Sm 018-01 (appears to be a duplicate)	Records search	Duke 2001	Negative

Historical maps consulted:

USGS Redondo Beach 15' Quadrangle, 1896, no structures.

USGS Redondo Beach 15' Quadrangle, 1944, 3 structures north of Ballona Creek; many structures south of Ballona Creek.

Persons/Organizations Contacted

Ms. Barbara Whitney, President, California Associations of Museums, Los Angeles.
Dr. Christopher Donnan, Director, Fowler Museum of Cultural History, UCLA.
Dr. Jerome Selmer, Executive Director, Southwest Museum, Los Angeles.
Mr. Jeffrey Rudolph, Executive Director, California Museum of Science and Industry, Los Angeles.
Dr. William Lee, Director, Los Angeles Maritime Museum, San Pedro.
Supervising Ranger, Malibu Lagoon State Beach, Malibu.
Ms. Louise Gabriel, President, Santa Monica Historical Society and Museum, Santa Monica.
Mr. Lawrence Jelinek, American Historical Association, Los Angeles.
Banning Residence Museum, Wilmington.
History and Heritage Committee, American Society of Civil Engineers, Los Angeles.
Dr. Thomas Andrews, Director, Historical Society of Southern California.
Dr. William Estrada, El Pueblo de Los Angeles Historic Park, Los Angeles.
Electric Railway Historical Association of Southern California.
Society of Architectural Historians, Los Angeles.

Native American Groups/Interested Parties

Native American Heritage Commission, Rob Wood, Sacramento.
Samuel Dunlap, Temecula.
Los Angeles City/County Native American Indian Committee, Ron Andrade, Los Angeles.
Ti'At Society, Cindi Alvitre, Reseda.
Gabrielino Tongva Indians of California Tribal Council, John Tomy Rosas, Marina del Rey.
Gabrielino/Tongva Tribal Council, Anthony Morales, San Gabriel.
Craig Torres, Santa Ana.
Coastal Gabrielino Diegueno, Jim Velasques, Riverside.
Gabrielino/Tongva Council/Gabrielino Tongva Nation, Santa Monica.
Gabrielino Band of Mission Indians of California, Susan Frank, Beaumont.
Gabrielino Tongva Indians of California Tribal Council, Robert Dorame, Culver City.
Gabrielino Tongva Indians of California Tribal Council, Mercedes Dorame, Malibu.

RESULTS OF THE INVESTIGATION

Archival Research

The archival research indicated that one archaeological site, CA-LAN-66, was present within the project alignment south of the Marina del Rey channel. Two previous investigations had concluded that the site had been destroyed (Rozaire and Belous 1950; Singer 1980a) by development.

The area surrounding the project alignments can be characterized as highly sensitive for archaeological sites with six known archaeological sites (CA-LAN-47, -66, -1118, -1716, -1970, and -100116) within a half mile of the project alignments.

Persons Contacted

The Native American Heritage Commission (Wood 2004) reported that the "Village of *Sa'aanga*, including recorded archaeological sites CA-LAN-63, -64, -65, -203, 204, and 206a are in the vicinity" of the Venice Pumping Plant Project. These sites are in the Del Rey hills and are outside of this record search boundary. Johnson (1991) believed that *Sa'aanga* was not a village but either a Gabrielino placename or a Gabrielino settlement of Indian laborers associated with one of the Spanish/Mexican ranchos in the Ballona vicinity.

Field Survey

The field survey was conducted on July 26 and 29, 2004 by John M. Foster, RPA. The record search for the project area indicated that the general area was sensitive for archaeological resources. The project area was surveyed by zigzaging the alignments, checking all open ground, and examining erosional cuts, rodent burrows, and construction sites along the way.

Alternatives North of the Channel

Pacific Avenue Alignment

Marine shell was noted in planters and isolated sections of open ground.

Dockweiler Beach Alignment

Marine shell was noted in beach sand along the entire alignment.

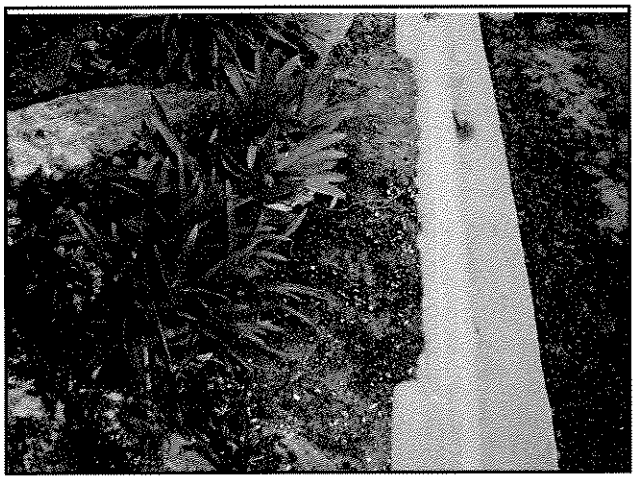

Figure 6. Shell Fragments in Median on Via Marina.

Marquesas Way-Via Marina

Marine shell was noted in planters, street median (Figure 6), and isolated sections of open ground.

Alternatives South of the Channel

Pacific Avenue Alignments

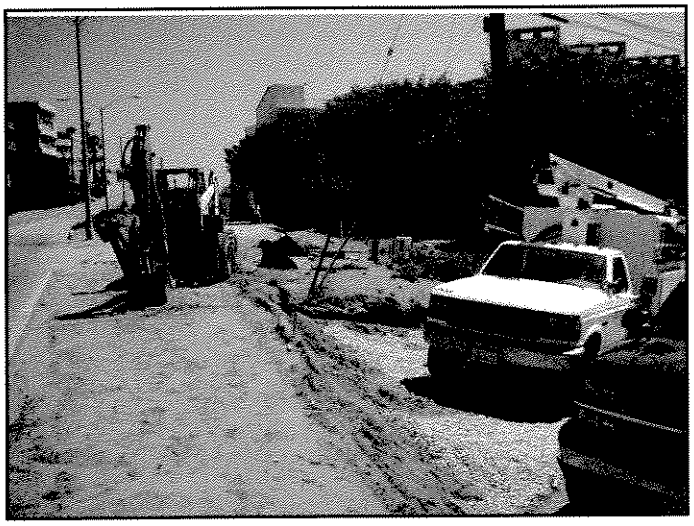

Figure 7. Utility Pole near CA-LAN-66.

The location of the recorded archaeological site, CA-LAN-66, was intensively examined for evidence of cultural remains. Based on the mapping of the site on the USGS Venice Quadrangle, it would appear that the majority of the site is under a housing development in construction. Previous investigations (Rozaire and Belous 1950; Singer 1980a) had failed to find any evidence of the site and had reasoned it had been destroyed by development. During the field survey, the site location was visited. The site area is under active construction for multiple residential units. The only area that was accessible was a small triangular section of open ground around a utility pole at Vista del Mar and the northwestern corner of the new housing development (Figure 7). Three fragments of weathered shell were observed, two unidentifiable pieces of marine shell and one piece of *Amiantis callosa*.

The survey of the rest of the alignment encountered weathered shell in every location where soil could be observed including a small hill at the southern terminus of the alignment.

Dockweiler Beach Alignment

Marine shell was noted in beach sand along the entire alignment.

The presence of marine shell can be indicative of cultural activities and its prevalence within the project area warranted research into its origin. The archival research had identified several surveys that have been conducted within 0.5 mile of the project area. Many of these studies encountered marine shell which provided identifications (Table 3).

Table 3. Shell Species Identified in Project Search Area				
Shell Species	Survey Authors			
	Dillon 1982	Rosen 1979	Singer 1979	Current Investigation
Tivela stultorum		x		
Argopecten aequisulcatus		x		x
Cerithidea californica	x	x		x
Chione sp.	x	x	x	x
Macoma nasuta		x	x	x
Mytilus californianus		x		
Ostrea lurida	x	x	x	x
Polinices sp.		x		
Solen rosacens	x			
Protothaca staminea	x			
Plagioctenium circularis aquisulcatus			x	
Petricola pholadiformus			x	
Tagelus californianus			x	x
Amiantis callosa				x
Chama arcana				x

Extremely weathered fragments of clam shell were encountered in one survey and the investigator thought their condition suggested old or beach rolled specimens, possibly fossils (Singer 1980b:3). No artifacts or bones were observed and no obvious soil discoloration. In an earlier report, Singer had encountered shell species west of Via Marina. He reported that "these shells appear to be relatively fresh...not associated with any prehistoric or early historic features," and "the shells are of all sizes and do not appear to be human food remains" (Singer 1979:6).

In another survey where shellfish remains were observed, it was the opinion of the investigator that the shell was brought in with fill, although he indicated that the parcel investigated was 3-4 feet below adjacent properties (Rosen 1979). Dr. Charles Rozaire

conducted a survey on Via Dolce, just west of Via Marina, and noted "presence of shellfish remains in concentrations referred to as middens" and "the area in question does have evidence of shell ranging from a few scatterings to heavy concentrations, the latter being in the southeast portion." He believed that the "occurrence of these shells is the result of dredging, dumping and leveling and natural causes rather than due to ancient man's occupation" (Rozaire 1974). He noted that there was an absence of the "usual cultural debris such as stone flakings and food bone refuse in addition to any artifacts."

North of the project area, Dillon reported finding concentrations of shell species. He noted that "this combination of shellfish populations does not normally occur in nature (Dillon 1982). As supporting evidence, he indicated that no man-made artifacts were found in association with the shells and that the most common food source of these Indians, mussels, was not found, while *Cerithidea californica* was not eaten by these Indians. Rozaire's report (1974) was cited as evidence of dumping, filling, and leveling of the area.

In the only excavation conducted within the harbor area of Marina del Rey, the Admiralty Site yielded considerable quantities of shellfish. Seven major species of economic value were reported: *Chione californiensis, Chione undatella, Chione fluctafraga, Ostrea lurida, Argopecten aeqisulcatus, Protothaca staminea,* and *Tresus nuttalli.* Pismo clam, abalone, mussel, and white venus, which are uncommon in lagoons, were found in such small numbers that they are a minor component of the analysis. Seventeen species of noneconomic mollusks were recovered from the site but in such small amounts that they would not have been a focus of shellfish collecting activities (Altschul et al. 1992:293).

CONCLUSIONS

The archival research indicated the presence of one recorded archaeological site, CA-LAN-66 within the project area. Various studies of the site area failed to document any shellfish remains, artifacts, or other cultural features. Two of the studies (Rozaire and Belous 1950; Singer 1980a) concluded that the site had probably been destroyed. The area was resurveyed in this investigation and three fragments of weathered shell were observed adjacent to Vista del Mar. Van Valkenburgh, who had originally identified the site, was a respected archaeologist and it is likely that he had found some evidence of prehistoric usage. What is clear is that the mapped boundaries of the resource have been repeatedly built over, probably destroying most of it or at least seriously affecting its integrity. The three fragments of shell found adjacent to Vista del Mar may indicate survival of archaeological remains or simply be part of the pervasive "background shell" present throughout the project area.

Based on the analysis of shellfish remains by various investigators, it is likely that the pervasive scattering of marine shell is the result of dredging, dumping, and leveling as postulated by Rozaire (1974). The history of the project area demonstrates that the area has been significantly modified through various construction efforts including development of Port Ballona in 1887 and culminating in the creation of Marina del Rey in the 1960s. The absence of artifacts, archaeological features, and ecofacts typical of prehistoric

occupation or usage are the key components that would distinguish whether or not the shellfish remains are cultural. While the area has been the scene of significant development, the discovery of the Admiralty Site, CA-LAN-47, with its assemblage of prehistoric tools, human burials, and food remains is a cautious reminder that there are prehistoric sites in the immediate area.

EVALUATION OF IMPACTS

According to CEQA Guidelines, impacts are defined as those results that are directly attributable to the project and which occur at the same time and place. Direct impacts are those that may result from the immediate disturbance of resources, whether from vegetation removal, demolition of structures, earth-moving activities, or excavation. A project with an effect that may cause a substantial adverse change in the qualities that contribute to the significance of an historical or prehistoric resource is a project that may have an effect on the environment (CEQA 15064.5[b]). Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired.

Since project development will entail surface and subsurface disturbance of the ground, the proposed development of the sewer alignment has the potential to cause a significant impact on unknown cultural resources. The potential for permanent effects to occur to cultural resources would be related to such project activities as grading, cutting and filling, excavation, trenching, augering, pile driving, utility installation, landscaping, or other pre-construction or construction process which disturbs, removes, or destroys an historic property. Permanent effects may also be caused by damage or disturbance of previously unknown resources that are unexpectedly encountered during subsurface activities or construction. For deposits or features that will be buried or covered by new construction, the effect will be lack of access of these resources for research or public interpretation.

CA-LAN-66

One archaeological site is recorded in the vicinity of the southern alignment at Vista del Mar. The location of the site has been repeatedly impacted by development. It is possible that if the location retains any integrity, then remnants may be present under pavement of Vista del Mar. However, in our opinion, there is insufficient evidence that a cultural resource is present and no impacts are expected.

RECOMMENDATIONS

The preferred mitigation for impacts to cultural resources is preservation by avoiding areas where cultural resources are known to exist, wherever possible. When avoidance cannot be achieved, alternate measures such as surface collection and/or subsurface data recovery of significant sites must be implemented. If previously unknown cultural resources are encountered during site clearance and preparation, or during project

construction, and they cannot be avoided, then contingency measures must be in place to react promptly to protect these resources and ameliorate the impacts to a level of not significant.

There are two recommendations that can be made:

1. Monitor all construction in the vicinity of CA-LAN-66 by an archaeologist qualified to recognize and assess both prehistoric and historical resources; and

2. Develop a contingency plan for addressing unanticipated new discoveries; evaluate and report any additional resources encountered either through monitoring or trenching.

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Figure 1 Topographic/surficial geologic/paleontologic resource sensitivity map, proposed Venice Pumping Plant Dual Force Main Project site, Los Angeles, Los Angeles County, California 7

SECTION 1

INTRODUCTION

1.1 BACKGROUND

Paleontologic resources include fossil remains, fossil sites, associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata. This technical report summarizes the results of the paleontologic resource inventory/impact assessment conducted by Paleo Environmental Associates, Inc. (PEAI), in support of the proposed Venice Pumping Plant Dual Force Main Project environmental impact report (EIR). The City of Los Angeles, the CEQA lead agency for the project, has required this inventory/impact assessment be conducted because of the potential for fossil sites and remains being encountered by earth-moving activities associated with project construction.

1.2 PERSONNEL

This technical report was prepared by Dr. E. Bruce Lander, a paleontologist with PEAI, Altadena, California. Dr. Lander has a Ph.D. degree in paleontology and has conducted research, authored published scientific contributions, and prepared environmental impact review documents on the paleontologic resources of California in support of other major construction projects, including a number of major earth-moving projects in the project site vicinity. Dr. Lander conducted the literature review, archival search, and field survey for this report.

SECTION 2

ENVIRONMENTAL SETTING

The Venice Pumping Plant Dual Force Main Project consists of three alignments (Marquesas Way/Via Marina, Pacific Avenue, Dockweiler Beach) that lie in the Venice Beach-Marina del Rey and Dockweiler Beach-Playa del Rey areas of Los Angeles and cross the Marina del Rey inlet channel and Ballona Creek (see Figure 1). The project site occupies the unsurveyed portion of Township 2 South, Range 15 West of the San Bernardino Base and Meridian. Topographic map coverage of the project site is provided at a scale of 1:24,000 by the United States Geological Survey (USGS) Venice Quadrangle, California—Los Angeles Co., 7.5 Minute Series (Topographic) (1964, photorevised 1981). Except for portions of the Dockweiler Beach Alignment and where the three alignments cross the Marina del Rey inlet channel and Ballona Creek, the entire project site is covered by urban development, mostly roadways. One alignment will be selected for construction

Paleontologic resources of the project site include sedimentary or stratigraphic rock units that immediately underlie the surface and have a potential for yielding particular types of fossil remains because they have yielded similar fossil remains at previously recorded fossil sites near the project site. Fossils, the remains or indications of once-living organisms, are a very important scientific resource because of their use in 1) documenting the evolution of particular groups of organisms, 2) reconstructing the environments in which they lived, 3) and in determining the ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments constituting these strata.

2.1 METHODS

The following tasks were conducted to develop a baseline paleontologic resource inventory of the project site by rock unit, and to assess the potential paleontologic productivity and the paleontologic/scientific importance of each rock unit, these assessments being based on the fossil remains previously recorded from the rock unit in the project site vicinity. These tasks were completed in compliance with Society of Vertebrate Paleontology (SVP, 1995) guidelines for assessing the scientific importance of the paleontologic resources in an area of potential environmental effect.

2.1.1 Stratigraphic Inventory

Geologic maps and reports covering the surficial geology of the project site were reviewed 1) to determine the rock units present at the project site, particularly those rock units known to be fossiliferous, and 2) to delineate their respective areal distributions.

2.1.2 Paleontologic Resource Inventory

Published and unpublished geologic and paleontologic literature was reviewed to document the number and locations of previously recorded fossil sites at and near the project site from each rock unit present at the project site, and the types of fossil remains the rock unit has produced locally. The literature review was supplemented by an archival search conducted at the Natural History Museum of Los Angeles County Vertebrate Paleontology Department (LACMVP) for additional information regarding the occurrences of fossil sites and remains at and near the project site. A field survey of the project site was conducted 1) to determine the condition of any previously recorded site at the project site, 2) to document the presence of any unrecorded fossil site, and 3) to substantiate the presence of strata suitable for containing fossil remains.

2.1.3 Paleontologic Resource Assessment Criteria

The paleontologic importance (high, moderate, low, none, undetermined) of a rock unit present at the project site is the measure most amenable to assessing the scientific importance of the paleontologic resources of the project site because the areal distribution of a rock unit can be delineated on a topographic map. The paleontologic importance of a rock unit reflects 1) its potential paleontologic productivity and 2) the scientific importance of the fossils it has produced locally.

The potential paleontologic productivity (high, moderate, low, none, undetermined) of a rock unit present at the project site is based on the abundance/densities of fossil specimens and/or unrecorded/previously recorded fossil sites in exposures of the unit at and near the project site. Exposures of a specific rock unit at the project site are most likely to yield fossil remains representing particular species in quantities similar to those previously recorded from the unit at and near the project site, or to contain fossil sites at similar densities. The criteria for establishing the potential paleontologic productivity of a rock unit present at the project site are described below.

1) High potential: rock unit contains comparatively high density of unrecorded/previously recorded fossil sites and has produced numerous fossil remains at and/or near project site, and is very likely to yield additional similar remains at project site.

2) Moderate potential: rock unit contains relatively moderate density of unrecorded/previously recorded fossil sites and has produced some fossil remains at and/or near project site, and is somewhat likely to yield additional similar remains at project site.

3) Low potential: rock unit contains no or comparatively low density of previously recorded fossil sites and has yielded very few or no fossil remains near project site, and is not likely to yield any remains at project site.

4) Undetermined potential: rock unit has limited or no exposure at and/or near project site, is poorly studied, contains no previously recorded fossil site, and has produced no fossil remains near project site. However, in project site region, same or correlative and/or lithologically similar rock unit contains sufficient recorded fossil sites to suggest rock unit at project site has at least a moderate potential for containing unrecorded fossil sites (note: elsewhere in California, exposures of rock units with few or no previously recorded fossil sites have recently proven abundantly fossiliferous during surveying, monitoring, or processing of fossiliferous rock samples as part of mitigation programs for other earth-moving projects).

5) No potential: unfossiliferous artificial fill and igneous and high-grade metamorphic rock units with no potential for containing any unrecorded fossil site or yielding any fossil remains.

A fossil specimen is considered scientifically highly important if it is 1) identifiable, 2) complete, 3) well preserved, 4) age diagnostic, 5) useful in environmental reconstruction, 6) a type or topotypic specimen, 7) a member of a rare species, 8) a species that is part of a diverse assemblage, and/or 9) a skeletal element different from, or a specimen more complete than those now available for its respective species. Identifiable fossil land mammal remains, for example, are considered scientifically highly important because of their potential use in providing very accurate age determinations and environmental reconstructions for the rock units in which they occur. The geologic age of some fossil mollusk and land mammal and plant remains can be determined by carbon-14 dating analysis. Moreover, land mammal and plant remains are comparatively rare in the fossil record.

Using the definitions presented above, the paleontologic or scientific importance of a rock unit present at the project site would be assessed using the following criteria.

1) High importance: rock unit has comparatively high potential for containing unrecorded fossil sites and for yielding scientifically important fossil remains at project site similar to those previously recorded from rock unit at and/or near project site.

2) Moderate importance: rock unit has relatively moderate potential for containing unrecorded fossil sites and for yielding scientifically important fossil remains at project site similar to those previously recorded from rock unit near project site.

3) Low importance: rock unit has comparatively low potential for containing any unrecorded fossil site or for yielding any scientifically important fossil remains at project site.

4) Undetermined importance: rock unit for which too few data are available from project site and vicinity

to allow an accurate assessment of its potential for containing any unrecorded fossil site or for yielding any scientifically important fossil remains at project site.

5) No importance: unfossiliferous artificial fill and igneous and high-grade metamorphic rock units having no potential for containing any unrecorded fossil site or for yielding any fossil remains.

Note, however, that any fossil site containing identifiable fossil remains and the fossil-bearing strata are considered highly important paleontologically, regardless of the paleontologic or scientific importance of the rock unit in which the site and strata occur.

The following tasks were completed to establish the paleontologic importance of each rock unit present at the project site.

1) The scientific importance of fossil remains recorded from a rock unit present at the project site was assessed.

2) The potential paleontologic productivity of the rock unit was assessed, based on the density of fossil remains and/or previously recorded and newly documented fossil sites it contains at and/or near the project site.

3) The paleontologic importance of the rock unit was assessed, based on its documented and/or potential fossil content at the project site.

This method of resource assessment is the most appropriate for an areal paleontologic resource investigation of the project site because discrete levels of paleontologic importance can be delineated on a topographic/geologic map.

2.2 RESULTS

2.2.1 Stratigraphic Inventory

The project site lies on the western shelf of the Cenozoic Los Angeles Basin (Wright, 1991), which, in turn, is situated at the northwestern corner of the Peninsular Ranges Province, where major linear geographic features (mountains, valleys) and the underlying geologic structures (faults, folds) trend in a northwesterly direction (see Jahns, 1954). The western shelf is composed of sedimentary or stratigraphic rock units consisting of late Cenozoic marine and stratigraphically overlying nonmarine strata reflecting the final filling of the basin and its accompanying emergence above sea level.

Regional surficial geologic mapping of the project site and vicinity is provided by Jennings (1962) at a scale of 1:250,000. Larger-scale (1:31,680) geologic mapping of the area by Poland and others (1959) indicates that the project site is underlain by three Quaternary rock units. In ascending stratigraphic order, these rock units include the Pleistocene marine Palos Verdes Sand and Holocene dune sand, which form the lower portion of the bluff at the southeastern corner of the project site; and by Holocene coastal deposits, which underlie the remaining flat-lying portion of the project site. A surficial geologic map of the project site is presented at a scale of 1:24,000 in Figure 1.

2.2.2 Paleontologic Resource Inventory and Assessment by Rock Unit

An inventory of the paleontologic resources of the rock units present at the project site is presented below, and the scientific importance of these resources is assessed. Although neither the literature review, the archival search, nor the field survey conducted for this inventory documented any previously recorded fossil site as occurring at the project site, a number of previously recorded fossil sites were documented as occurring in areas mapped as being underlain by these rock units near the project site. The fossil remains from some of these fossil sites were uncovered as a result of earth-moving activities associated with other major construction projects.

2.2.2.1 Palos Verdes Sand.—Although no previously recorded fossil site is reported as occurring in the Palos Verdes Sand at the project site, abundant fossilized remains representing a taxonomically highly diverse assemblage

consisting of more than 300 species of Pleistocene marine invertebrates, a number of marine vertebrate species, and one land mammal species, was recovered at a fossil site in the Palos Verdes Sand at LACMVP fossil site 1024 (= Natural History Museum of Los Angeles County Invertebrate Paleontology Department (LACMIP) fossil site 59), approximately 1.7 miles east of the project site at the intersection of Lincoln Boulevard and Cabora Drive, which overlies the North Outfall Sewer. This fossil site was discovered as a result of trenching for the sewer. The taxa represented by the fossil remains recovered at the fossil site include bryozoans (moss animals), tusk shells, snails, clams, barnacles, crabs, sand dollars, sea urchins, sharks, rays, fishes, birds, seals, porpoises, and a gopher (Jefferson, 1991a; Lander, 1990, 2003; Miller and DeMay, 1942; Willett, 1937). LACMVP fossil site 1024 is the type locality for one of the extinct species of bird. Poland and others (1959) considered the fossil-bearing interval to be a sandstone layer constituting the lower 6 feet of the Palos Verdes Sand. Two additional fossil sites that yielded the fossilized shells of marine clams occur along Lincoln Boulevard, very near the previous fossil site (Lander, 1990, 2003).

The occurrence of several previously recorded fossil sites near the project site suggests that there probably is a high potential for additional similar, scientifically highly important fossil remains at the project site being encountered by earth-moving activities at unrecorded fossil sites in the Palos Verdes Sand. Identifiable fossil remains recovered from this rock unit at the project site would be particularly important if they represented a new or rare species; geologic (temporal) and/or geographic range extension; new taxonomic record for the rock unit; age-diagnostic species; and/or a skeletal element different from, or a specimen more complete than those now available for its respective species. Moreover, the recovery of remains representing environmentally sensitive species would be critical in paleoenvironmental and habitat reconstruction. Finally, the remains would contribute to a more comprehensive documentation of the diversity of animal life that existed at and near the project site during the Pleistocene Epoch.

2.2.2.2 Dune Sand.—Although no previously recorded fossil site is reported as occurring in the dune sand at the project site, fossilized remains representing an extinct species of elephant might have been recovered from this rock unit at LACM fossil site 3264, which was encountered at a depth of 25 feet below previous grade approximately 2.4 miles east-southeast of the project site at Los Angeles International Airport. However, the fossil site also might have been in the stratigraphically underlying terrace cover, which is mapped with the Palos Verdes Sand and has yielded the fossilized bones and teeth of extinct species of land mammals, including mastodon, mammoth, horse, bison, and rabbit, near the airport at LACM fossil sites 1180, 3789, 4942, and 7332 (Jefferson, 1991b; Miller, 1971). These sites were encountered at depths 13.5 to 16 feet below previous grade. The occurrence of fossilized remains representing an extinct species of Pleistocene bison (*Bison*), which defines the beginning of the Rancholabrean North American Land Mammal Age (NALMA) (Savage, 1951), indicates that the terrace cover is Rancholabrean in age.

The possible occurrence of only one previously recorded fossil site near the project site suggests that there is an undetermined (but probably no more than moderate) potential for additional similar, scientifically highly important fossil remains at the project site being encountered at depth by earth-moving activities at unrecorded fossil sites in the dune sand. However, any identifiable fossil remains recovered from this rock unit at the project site would be particularly important if they represented a new or rare species; geologic (temporal) and/or geographic range extension; new taxonomic record for the rock unit; age-diagnostic species; and/or a skeletal element different from, or a specimen more complete than those now available for its respective species. Moreover, there is a potential for encountering land mammal remains representing species rarely if ever recorded from the rock unit or the immediate project site vicinity. In addition, the recovery of remains representing age-diagnostic species or whose age can be determined by carbon-14 dating analysis would be critical in determining if the rock unit is assignable partly to the Rancholabrean NALMA or is entirely Holocene in age, while the remains of environmentally sensitive species would be critical in paleoenvironmental and habitat reconstruction. The remains also would contribute to a more comprehensive documentation of the diversity of animal life that existed at and near the project site during the Pleistocene and/or Holocene Epochs. Finally, land mammal remains also are scientifically highly important because such remains are comparatively rare in the fossil record.

The potential for fossil remains being encountered at and very near the surface is considered to be only low because any remains encountered at such shallow depths probably would be too young to be considered fossilized.

2.2.2.3 Coastal Deposits.—Although no previously recorded fossil site is reported as occurring in the coastal deposits at the project site, fossilized shells of marine mollusks were encountered below the water table at depths of

2 to 31 feet below previous grade in 28 borings from Playa Vista, immediately east of the project site, and fossilized wood was encountered in one of the borings at a depth nearly 70 feet below previous grade (Converse Consultants, Inc., 1981; Lander, 1990, 2003; LeRoy Crandall and Associates, 1988).

During the field survey conducted in support of this inventory, the shells of marine snails and clams of presumed Holocene age were observed on the embankment above Ballona Lagoon. However, it was not possible to determine if the shells were derived from undisturbed strata (if any) exposed along the embankment, or were in spoils excavated from the lagoon.

The occurrence of numerous previously recorded fossil sites near the project site suggests that there is a high potential for additional similar, scientifically highly important fossil remains at the project site being encountered by earth-moving activities at unrecorded fossil sites in the coastal deposits. Identifiable fossil remains recovered from this rock unit at the project site would be particularly important if they represented a new or rare species; geologic (temporal) and/or geographic range extension; new taxonomic record for the rock unit; age-diagnostic species; and/or a skeletal element different from, or a specimen more complete than those now available for its respective species. Moreover, the recovery of remains representing age-diagnostic species or whose age can be determined by carbon-14 dating analysis would be critical in determining if the rock unit is partly Pleistocene or entirely Holocene in age, while the remains of environmentally sensitive species would be critical in paleoenvironmental and habitat reconstruction. In addition, the remains of environmentally sensitive species would be critical in paleoenvironmental and habitat reconstruction. Finally, the remains would contribute to a more comprehensive documentation of the diversity of animal life that existed at and near the project site during the Pleistocene and/or Holocene Epochs.

The potential for fossil remains being encountered at and very near the surface is considered to be only low because any remains encountered at such shallow depths probably would be too young to be considered fossilized.

SECTION 3

ENVIRONMENTAL IMPACTS

3.1 CONSTRUCTION PHASE IMPACTS

Paleontologic resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, could be adversely affected by (i.e., would be sensitive to) the significant direct and indirect environmental impacts resulting from earth-moving activities associated with project construction in the selected alignment.

Direct impacts would result mostly from earth-moving activities (primarily trenching and boring for pipeline) in previously undisturbed strata. Although earth-moving activities would be comparatively short term, the possible accompanying loss of some fossil remains, unrecorded fossil sites, associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata is a potentially significant long-term adverse environmental impact.

Easier access to fresh exposures of fossiliferous strata and the accompanying potential for unauthorized fossil collecting by construction personnel, rock hounds, and amateur and commercial fossil collectors could result in the loss of some additional fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data. The loss of these additional paleontologic resources is another potentially significant long-term (but indirect) environmental impact.

3.1.1 Significance Criteria

The following tasks were conducted in compliance with SVP (1995) guidelines for assessing the significance of construction-related adverse environmental impacts on paleontologic resources, or the paleontologic sensitivity of a particular rock unit to adverse impacts.

The paleontologic significance (high, moderate, low, none, undetermined) of the potential adverse impacts of earth-moving activities on the paleontologic resources of each rock unit present at the project site was assessed and reflects the paleontologic or scientific importance/impact sensitivity of the rock unit, which, in turn, primarily reflects the potential for fossil remains and fossil sites being encountered by these activities. Note, however, that any impact on a fossil site and the fossil-bearing strata would be considered highly significant paleontologically, regardless of the paleontologic importance of the rock unit in which the site and strata occur. For example, trenching in an area underlain by a moderately important rock unit would have only a moderate potential for the disturbance or burial of fossil remains and sites (i.e., the rock unit would be moderately sensitive to adverse impacts). Although the accompanying loss of any fossil remains and site would be a highly significant impact paleontologically, the impact of earth-moving activities would be considered only moderately significant because of the moderate potential for the loss of paleontologic resources. This method of impact assessment is most appropriate to an areal paleontologic resource investigation of the project site because discrete levels of paleontologic impact sensitivity/significance can be delineated on a topographic/geologic map of the project site.

A paleontologic resource impact sensitivity assessment of the project site is presented below and on the geologic map of the project site included as Figure 1.

3.1.2 Impact Assessment

3.1.2.1 Palos Verdes Sand.—The Palos Verdes Sand has yielded abundant fossil remains at several previously recorded fossil sites near the project site. For this reason, adverse environmental impacts on the paleontologic resources of the Palos Verdes Sand that would result from earth-moving activities at the project site would be considered to be of high paleontologic significance because there probably is a high potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities.

3.1.2.2 Dune Sand.—The dune sand possibly has yielded fossil remains at only one previously recorded fossil site near the project site. For this reason and because this fossil site was encountered at depth, adverse environmental impacts on the paleontologic resources of the dune sand that would result from earth-moving activities at the project site would be considered to be of undetermined (but probably no more than moderate) paleontologic significance at depth because the potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities is undetermined.

On the other hand, any adverse environmental impact on the paleontologic resources of the dune sand that would result from earth-moving activities at and near the surface probably would be considered to be of low significance because the dune sand probably is too young at and near the surface to contain remains old enough to be considered fossilized.

3.1.2.3 Coastal Deposits.—The coastal deposits have yielded fossil remains at numerous previously recorded fossil sites near the project site. For this reason and because these fossil sites were encountered at depth, adverse environmental impacts on the paleontologic resources of the coastal deposits that would result from earth-moving activities at the project site would be considered to be of high paleontologic significance at depth because there probably is a high potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities.

On the other hand, any adverse environmental impact on the paleontologic resources of the coastal deposits that would result from earth-moving activities at and near the surface probably would be considered to be of low significance because the coastal deposits probably are too young at and near the surface to contain remains old enough to be considered fossilized.

3.2 OPERATIONAL PHASE

There would be no impact on paleontologic resources during the operational phase of the project if there were no earth-moving activity.

3.3 CUMULATIVE IMPACTS

Development of the project site, in combination with other projects in the region where a project site is underlain by the Palos Verdes Sand might lead to the progressive loss of fossil-bearing strata in these rock units that could be prospected for fossil remains and unrecorded fossil sites. The loss of these additional paleontologic resources is another potentially significant long-term adverse environmental impact.

SECTION 4

MITIGATION MEASURES

4.1 CONSTRUCTION PHASE

The following measures comprise a paleontologic resource impact mitigation program that would reduce, to an insignificant level, the direct, indirect, and cumulative adverse environmental impacts on paleontologic resources that might accompany earth-moving activities (primarily trenching and boring for pipeline) associated with project construction in the selected alignment. The program would allow for the recovery of some scientifically highly important fossil remains, should any be encountered by these activities, as well as associated specimen data and corresponding geologic and geographic site data; their preservation in a recognized museum repository; and their availability for future study by qualified scientific investigators. These specimens and data otherwise might have been lost to the earth-moving activities and unauthorized fossil collecting. Specimen recovery would be allowed under CEQA Appendix G (5.c).

4.1.1 Mitigation Program Design Criteria

The recommended level and type of mitigation effort in a particular area of the project site reflects the paleontologic importance/impact sensitivity of the rock unit underlying the area and the corresponding potential for fossil remains being encountered by earth-moving activities at the project site, the type of rock comprising the rock unit, the type or earth-moving activity, and the magnitude of the impact that would occur in the area. For example, trenching in an area underlain by a paleontologically highly important rock unit or one containing a fossil site would require more intensive paleontologic construction monitoring than trenching in an area underlain by a rock unit of moderate, low, or undetermined paleontologic importance. Monitoring would not be required in an area underlain by artificial fill or a rock unit of no paleontologic importance (unless a rock unit of higher importance would be encountered at depth), or one in which a rock unit would be buried, but not otherwise disturbed. No rock sample would be processed if the rock were too coarse grained or resistant to breaking down in water.

The discovery and subsequent recovery of fossil remains as part of the mitigation program might result in a slight delay of some earth-moving activities. However, the mitigation measures presented below have been designed to eliminate or reduce any delay to the greatest extent possible by 1) ensuring that a paleontologic construction monitor would be present when and where fossil remains were most likely to be uncovered by earth-moving activities; 2) allowing for the rapid recovery of fossil remains, should any be encountered by these activities, and associated specimen and site data; and 3), if necessary, diverting the activities temporarily around a newly discovered fossil site until the remains had been removed by the monitor and the activities allowed to proceed through the site. Similar paleontologic resource impact mitigation programs usually have resulted in no delay of earth-moving activities.

4.1.2 Beneficial Environmental Effects of Mitigation Program

If the paleontologic resource impact mitigation program detailed below were implemented, earth-moving activities at the project site might produce some beneficial effects. The fresh exposure of fossil-bearing strata would allow for the discovery of an undetermined number of unrecorded fossil sites and the recovery of some scientifically highly important fossil remains that otherwise might not even have been exposed without these activities. Moreover, these remains and associated specimen data and corresponding geologic and geographic site data, instead of being lost to earth-moving activities or to unauthorized fossil collecting, would be preserved in a museum repository, where they would be made available to qualified scientific investigators for future study. There also is the potential that some of these remains might represent new or rare species; new geologic or geographic records; and/or skeletal elements different from, or specimens more complete than those now available for their respective species. Finally, these remains would provide a more comprehensive paleontologic resource inventory of the project site and vicinity than is now available or would have been available without the project.

4.1.3 Qualifications of Paleontologist Conducting Mitigation Program

All mitigation measures presented below should be directed by a vertebrate paleontologist approved by the City of

Los Angeles and LACMVP. The paleontologist should have substantial experience designing and conducting paleontologic resource impact mitigation programs in areas underlain by fossil-bearing strata. The paleontologic monitor and other paleontologic staff working under the direction of the paleontologist should have experience monitoring earth-moving activities, recovering large vertebrate fossil specimens, and recovering and processing large samples of fossiliferous rock or sediment.

4.1.4 Compliance with Lead Agency and Professional Society Guidelines

The mitigation measures described below would be in compliance with any City of Los Angeles environmental guideline and with SVP (1995, 1996) standard guidelines for mitigating adverse construction-related impacts on paleontologic resources. The paleontologist would ensure implementation of these measures and verify the effectiveness of the measures. The results of the program would be summarized in a final technical report of results and findings submitted to the City of Los Angeles.

4.1.5 Mitigation Measures

The literature review, archival search, and field survey, as well as a review of the geologic maps covering the project site, indicated that the project site is underlain partly by paleontologically highly sensitive strata, in which earth-moving activities associated with project construction would have a high potential for encountering fossil remains (see Figure 1). Mitigation measures that would be implemented in a particular area of the project site are based on the sensitivity of the underlying rock unit and include paleontologic construction monitoring, which would be conducted in conjunction with other measures provided below.

4.1.5.1 Task 1—Retention of Paleontologist.—Prior to construction, the services of a qualified vertebrate paleontologist approved by the City of Los Angeles and LACMVP will be retained to implement the mitigation program during earth-moving activities at the project site.

4.1.5.2 Task 2—Museum Storage Agreement.—The paleontologist will develop a formal agreement with a recognized museum repository, such as the LACMVP or LACMIP, regarding the final disposition and permanent storage and maintenance of any fossil remains and the archiving of associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the mitigation program, and the level of treatment (preparation, identification, curation, cataloguing) of the remains that would be required before the entire mitigation program fossil collection would be accepted by the repository for storage.

4.1.5.3 Task 3—Pre-construction Coordination.—The paleontologist or monitor will coordinate with the appropriate construction contractor personnel to provide information regarding lead agency requirements for the protection of paleontologic resources. Contractor personnel also will be briefed on procedures to be followed in the event that a fossil site or remains are encountered by earth-moving activities, particularly when the monitor is not on site. The briefing will be presented to new contractor personnel as necessary. Names and telephone numbers of the monitor and other appropriate mitigation program personnel will be provided to the appropriate contractor personnel.

4.1.5.4 Task 4—Paleontologic Monitoring and Fossil/Sample Recovery.—Earth-moving activities will be monitored by the monitor only in those areas of the project site where these activities will disturb previously undisturbed strata. Monitoring will be conducted on a full-time basis in areas underlain by the Palos Verdes Sand and, once the activities have reached a depth 5 feet below grade, on a full-time basis in areas underlain by the coastal deposits and on a half-time basis in areas underlain by the dune sand. If fossil remains are encountered by these activities, monitoring will be increased to full time, if appropriate, at least in the vicinity of the fossil site where the area is underlain by the fossil-bearing rock unit. If no fossil remains are found once 50 percent of earth-moving activities have been completed in an area underlain by a particular rock unit, with City of Los Angeles approval, monitoring can be reduced or suspended in that area.

Monitoring will consist of visually inspecting debris piles and freshly exposed strata for larger fossil remains, and periodically dry test screening sediment, rock, and debris for smaller fossil remains. As soon as practicable, the monitor will recover all vertebrate fossil specimens, a representative sample of invertebrate or plant fossils, or any

fossiliferous rock sample that can be recovered easily. If recovery of a large or unusually productive fossil occurrence is warranted, earth-moving activities will be diverted temporarily around the fossil site and a recovery crew will be mobilized as necessary to remove the occurrence as quickly as possible. If not on site when a fossil occurrence is uncovered by these activities, the activities will be diverted temporarily around the fossil site and the monitor called to the site to evaluate and, if warranted, recover the occurrence. If the fossil site is determined too unproductive or the fossil remains not worthy of recovery, no further action will be taken to preserve the fossil site or remains, and earth-moving activities will be allowed to proceed through the site immediately. The location and proper geologic context of any fossil occurrence will be documented, as appropriate. Any recovered rock sample will be processed to allow for the recovery of smaller fossil remains.

Rock samples will be processed to allow for the recovery of smaller fossil remains that normally are too small to be observed by the monitor. No more than 6,000 pounds (12,000 pounds total) of rock will be processed from either the Palos Verdes Sand or coastal deposits.

4.1.5.5 Task 5—Final Laboratory Tasks.—All fossil specimens recovered from the project site as a result of the mitigation program, including those recovered as the result of processing fossiliferous rock samples, will be treated (prepared, identified, curated, catalogued) in accordance with designated museum repository requirements. Small rock samples from the Palos Verdes Sand, dune sand, and coastal deposits will be submitted to commercial laboratories for microfossil, pollen, or radiometric (carbon-14) dating analysis.

4.1.5.6 Task 6—Reporting.—The monitor will maintain daily monitoring logs that include the particular tasks accomplished, the earth-moving activity monitored, the location where monitoring was conducted, the rock unit encountered, fossil specimens recovered, and associated specimen data and corresponding geologic and geographic site data. A final technical report of results and findings will be prepared by the paleontologist in accordance with any City of Los Angeles requirement.

4.2 OPERATIONAL PHASE

No mitigation measure would be necessary during the operational phase if there were no earth-moving activity.

4.3 ENVIRONMENTAL COMPLIANCE

The project will comply with any applicable environmental law, ordinance, regulation, or standard regarding paleontologic resources during earth-moving activities associated with project construction.

Paleontologic resources, including fossil remains, associated specimen data and corresponding geologic and geographic site data, fossil sites, and the fossil-bearing strata, are a limited, nonrenewable, and very sensitive scientific and educational resource and, particularly with regard to fossil sites, are afforded protection under the following state environmental legislation (see California Office of Historic Preservation, 1983).

California Environmental Quality Act of 1970 (CEQA) (Division 13, California Public Resources Code: 21000 *et seq.*).—Requires that a public agency or private interest identify the environmental consequences of its proposed project on any object or site of significance to the scientific annals of California (Division I, Public Resources Code: 5020.1 [b]).

Guidelines for the Implementation of CEQA, as amended May 10, 1980, and March 29, 1999 (Title 14, Chapter 3, California Administrative Code: 15000 *et seq.*).—Define procedures, types of activities, persons, and public agencies required to comply with CEQA, and include definitions of significant impacts on a fossil locality (Section 15023, Appendix G [5.c]).

California Public Resources Code, Section 5097.5 (Statute 1965, Chapter 1136, Paragraph 2792).—Defines any unauthorized disturbance or removal of a fossil locality or remains on public land as a misdemeanor.
California Public Resources Code, Section 30244.—Requires reasonable mitigation of adverse environmental impacts that result from development of public land and affect paleontologic resources.

Angeles, also have developed environmental guidelines for protecting paleontologic resources in areas under their respective jurisdictions. Under its guidelines, a CEQA lead agency can require the completion of a paleontologic resource impact assessment of an area to be adversely impacted by a discretionary project deemed nonexempt under its guidelines. As part of such an assessment, the agency can require the compilation of a paleontologic resource inventory and the mapping of fossil-bearing rock units and previously recorded and newly documented fossil sites by a qualified paleontologist in the area to be affected, an evaluation of the scientific importance of these resources, a determination of the adverse environmental impacts that might arise from the project and an appraisal of their significance, and the formulation of measures to mitigate these impacts to an insignificant level. The City of Los Angeles has required that such an assessment be conducted in support of the proposed Venice Pumping Plant Dual Force Main Project EIR because earth-moving activities associated with project construction might result in the loss of fossil remains and unrecorded fossil sites. This paleontologic resource assessment technical report, particularly with regard to the mitigation measures presented above, is in compliance with SVP (1995, 1996) standard measures for assessing the scientific importance of paleontologic resources in an area of potential environmental effect, developing measures to mitigate significant adverse construction-related environmental impacts on these resources, and with conditions for the acceptance of a paleontologic resource impact mitigation program fossil collection by a museum repository.

SECTION 3

ENVIRONMENTAL IMPACTS

3.1 CONSTRUCTION PHASE IMPACTS

Paleontologic resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, could be adversely affected by (i.e., would be sensitive to) the significant direct and indirect environmental impacts resulting from earth-moving activities associated with project construction in the selected alignment.

Direct impacts would result mostly from earth-moving activities (primarily trenching and boring for pipeline) in previously undisturbed strata. Although earth-moving activities would be comparatively short term, the possible accompanying loss of some fossil remains, unrecorded fossil sites, associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata is a potentially significant long-term adverse environmental impact.

Easier access to fresh exposures of fossiliferous strata and the accompanying potential for unauthorized fossil collecting by construction personnel, rock hounds, and amateur and commercial fossil collectors could result in the loss of some additional fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data. The loss of these additional paleontologic resources is another potentially significant long-term (but indirect) environmental impact.

3.1.1 Significance Criteria

The following tasks were conducted in compliance with SVP (1995) guidelines for assessing the significance of construction-related adverse environmental impacts on paleontologic resources, or the paleontologic sensitivity of a particular rock unit to adverse impacts.

The paleontologic significance (high, moderate, low, none, undetermined) of the potential adverse impacts of earth-moving activities on the paleontologic resources of each rock unit present at the project site was assessed and reflects the paleontologic or scientific importance/impact sensitivity of the rock unit, which, in turn, primarily reflects the potential for fossil remains and fossil sites being encountered by these activities. Note, however, that any impact on a fossil site and the fossil-bearing strata would be considered highly significant paleontologically, regardless of the paleontologic importance of the rock unit in which the site and strata occur. For example, trenching in an area underlain by a moderately important rock unit would have only a moderate potential for the disturbance or burial of fossil remains and sites (i.e., the rock unit would be moderately sensitive to adverse impacts). Although the accompanying loss of any fossil remains and site would be a highly significant impact paleontologically, the impact of earth-moving activities would be considered only moderately significant because of the moderate potential for the loss of paleontologic resources. This method of impact assessment is most appropriate to an areal paleontologic resource investigation of the project site because discrete levels of paleontologic impact sensitivity/significance can be delineated on a topographic/geologic map of the project site.

A paleontologic resource impact sensitivity assessment of the project site is presented below and on the geologic map of the project site included as Figure 1.

3.1.2 Impact Assessment

3.1.2.1 Palos Verdes Sand.—The Palos Verdes Sand has yielded abundant fossil remains at several previously recorded fossil sites near the project site. For this reason, adverse environmental impacts on the paleontologic resources of the Palos Verdes Sand that would result from earth-moving activities at the project site would be considered to be of high paleontologic significance because there probably is a high potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities.

3.1.2.2 Dune Sand.—The dune sand possibly has yielded fossil remains at only one previously recorded fossil site near the project site. For this reason and because this fossil site was encountered at depth, adverse environmental impacts on the paleontologic resources of the dune sand that would result from earth-moving activities at the project site would be considered to be of undetermined (but probably no more than moderate) paleontologic significance at depth because the potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities is undetermined.

On the other hand, any adverse environmental impact on the paleontologic resources of the dune sand that would result from earth-moving activities at and near the surface probably would be considered to be of low significance because the dune sand probably is too young at and near the surface to contain remains old enough to be considered fossilized.

3.1.2.3 Coastal Deposits.—The coastal deposits have yielded fossil remains at numerous previously recorded fossil sites near the project site. For this reason and because these fossil sites were encountered at depth, adverse environmental impacts on the paleontologic resources of the coastal deposits that would result from earth-moving activities at the project site would be considered to be of high paleontologic significance at depth because there probably is a high potential for the loss of scientifically important fossil remains, unrecorded fossil sites, and associated specimen data and corresponding geologic and geographic site data as a result of these activities.

On the other hand, any adverse environmental impact on the paleontologic resources of the coastal deposits that would result from earth-moving activities at and near the surface probably would be considered to be of low significance because the coastal deposits probably are too young at and near the surface to contain remains old enough to be considered fossilized.

3.2 OPERATIONAL PHASE

There would be no impact on paleontologic resources during the operational phase of the project if there were no earth-moving activity.

3.3 CUMULATIVE IMPACTS

Development of the project site, in combination with other projects in the region where a project site is underlain by the Palos Verdes Sand might lead to the progressive loss of fossil-bearing strata in these rock units that could be prospected for fossil remains and unrecorded fossil sites. The loss of these additional paleontologic resources is another potentially significant long-term adverse environmental impact.

SECTION 4

MITIGATION MEASURES

4.1 CONSTRUCTION PHASE

The following measures comprise a paleontologic resource impact mitigation program that would reduce, to an insignificant level, the direct, indirect, and cumulative adverse environmental impacts on paleontologic resources that might accompany earth-moving activities (primarily trenching and boring for pipeline) associated with project construction in the selected alignment. The program would allow for the recovery of some scientifically highly important fossil remains, should any be encountered by these activities, as well as associated specimen data and corresponding geologic and geographic site data; their preservation in a recognized museum repository; and their availability for future study by qualified scientific investigators. These specimens and data otherwise might have been lost to the earth-moving activities and unauthorized fossil collecting. Specimen recovery would be allowed under CEQA Appendix G (5.c).

4.1.1 Mitigation Program Design Criteria

The recommended level and type of mitigation effort in a particular area of the project site reflects the paleontologic importance/impact sensitivity of the rock unit underlying the area and the corresponding potential for fossil remains being encountered by earth-moving activities at the project site, the type of rock comprising the rock unit, the type or earth-moving activity, and the magnitude of the impact that would occur in the area. For example, trenching in an area underlain by a paleontologically highly important rock unit or one containing a fossil site would require more intensive paleontologic construction monitoring than trenching in an area underlain by a rock unit of moderate, low, or undetermined paleontologic importance. Monitoring would not be required in an area underlain by artificial fill or a rock unit of no paleontologic importance (unless a rock unit of higher importance would be encountered at depth), or one in which a rock unit would be buried, but not otherwise disturbed. No rock sample would be processed if the rock were too coarse grained or resistant to breaking down in water.

The discovery and subsequent recovery of fossil remains as part of the mitigation program might result in a slight delay of some earth-moving activities. However, the mitigation measures presented below have been designed to eliminate or reduce any delay to the greatest extent possible by 1) ensuring that a paleontologic construction monitor would be present when and where fossil remains were most likely to be uncovered by earth-moving activities; 2) allowing for the rapid recovery of fossil remains, should any be encountered by these activities, and associated specimen and site data; and 3), if necessary, diverting the activities temporarily around a newly discovered fossil site until the remains had been removed by the monitor and the activities allowed to proceed through the site. Similar paleontologic resource impact mitigation programs usually have resulted in no delay of earth-moving activities.

4.1.2 Beneficial Environmental Effects of Mitigation Program

If the paleontologic resource impact mitigation program detailed below were implemented, earth-moving activities at the project site might produce some beneficial effects. The fresh exposure of fossil-bearing strata would allow for the discovery of an undetermined number of unrecorded fossil sites and the recovery of some scientifically highly important fossil remains that otherwise might not even have been exposed without these activities. Moreover, these remains and associated specimen data and corresponding geologic and geographic site data, instead of being lost to earth-moving activities or to unauthorized fossil collecting, would be preserved in a museum repository, where they would be made available to qualified scientific investigators for future study. There also is the potential that some of these remains might represent new or rare species; new geologic or geographic records; and/or skeletal elements different from, or specimens more complete than those now available for their respective species. Finally, these remains would provide a more comprehensive paleontologic resource inventory of the project site and vicinity than is now available or would have been available without the project.

4.1.3 Qualifications of Paleontologist Conducting Mitigation Program

All mitigation measures presented below should be directed by a vertebrate paleontologist approved by the City of

Los Angeles and LACMVP. The paleontologist should have substantial experience designing and conducting paleontologic resource impact mitigation programs in areas underlain by fossil-bearing strata. The paleontologic monitor and other paleontologic staff working under the direction of the paleontologist should have experience monitoring earth-moving activities, recovering large vertebrate fossil specimens, and recovering and processing large samples of fossiliferous rock or sediment.

4.1.4 Compliance with Lead Agency and Professional Society Guidelines

The mitigation measures described below would be in compliance with any City of Los Angeles environmental guideline and with SVP (1995, 1996) standard guidelines for mitigating adverse construction-related impacts on paleontologic resources. The paleontologist would ensure implementation of these measures and verify the effectiveness of the measures. The results of the program would be summarized in a final technical report of results and findings submitted to the City of Los Angeles.

4.1.5 Mitigation Measures

The literature review, archival search, and field survey, as well as a review of the geologic maps covering the project site, indicated that the project site is underlain partly by paleontologically highly sensitive strata, in which earth-moving activities associated with project construction would have a high potential for encountering fossil remains (see Figure 1). Mitigation measures that would be implemented in a particular area of the project site are based on the sensitivity of the underlying rock unit and include paleontologic construction monitoring, which would be conducted in conjunction with other measures provided below.

4.1.5.1 Task 1—Retention of Paleontologist.—Prior to construction, the services of a qualified vertebrate paleontologist approved by the City of Los Angeles and LACMVP will be retained to implement the mitigation program during earth-moving activities at the project site.

4.1.5.2 Task 2—Museum Storage Agreement.—The paleontologist will develop a formal agreement with a recognized museum repository, such as the LACMVP or LACMIP, regarding the final disposition and permanent storage and maintenance of any fossil remains and the archiving of associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the mitigation program, and the level of treatment (preparation, identification, curation, cataloguing) of the remains that would be required before the entire mitigation program fossil collection would be accepted by the repository for storage.

4.1.5.3 Task 3—Pre-construction Coordination.—The paleontologist or monitor will coordinate with the appropriate construction contractor personnel to provide information regarding lead agency requirements for the protection of paleontologic resources. Contractor personnel also will be briefed on procedures to be followed in the event that a fossil site or remains are encountered by earth-moving activities, particularly when the monitor is not on site. The briefing will be presented to new contractor personnel as necessary. Names and telephone numbers of the monitor and other appropriate mitigation program personnel will be provided to the appropriate contractor personnel.

4.1.5.4 Task 4—Paleontologic Monitoring and Fossil/Sample Recovery.—Earth-moving activities will be monitored by the monitor only in those areas of the project site where these activities will disturb previously undisturbed strata. Monitoring will be conducted on a full-time basis in areas underlain by the Palos Verdes Sand and, once the activities have reached a depth 5 feet below grade, on a full-time basis in areas underlain by the coastal deposits and on a half-time basis in areas underlain by the dune sand. If fossil remains are encountered by these activities, monitoring will be increased to full time, if appropriate, at least in the vicinity of the fossil site where the area is underlain by the fossil-bearing rock unit. If no fossil remains are found once 50 percent of earth-moving activities have been completed in an area underlain by a particular rock unit, with City of Los Angeles approval, monitoring can be reduced or suspended in that area.

Monitoring will consist of visually inspecting debris piles and freshly exposed strata for larger fossil remains, and periodically dry test screening sediment, rock, and debris for smaller fossil remains. As soon as practicable, the monitor will recover all vertebrate fossil specimens, a representative sample of invertebrate or plant fossils, or any

fossiliferous rock sample that can be recovered easily. If recovery of a large or unusually productive fossil occurrence is warranted, earth-moving activities will be diverted temporarily around the fossil site and a recovery crew will be mobilized as necessary to remove the occurrence as quickly as possible. If not on site when a fossil occurrence is uncovered by these activities, the activities will be diverted temporarily around the fossil site and the monitor called to the site to evaluate and, if warranted, recover the occurrence. If the fossil site is determined too unproductive or the fossil remains not worthy of recovery, no further action will be taken to preserve the fossil site or remains, and earth-moving activities will be allowed to proceed through the site immediately. The location and proper geologic context of any fossil occurrence will be documented, as appropriate. Any recovered rock sample will be processed to allow for the recovery of smaller fossil remains.

Rock samples will be processed to allow for the recovery of smaller fossil remains that normally are too small to be observed by the monitor. No more than 6,000 pounds (12,000 pounds total) of rock will be processed from either the Palos Verdes Sand or coastal deposits.

4.1.5.5 Task 5—Final Laboratory Tasks.—All fossil specimens recovered from the project site as a result of the mitigation program, including those recovered as the result of processing fossiliferous rock samples, will be treated (prepared, identified, curated, catalogued) in accordance with designated museum repository requirements. Small rock samples from the Palos Verdes Sand, dune sand, and coastal deposits will be submitted to commercial laboratories for microfossil, pollen, or radiometric (carbon-14) dating analysis.

4.1.5.6 Task 6—Reporting.—The monitor will maintain daily monitoring logs that include the particular tasks accomplished, the earth-moving activity monitored, the location where monitoring was conducted, the rock unit encountered, fossil specimens recovered, and associated specimen data and corresponding geologic and geographic site data. A final technical report of results and findings will be prepared by the paleontologist in accordance with any City of Los Angeles requirement.

4.2 OPERATIONAL PHASE

No mitigation measure would be necessary during the operational phase if there were no earth-moving activity.

4.3 ENVIRONMENTAL COMPLIANCE

The project will comply with any applicable environmental law, ordinance, regulation, or standard regarding paleontologic resources during earth-moving activities associated with project construction.

Paleontologic resources, including fossil remains, associated specimen data and corresponding geologic and geographic site data, fossil sites, and the fossil-bearing strata, are a limited, nonrenewable, and very sensitive scientific and educational resource and, particularly with regard to fossil sites, are afforded protection under the following state environmental legislation (see California Office of Historic Preservation, 1983).

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Guidelines for the Implementation of CEQA, as amended May 10, 1980, and March 29, 1999 (Title 14, Chapter 3, California Administrative Code: 15000 *et seq.*).—Define procedures, types of activities, persons, and public agencies required to comply with CEQA, and include definitions of significant impacts on a fossil locality (Section 15023, Appendix G [5.c]).

California Public Resources Code, Section 5097.5 (Statute 1965, Chapter 1136, Paragraph 2792).—Defines any unauthorized disturbance or removal of a fossil locality or remains on public land as a misdemeanor.
California Public Resources Code, Section 30244.—Requires reasonable mitigation of adverse environmental impacts that result from development of public land and affect paleontologic resources.

Angeles, also have developed environmental guidelines for protecting paleontologic resources in areas under their respective jurisdictions. Under its guidelines, a CEQA lead agency can require the completion of a paleontologic resource impact assessment of an area to be adversely impacted by a discretionary project deemed nonexempt under its guidelines. As part of such an assessment, the agency can require the compilation of a paleontologic resource inventory and the mapping of fossil-bearing rock units and previously recorded and newly documented fossil sites by a qualified paleontologist in the area to be affected, an evaluation of the scientific importance of these resources, a determination of the adverse environmental impacts that might arise from the project and an appraisal of their significance, and the formulation of measures to mitigate these impacts to an insignificant level. The City of Los Angeles has required that such an assessment be conducted in support of the proposed Venice Pumping Plant Dual Force Main Project EIR because earth-moving activities associated with project construction might result in the loss of fossil remains and unrecorded fossil sites. This paleontologic resource assessment technical report, particularly with regard to the mitigation measures presented above, is in compliance with SVP (1995, 1996) standard measures for assessing the scientific importance of paleontologic resources in an area of potential environmental effect, developing measures to mitigate significant adverse construction-related environmental impacts on these resources, and with conditions for the acceptance of a paleontologic resource impact mitigation program fossil collection by a museum repository.

SECTION 6

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APPENDIX G

HAZARDS AND HAZARDOUS MATERIALS

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

STATE CLEARINGHOUSE NUMBER: 2003031001

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Regulatory Database Descriptions and Corresponding ASTM Search Distances

Type of Database/Date	Description of Database	Radius Searched
Required Federal Database Listings		
NPL	The National Priorities List (NPL) identifies uncontrolled or abandoned hazardous waste sites. To appear on the NPL, sites must have met or surpassed a predetermined hazard ranking system score, been chosen as a state's top priority site, pose a significant health or environmental threat, or be a site where the EPA has determined that remedial action is more cost-effective than removal action.	1.0 mile
CORRACTS	Resource Conservation & Recovery Act (RCRA) facilities ordered to implement corrective actions.	1.0 mile
CERCLIS	The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database identifies hazardous waste sites that require investigation and possible remedial action to mitigate potential negative impacts on human health or the environment.	0.5 mile
RCRA TSDs	RCRA treatment, storage, or disposal (TSD) sites.	0.5 mile
CERCLIS- NFRAP	No Further Remedial Action is Planned (NFRAP) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for these sites and they have been removed from CERCLIS list based on findings of site investigations.	Site and Adjoining
RCRA Generators	RCRA regulated hazardous waste generator notifiers list; both large quantity and small quantity generators are included in this list.	Site and Adjoining
ERNS	EPA's Emergency Response Notification System (ERNS) list contains reported spill records of oil and hazardous substances.	Site
Supplemental Federal Database Listings		
CONSENT	Superfund (CERCLA) Consent Decrees by the Department of Justice. Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.	1.0 mile
ROD	Record of Decision (ROD) documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.	1.0 mile
DELISTED NPL	NPL Deletions. The National Oil and Hazardous Substances Pollution Contingency Plan establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 Code of Federal Regulations (CFR) 300.425 (e), sites may be deleted from the NPL where no further response is appropriate.	1.0 mile
DOD	Department of Defense (DOD) Sites. This data set consists of federally owned or administered lands, administered by the DOD, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.	1.0 mile
INDIAN RESERVE	This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.	1.0 mile
FUDS	Formerly Used Defense Sites (FUDS). The listing includes locations of FUDS properties where the USACOE is actively working or will take necessary cleanup actions.	1.0 mile
US ENG CONTROLS	Engineering Controls Sites List. A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.	0.5 mile
ODI	Open Dump Inventory (ODI). An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.	0.5 mile
UMTRA	Uranium Mill Tailings Sites. Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.	0.5 mile
FINDS	The Facility Index System (FINDS) database identifies different databases that contain information regarding federally listed sites.	Site and Adjoining
MINES	Mines Master Index File. Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.	Site and Adjoining
TSCA	Toxic Substances Control Act (TSCA). TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.	Site and Adjoining

Type of Database/Date	Description of Database	Radius Searched
SSTS	Section 7 Tracking Systems. Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the EPA by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.	Site and Adjoining
TRIS	The Toxic Release Inventory System (TRIS) database identifies facilities that release toxic chemical to the air, water, or land in reportable quantities.	Site and Adjoining
FTTS	Tracks administrative cases and pesticide enforcement actions and compliance activities related to the Federal Insecticide, Fungicide, and Rodenticide Act, the TSCA, and the Emergency Planning and Community Right-to-Know Act.	Site and Adjoining
HMIRS	The Hazardous Material Information Reporting System records of spills or hazardous materials incidents reported to the Department of Transportation.	Site
MLTS	Material Licensing Tracking System (MLTS). The MLTS is maintained by the Nuclear Regulatory Commission (NRC) and contains a list of approximately 8,100 sites, which possess or use radioactive materials and which are subject to NRC licensing requirements.	Site
NPL LIENS	Federal Superfund Liens. Federal Superfund Liens. Under the authority granted the EPA by the CERCLA of 1980, the EPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. EPA compiles a listing of filed notices of Superfund Liens.	Site
PADS	Polychlorinated Biphenyl (PCB) Activity Database System. PADS identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs who are required to notify the EPA of such activities.	Site
RAATS	RCRA Administration Action Tracking System (RAATS). RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.	Site
Required State Database Listings		
AWP/ Former BEP	Annual Work Plan (formerly known as Bond Expenditure Plan [BEP]) sites – known hazardous waste sites targeted for cleanup. This is the state-equivalent to the NPL.	1.0 mile
CalSites	The CalSites database contains potential or confirmed release properties. This is the state equivalent to CERCLIS.	0.5 mile
VCP	Voluntary Cleanup Program sites – low-threat sites with either confirmed or unconfirmed releases and that have requested DTSC oversight and cleanup activities and have agreed to cover cleanup costs. (Similar to Brownfields sites below)	0.5 mile
TOXIC PITS	Toxic Pits Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.	0.5 mile
STATE LANDFILL	Solid Waste Information System. Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.	0.5 mile
WMUDS/SWAT	State inventory of solid waste disposal and landfill sites.	0.5 mile
LUST	List of information pertaining to all reported leaking underground storage tanks (LUSTs). This includes listings at the state and local level.	0.5 mile
Cortese	The Hazardous Waste & Substances Sites list identifies older LUST sites and sites listed by the Department of Health. It is no longer updated.	0.5 mile
INDIAN LUST	LUSTs on indian land in Arizona, California, New Mexico and Nevada.	0.5 mile
CA UST	State listing of active underground storage tank (UST) sites.	Site and Adjoining
INDIAN UST	USTs on indian land in Arizona, California, New Mexico and Nevada.	Site and Adjoining
CA FID UST	State listing of active and inactive UST sites. This list is no longer updated.	Site and Adjoining
HIST UST	State listing of historical UST sites. This list is no longer updated.	Site and Adjoining

Type of Database/Date	Description of Database	Radius Searched
NOTIFY 65	Proposition 65 Notification Records. The NOTIFY 65 list contains facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk.	Site and Adjoining
CHMIRS	The California Hazardous Material Incident Report System records of spills or hazardous materials incidents.	Site
	Supplemental State and Local Database Listings	
SLIC	The Regional Water Quality Control Board issues this list of sites with non-tank spill, leaks, investigations, and cleanups.	0.5 mile
Brownfields	Database of low-threat properties with either confirmed or unconfirmed releases that have requested DTSC oversight and cleanup activities and have agreed to cover cleanup costs. (Similar to VCP sites above)	0.5 mile
DEED	Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.	0.5 mile
City of L.A. Landfills	The City Engineering and Construction Division maintain a list of landfills within city limits.	0.5 mile
L.A. County SWLF	The Los Angeles County Department of Public Works maintains a list of historic, current, and potential landfills within the county.	0.5 mile
WDS	The State Water Resources Control Board generates this list of industrial wastewater dischargers.	Site and Adjoining
HAZNET	Facility and manifest data is gathered for this database from hazardous wastes manifests that are submitted to DTSC.	Site and Adjoining
EMI	Database of facilities reporting toxic and criteria pollutant emissions data to the local air pollution agencies.	Site and Adjoining
NFA	No Further Action Determination. This category contains properties at which DTSC has made a clear determination that the property does not pose a problem to the environment or to public health.	Site and Adjoining
REF	Unconfirmed Properties Referred to Another Agency. This category contains properties where contamination has not been confirmed and which were determined as not requiring direct DTSC Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency.	Site and Adjoining
SCH	School Property Evaluation Program. This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.	Site and Adjoining
NFE	Properties Needing Further Evaluation. This category contains properties that are suspected of being contaminated. These are unconfirmed contaminated properties that need to be assessed using the PEA process. PEA in Progress indicates properties where DTSC is currently conducting a PEA. PEA Required indicates properties where DTSC has determined a PEA is required, but not currently underway.	Site and Adjoining
Dry Cleaners	EDR compiles a database of dry cleaning facilities based on their having a hazardous waste generator ID and certain SIC codes.	Site and Adjoining
L.A. County HMS	The Los Angeles County Department of Public Works maintains a listing of files they maintain for sites with USTs or facilities with industrial wastewater permits.	Site and Adjoining
Site Mitigation List	The L. A. County Department of Public Health maintains a listing of industrial sites that have had some sort of spill or complaint.	Site and Adjoining
AST	Registered Aboveground Storage Tanks.	Site

Regulatory Database Findings for Proposed Venice Force Main Alignments

EDR Map ID	Facility Name Address	Proximity to Via Marina Alignment Alternative	Proximity to Pacific Ave Alignment Alternative	Proximity to Beach Alignment Alternative	Database Lists	Description	Current Agency Status	Recognized Environmental Condition Potential
5	LA Pumping Plant #46 140 Hurricane Street	On site	On site	On site	RCRS-SQG	Small quantity generator of hazardous waste	No violations reported	Low
					Notify 65	Site has notified the State Water Resources Control Board that a release of hazardous substances could potentially impact drinking water	Not applicable-notification only	Low
					FINDS	Included on RCRIS	Not provided	Low
18	7332 Vista Del Mar	On site	On site	On site	ERNS	Sewer collapsed on 4/17/1992; release to land only.	Not provided	Low
7	Timberlake Group Int'l 4100-5000 Pacific	Approx. 900 feet. southwest	On site	Approx. 500 feet northeast	CA SLIC	Total petroleum hydrocarbons (TPH) contamination	Case closed	Low
11	S. California Gas Co. 5400 Pacific Avenue	Approx. 900 feet. southwest	On site	Approx. 500 feet northeast	CA SLIC	TPH contamination	Case closed	Low
					HAZNET	Generator of contaminated soil from site cleanup	Not provided	Low
Unmapped	S. California Gas Co. 143 Union Jack	Approx. 700 feet southwest	Approx. 200 feet northeast	Approx. 700 feet northeast	CA SLIC	TPH contamination	Case closed	Low
12	OHN Kearney 6512 Pacific Avenue	Approx. 1000 feet southwest	On site	Approx. 400 feet northeast	HAZNET	One-time generator of asbestos-containing waste.	Not provided	Low
8	Unocal #0407 13800 Bora Bora Way	Approx. 0.25 mile east	<0.25 mile east	<0.25 mile east	Cortese	Leaking UST site	Not provided	Low
					LUST	Release of gasoline to groundwater in 1991 as a result of piping failure. Methyl tert-butyl ether (MTBE) detected.	Case closed in 1997	Low
9	Unocal Corp SS 0407 1 Bora Bora Way (File review indicates actually same location as above)	Same as above	Same as above	Same as above	CA FID UST	UST location	Active	Low
9	Service Station No. 1 Bora Bora Way (Same as above)	Same as above	Same as above	Same as above	HIST UST	Historic UST site with 10,000-gallon Product 10,000-gallon Premium 10,000-gallon Unleaded 10,000-gallon Diesel (1) 550-gallon Waste oil (1) Unidentified contents	Not provided	Low

EDR Map ID	Facility Name Address	Proximity to Via Marina Alignment Alternative	Proximity to Pacific Ave Alignment Alternative	Proximity to Beach Alignment Alternative	Database Lists	Description	Current Agency Status	Recognized Environmental Condition Potential
9	Pegasus Carriers, Inc. (Same as above)	Same as above	Same as above	Same as above	RCRIS-SQG	Small Quantity Generator of hazardous waste	No violations reported	Low
					FINDS	Identified on RCRIS	Not provided	Low
3	Via Dolce Acquisition Area 3 3700-3706 Canal North-northwest	Approx. 1000 feet north-northwest	Approx. 1000 feet north-northwest	Approx. 1000 feet north-northwest	CA SLIC	TPH contamination	Case closed	Low
3	Via Dolce Acquisition Area 2 3600-3615 Canal North-northwest	Approx. 1000 feet north-northwest	Approx. 1000 feet north-northwest	Approx. 1000 feet north-northwest	CA SLIC	TPH contamination	Case closed	Low
4	Via Dolce Acquisition Area 1 3602 Pacific Avenue Northwest	Approx. 1000 feet northwest	Approx. 1000 feet northwest	Approx. 1000 feet northwest	CA SLIC	TPH contamination	Case closed	Low
10	Southern California Gas Company 5101 Ocean Front Walk West	Approx. 200 feet southwest	Approx. 1200 feet southwest	Less than 100 feet northeast	CA SLIC	TPH contamination	Case closed	Low
14	Del Rey Cleaners 310 Culver Blvd. Northeast	Approx. 200 feet northeast	Approx. 200 feet northeast	Approx. 2000 feet southeast	CA SLIC	Perchloroethylene, VOC (volatile organic compounds) release from non-tank source	Site assessment	Moderate
					RCRIS-SQG	Small quantity generator of hazardous waste	No violations reported	Low
					FINDS	Identified on RCRIS	Not provided	Low
					HAZNET	Generator of hazardous waste: Halogenated solvents; Liquids with halogenated organic compounds >1,000 milligrams per liter.	Not provided	Low
					Cleaners	Dry cleaning establishment	Not provided	Low

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APPENDIX **H**

NOISE AND VIBRATION ANALYSIS

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

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REPORT

VENICE PUMPING PLANT DUAL FORCE MAIN NOISE AND VIBRATION TECHNICAL STUDY

Prepared for

City of Los Angeles
Department of Public Works
BUREAU OF ENGINEERING

October 5, 2005

URS

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1.0 PURPOSE AND INTRODUCTION

This Technical Report presents the results of a noise and vibration impact assessment for the Venice Pumping Plant Dual Force Main Project (Project). The assessment presented herein was conducted for the Project's Draft Environmental Impact Report and prepared in accordance with the City of Los Angeles guidelines for the California Environmental Quality Act (Los Angeles, July 2002). This report describes the existing levels of environmental noise at sensitive receptors along the alignments of the project alternatives, identifies the applicable regulatory background, and presents the predicted noise and vibration impacts associated with the project alternatives. Mitigation measures are recommended for consideration where appropriate.

As shown in Figure 1-1, the project is located in the Venice and Westchester / Playa Del Rey communities of the city of Los Angeles, California. The existing 48-inch diameter Venice Pumping Plant force main was built in 1958 and is a pressurized pipeline that conveys wastewater flows to the Hyperion Treatment Plant located in Los Angeles. The City of Los Angeles proposes to construct and install a new force main sewer extending from the existing Venice Pumping Plant (VPP) at 140 Hurricane Avenue in Venice to a junction structure on the North Outfall Sewer in Vista del Mar near Waterview Street in Playa Del Rey. The second force main would be used in tandem with the existing force main to fulfill two key objectives:

- To expand the capacity of the Coastal Interceptor Sewer's force main segment from the VPP to a connection in Playa Del Rey in the vicinity of Waterview Street, such that all projected wet weather flows can be safely conveyed without future threats of spilling onto city streets and adjacent surface waters; and

- To provide force main redundancy to allow for much needed maintenance and rehabilitation of the existing force main and future reciprocal cleaning of each force main during dry weather periods.

The four alignment alternatives under consideration are known as the Marquesas Way/Via Marina Alignment, the Pacific Avenue Alignment, the Dockweiler Beach / Pacific Avenue Alignment, and the Dockweiler Beach Alignment. In addition, the pipeline will pass under the Marina Del Rey Channel along one of six possible Marina Del Rey Channel Alignments.

The Marquesas Way/Via Marina Alignment would begin at the existing VPP on Hurricane Street, and proceed east under the Grand Canal and along Marquesas Way, then southeasterly on Via Marina to the Marina Del Rey entrance channel. It would then cross under the Marina Del Rey and Ballona Creek channels and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

The Pacific Avenue Alignment would begin at the VPP and proceed westerly to Pacific Avenue, then turn south and proceed along Pacific Avenue, cross under the Marina Del Rey and Ballona Creek channels, and continue south within Pacific Avenue to a junction structure in Vista Del Mar near Waterview street. This alignment is the shortest route – about 10,000 feet.

The Dockweiler Beach to Pacific Avenue Alignment would begin at the VPP and would proceed westerly to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels, and continue south within the Pacific Avenue alignment to a junction structure in Vista Del Mar near Waterview street. This alignment is about 10,400 feet long.

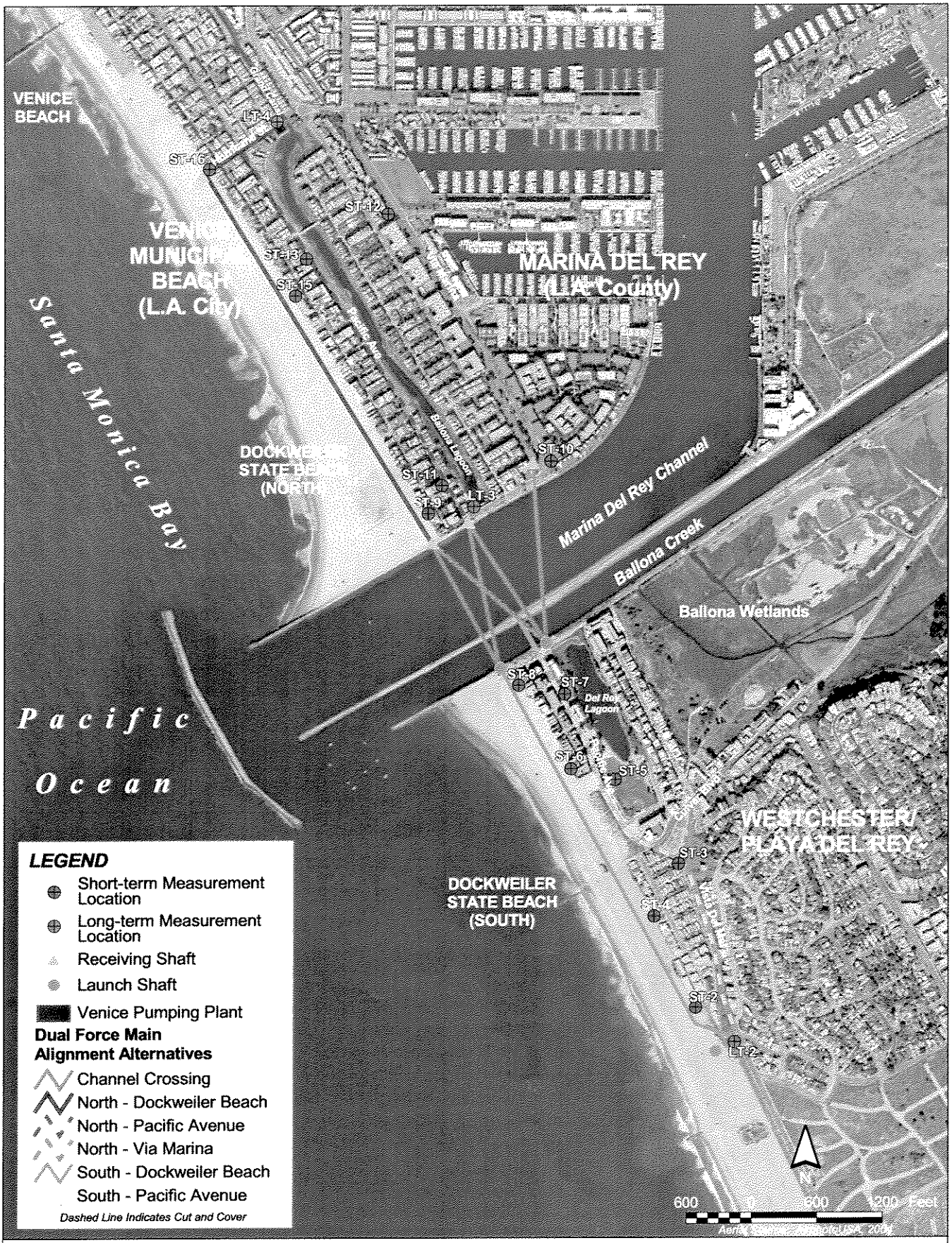
The Dockweiler Beach Alternative would begin at the VPP and would proceed westerly to the existing 20-foot wide sewer easement in Dockweiler State Beach, then turn south and cross under the Marina Del Rey and Ballona Creek channels. The alignment would continue south along the Dockweiler Beachfront to a point west of the junction structure in Vista Del Mar near Waterview Street. From this point the line runs east to the junction structure in Vista Del Mar near Waterview Street. This alignment is about 11,000 feet long.

Construction Methods: The alignments under consideration cross the Marina entrance channel and Ballona Creek channel, requiring about 1,800 feet of micro-tunneling under the two channels. Elsewhere along each alignment, three Alternative construction methods are analyzed for consideration in the DRAFT EIR, consisting of; cut and cover, micro-tunneling, and large diameter tunneling. Each method provides both benefits and issues of concern for the project. While open trench construction costs less, micro tunneling would eliminate the majority of traffic and parking impacts to residential areas both north and south of the channels and can facilitate mitigation of other impacts such as noise. The Large Diameter Tunneling and continuous full length alternative method of installation/construction of the sewer is under consideration for the following alignment areas:

a. Dockweiler Beach - South to North Shafts
b. Dockweiler Beach - LAX to North Shaft
c. LAX to VPP Shafts via Dockweiler Beach
d. LAX to VPP Shafts via Inland Route

Unless otherwise stated, it is assumed that the project will be designed, constructed and operated following all applicable laws, regulations, ordinances and other formally adopted City standards (e.g., *Los Angeles Municipal Code* and Bureau of Engineering *Standard Plans*). Also, this analysis assumes that construction will follow the uniform practices established by the Southern California Chapter of the American Public Works Association (e.g., *Standard Specifications for Public Works Construction* and the *Work Area Traffic Control Handbook*) as specifically adapted by the City of Los Angeles (e.g., The City of Los Angeles Department of Public Works *Additions and Amendments to the Standard Specifications For Public Works Construction* ("The Brown Book," formerly Standard Plan S-1610).

The terms and metrics associated with noise that are used in this technical report can be complex and are discussed in detail in Appendix A. In general and in this document, noise or sound levels are expressed in A-weighted decibels (dBA) relative to 20 micropascals and vibration levels are expressed in inches per second.



PROJECT AREA OVERVIEW, ALIGNMENTS, AND MEASUREMENT LOCATIONS

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	Figure 1-1

VENICE PROJECT AREA, ALIGNMENTS, AND MEASUREMENT LOCATIONS

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	Figure 1-2

PLAYA DEL REY PROJECT AREA, ALIGNMENTS, AND MEASUREMENT LOCATIONS

URS	Project No.: 29870322	Project: VENICE PUMPING PLANT DUAL FORCE MAIN EIR	Figure 1-3

2.0 EXISTING NOISE AND VIBRATION ENVIRONMENT

The proposed project is located on the immediate coastline and inland adjacent to the coastline in the southern portion of the community of Venice and in the community of Playa Del Rey (see Figure 1-1). The primary land uses in these areas are medium to high density residential with some recreational and light commercial designations, particularly in the Playa Del Rey and Marina Del Rey areas. Two Environmentally Sensitive Habitat Areas (ESHAs) are located in close proximity to most of the potential alignments; the Grand Canal/Ballona Lagoon in the Venice and Marina Del Rey area, and the Del Rey Lagoon situated in Playa Del Rey. These ESHAs, as well as Dockweiler State Beach, are designated as conservation and open space. A large protected breeding ground of the California Least Tern exists on Venice Beach just north of the Marina Del Rey entrance channel and adjacent to one of the proposed alignments – this species is both a state and federally listed endangered species. The project area is near the Los Angeles International Airport (LAX), with the southern end approximately 1/2 mile away from the westbound departure flight path of the northernmost runway (Runway 24/6) and the northern end approximately 2 1/2 miles away. Overflights by departing commercial aircraft are frequent, and are particularly noticeable in the project area south of Marina Del Rey Channel.

In order to characterize the existing noise in the project area and as a point of comparison for the project alternatives, ambient noise and meteorological conditions were measured along the proposed alignments during a three-day period from Wednesday, June 8 to Friday, June 10, 2005. Appendix B contains a complete list of the instruments used in the study to measure noise, weather, and traffic. (The calibration certificates for the acoustical instruments are shown in Appendix C.) The "raw" noise measurement data are presented in Appendices D and E. Sections 2.1, 2.2 and 2.3 address the observed noise, vibration and weather environments, respectively.

2.1 NOISE

Two types of ambient noise measurements were conducted: Short-Term (ST) and Long-Term (LT). The ST measurements consisted of separate measurements at 16 representative noise-sensitive locations, and were each 15 minutes in duration. These sampling measurements are considered representative of the hourly noise levels at the measurement sites. "Precision" grade (Type 1) Sound Level Meters (SLMs) were used to conduct the ST noise measurements. All of the ST measurements were attended (i.e. performed by persons with training and experience in measuring environmental sound). In addition to operating the SLMs, the noise specialists actively observed and noted the acoustical, weather, and community activity conditions. The LT noise measurements were unattended. Automated "Engineering" grade (Type 2) Community Noise Analyzers (CNAs) were deployed at four representative locations along the proposed alignments to collect continuous hour-by-hour sound level data for 24 hours at each location. Noise levels are reported here using the Equivalent Noise Level (L_{eq}) and Community Noise Equivalent Level (CNEL), which are described further in Appendix A.

The laboratory calibration of the sound instruments was verified in the field before and after each measurement period using a reference acoustical calibrator. The accuracy of the acoustical calibrator is maintained through a program established by the manufacturer, and is traceable to the National Institute

of Standards and Technology. The sound measurement instruments meet the requirements of the American National Standards Institute and International Electrotechnical Commission Publications. Appendix D contains the calibration records of all acoustical instruments used in this study.

For the short-term sound level measurements, a SLM was mounted on a tripod so that the microphone was five feet above the ground. The microphone was fitted with a windscreen. For the long-term sound level measurements, the CNA was locked in a small steel container with the microphone and windscreen protruding at least four inches from the top of the container. The container was attached to a fence or tree or other structure such that the microphone was at least five feet above the ground. The CNA was placed more than 15 feet from the nearest acoustically reflective surface (e.g. wall) wherever possible.

For each measurement, field personnel completed a Field Measurement Data Sheet (FMDS). For each short-term measurement, the FMDS lists the site location and description, weather conditions, calibration parameters, noise level data, sound sources and traffic counts (if applicable). Photographs were also taken at each location. For the long-term measurements, the FMDS includes the same information as for the short-term measurements, except noise level data and traffic counts. For a long-term measurement, the sound sources and weather conditions listed on the FMDS are typically the sources and conditions extant during CNA installation.

The measurement locations are shown on Figure 1-1, and the ST and LT noise measurement data are summarized in Table 2-1 and Table 2-2, respectively. Noise associated with typical coastal residential activity (e.g. traffic, pedestrian, and wind/waves) dominates in the project area north of Marina Del Rey Channel. The measured noise levels were typical for the project area's land uses. Near the southern end of the project area, the predominant noise sources are traffic on Vista Del Mar and overflights of commercial aircraft taking off from LAX.

The 15-minute L_{eq}'s measured at the eight ST locations south of Marina Del Rey Channel ranged from 56 dBA at the beachfront patios of houses just south of 62nd Ave. (ST-8) to 66 dBA in the parking lot abutting Vista Del Mar between Sunridge St. and Surf St. (ST-1). Street traffic was the predominant noise source at ST-1 and ST-3, while aircraft overflights were the predominant noise source at ST-2 and ST-4 through ST-8. At the eight ST locations north of Marina Del Rey Channel, 15-minute L_{eq}'s ranged from 55 dBA at the beachfront sites (ST-9, ST-15, and ST-16) to 62 dBA at some inland sites (ST-12, ST-13, and ST-14). Community Noise Equivalent Sound Levels (CNEL) at the four LT locations ranged from 52 dBA at the east end of 62nd Ave. (LT-1) to 70 dBA near the intersection of Vista Del Mar and Waterview St.

Figures of the LT data in Appendix E show the hour-to-hour noise levels for LT-1 through LT-4. Although the overall noise levels differ at each of the six measurement locations, a brief comparison of these figures indicates that the general diurnal noise patterns are similar. The quietest hour of the 24-hour period is generally in the early morning, between 2 and 5 AM, followed by a rapid increase in the noise level beginning between 4 and 6 AM. The noise levels tend to reach a local maximum level during the morning commute time and then stabilize (within approximately 5 decibels) for the rest of the daytime hours, at which point the noise levels decline again. The lowest 1-hour L_{eq} measured at any of the four locations was 44 dBA at LT-1 (adjacent to the north end of Del Mar Lagoon) during the 4 – 5 AM hour.

Table 2-1. Short-Term Noise Measurement Data Summary

Site ID	Measurement Location	Measurement Period				Measurement Results, dBA					
		Date	Start Time	Duration (minutes)	Predominant Noise Source	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
ST-1	parking lot abutting W side of Vista Del Mar, S of Culver Blvd	6/8/2005	15:30	15:00	Vista Del Mar traffic, LAX aircraft takeoff overflights, rustling leaves, birds, distant landscaping	65.5	80.7	45.8	55.6	63.2	68.7
ST-2	oceanfront patios of condos S of Surf St	6/8/2005	15:45	15:00	wind, ocean surf, LAX aircraft takeoff overflights, Vista del Mar traffic, distant landscaping & vacuum cleaner	62.8	80.2	42.6	46.0	50.0	64.5
ST-3	Montreal St @ Vista Del Mar	6/8/2005	15:45	15:00	Pacific Ave traffic, LAX aircraft takeoffs, rustling leaves, distant barking dogs	64.1	81.7	45.5	50.4	60.1	67.5
ST-4	oceanfront patio of house between 6987/9 and 6995/7 Trolleyway	6/8/2005	16:15	15:42	LAX aircraft takeoffs, distant house construction (hammer & saw) & workers talking, birds, ocean surf, helicopter flyby along shore	61.8	77.4	42.6	46.0	50.0	63.5
ST-5	park S of Del Rey lagoon	6/8/2005	16:10	15:00	coach talking @ nearby baseball practice, rustling leaves, distant children playing	57.2	69.8	45.5	47.9	50.9	59.9
ST-6	oceanfront patio of 3rd building S of 66th Ave	6/8/2005	17:05	15:02	LAX aircraft takeoffs, distant volleyball practice, ocean surf, motorboat, helicopter passby along shore	61.7	77.7	43.6	49.5	55.0	65.5
ST-7	park @ Pacific Ave N of 64th Ave	6/8/2005	17:00	15:00	LAX aircraft takeoffs, rustling leaves, birds, wind chimes	59.5	74.6	44.2	46.9	51.7	69.2
ST-8	oceanfront patio of 3rd building S of 62nd Ave	6/8/2005	17:30	15:07	LAX aircraft takeoffs, people on beach & bike path, distant portable radio	55.9	69.8	41.4	43.5	49.0	60.0
ST-9	W end of Yawl St, even w/ building facades @ beach	6/9/2005	10:55	15:00	LAX aircraft, nearby pedestrians talking, rustling leaves	55.4	65.5	46.3	48.4	52.2	59.5
ST-10	park @ S curve of Via Marina, N of Marina Del Rey Channel	6/9/2005	10:55	15:00	Via Marina traffic, LAX aircraft, rustling leaves, distant landscaping, bids, distant back-up alarm	57.9	70.4	47.3	51.0	55.5	61.0
ST-11	Westwind St & Pacific Ave, S of 5315 Pacific Ave	6/9/2005	11:25	15:00	distant home construction, distant LAX aircraft, rustling leaves, birds	56.5	69.9	46.4	49.8	53.5	60.2
ST-12	NW corner of Via Marina & Tahiti Way	6/9/2005	11:45	15:12	Via Marina traffic, distant circular saw, birds	61.9	75.5	44.4	49.5	57.5	66.0
ST-13	Pacific Ave @ Outrigger St	6/9/2005	11:55	15:00	Pacific Ave traffic, distant LAX aircraft, rustling leaves, barking dogs, birds	61.8	79.6	43.2	45.5	51.5	66.7
ST-14	SW corner of Via Marina @ Marquesas Way	6/9/2005	15:00	15:00	Via Marina & Marquesas Way traffic, distant LAX aircraft, rustling leaves	62.3	82.7	47.9	51.4	58.0	65.1
ST-15	W end of Outrigger St, even w/ building facades @ beach	6/9/2005	16:10	15:00	distant LAX aircraft, distant traffic	54.8	67.9	45.5	47.7	51.4	57.4
ST-16	oceanfront patio of 3901 Speedway, S of Hurricane St	6/9/2005	16:15	15:00	ocean surf, distant LAX aircraft, distant dogs playing	54.9	70.3	46.0	48.0	50.5	57.0

Table 2-2. Long-Term Noise Measurement Data Summary

Site ID	Location	Measurement Period			Measurement Results, dBA					
		Start Date	Start Time	Duration (hours)	L_{eq}	L_{90}	L_{50}		L_{dn}	CNEL
LT-1	Back P/L of vacant lot N of 6206 Pacific Ave @ 62nd St	6/8/2005	13:00	24:00	52.3	46	49		57.2	57.5
LT-2	W side of Vista del Mar @ Waterview St	6/8/2005	14:00	24:00	69.5	55	67		72.7	73.3
LT-3	N side of Hurricane St @ Grand Canal	6/9/2005	16:00	24:00	52.5	47	50		56.0	56.6
LT-4	Via Marina @ S end of Ballona Lagoon	6/9/2005	16:00	0:00	61.1	49	55		64.0	64.4

2.2 VIBRATION

An ambient vibration survey was performed along the Pacific Avenue Alignment in October 2002 (Behrens, 2002). The survey measured existing ground vibration levels at four locations along Pacific Avenue north of the Marina Del Rey Channel. The measurement points were each at the sidewalk property line of residential buildings. The major sources of vibration were trucks and buses traveling on Pacific Avenue. The maximum ground vibration level for vibration "events" (i.e. bus or truck passbys) at any of the measurement sites was 0.02 inches per second peak-to-peak velocity. This level is within the range of human perception, but well below the threshold levels for architectural or structural damage.

During the June 2005 noise survey, survey personnel observed that the major sources of vibration were similar to those observed during the October 2002 vibration study: typical community sources and large road vehicles, such as trucks and buses. No unusual sources of vibration (e.g. pile driving or demolition) were observed in the project area during the 2005 survey.

2.3 METEOROLOGY

Meteorological data was measured and noted during the noise measurements. Using the hand-held instruments listed in Appendix B, field personnel made objective measurements and subjective observations of weather conditions (e.g., temperature, relative humidity, wind speed and direction, and cloud cover) during the measurement periods at each location. These observations were recorded on the FMDS shown in Appendix D. The weather during the measurement period was generally warm and sunny, with calm to light breezes. The weather conditions were generally favorable for conducting ambient measurements and there was no adverse effect on the measurement accuracy due to the weather.

3.0 IMPACT EVALUATION CRITERIA AND THRESHOLDS OF SIGNIFICANCE

The methods detailed in the City's *Draft Los Angeles CEQA Thresholds Guide* (Thresholds Guide) were used for the noise and vibration impact evaluation in this study.

Section 3.1 discusses the regulatory setting of the impact evaluation. Sections 3.2 and 3.3 present the impact criteria and evaluation procedure, respectively.

3.1 REGULATORY SETTING

There are a number of laws and guidelines at the Federal level relevant to the assessment of noise and vibration impacts. These include:

- Noise Control Act of 1972 (42 U.S.C. 4910);
- HUD Environmental Standards (24 C.F.R. Part 51);
- OSHA Occupational Noise Exposure; Hearing Conversation Amendment (FR 48 (46), 9738--9785 (1983).

At the State level, the California Environmental Quality Act (CEQA) requires that an environmental study and an analysis of environmental impacts be performed for every development project that requires discretionary approval from a government agency and that may cause either a direct physical change or a reasonably foreseeable indirect change in the environment.

For the City of Los Angeles, the thresholds of significance for impact under CEQA are given in the Thresholds Guide. The Noise Ordinance of the City of Los Angeles (Los Angeles Municipal Code, Chapter XI) also sets noise limits based on zoning district and the change from the ambient level. Noise from construction activities is regulated by reference to Chapter IV of the Los Angeles Municipal Code. The relevant standards are summarized in Table 3-1.

For the Marquesas Way/Via Marina Alignment Alternative, a portion of the project (at the intersection of Marquesas Way and Via Marina) would take place within the County of Los Angeles, and residences on the east side of Via Marina (located within the County of Los Angeles) have the potential to be affected by project-related construction noise. The Noise Control Ordinance of the County of Los Angeles (County) has established both general and construction noise and vibration limits for four types of land use "noise zones": noise-sensitive areas, residential properties, commercial properties, and industrial properties. The relevant standards are summarized in Table 3-1.

Table 3-1: Summary of Applicable LORS

Publication	Section	Applies to	Max Level	Measured At
City of Los Angeles Noise Ordinance	Los Angeles Municipal Code Section 112.05	Powered equipment, hand tool, or construction machinery in or within 500 feet of a residential zone	75 dBA	50 feet from noise-producing equipment
City of Los Angeles CEQA Thresholds Guide	Chapter I, Section 2, Subsection A	Construction Activities lasting more than 10 days in a 3-month period	Ambient + 5dBA	At a noise sensitive use
City of Los Angeles CEQA Thresholds Guide	Chapter I, Section 2, Subsection A	Any construction activities between 9:00 PM. and 7:00 AM. Monday through Friday, before 8:00 AM. or after 6:00 PM. on Saturday, or anytime on Sunday	Ambient + 5dBA	At the location of sensitive receptors
County of Los Angeles Noise Ordinance	Los Angeles County Code Title 12, Chapter 12.08, Section 12.08.390	Operation of any source of sound at any location within the unincorporated county	See Section 3.2.1	Exterior on any other property
County of Los Angeles Noise Ordinance	Los Angeles County Code Title 12, Section 12.08.440	Construction Activities affecting unincorporated County residential or commercial use.	See Section 3.2.2	At the location of sensitive receptors
County of Los Angeles Noise Ordinance	Los Angeles County Code, Section 12.08.560	"Any Device" Vibration Motion Velocity	0.01 in/sec over a range of 1 to 100 Hz	At or beyond the property boundary of the source, or 150 feet from the source if on a public space or public right-of-way

3.2 THRESHOLDS OF SIGNIFICANCE

Operational and construction noise and vibration are treated separately in the following four subsections.

3.2.1 Operational Noise

Screening Criteria are given in the Los Angeles CEQA Guidelines: If the proposed project triggers a "yes response to the following questions, than further study would be required:

- Would the project introduce a stationary noise source 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 or greater of nonresidential development, or have the potential to generate 10,000 or more average daily vehicle trips?

In the operational noise evaluation outlined in the Los Angeles Draft CEQA Guidelines, the thresholds for impact are based on the net change in the environmental noise level due to the project alternative. Similarly noise-sensitive land uses are grouped, and ambient noise levels are classified according to their compatibility with the various land use types. For each land use group, the ambient level is either Normally Acceptable, Conditionally Acceptable, Normally Unacceptable, or Clearly Unacceptable. The land use compatibility categories and their associated noise levels are given in Table 3-2.

Table 3-2. Land Use Compatibility Categories and Noise Levels

Land Use	Ambient Community Noise Exposure Level (dBA CNEL)		
	Normally/Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
single-family, duplex, mobile homes, multi-family homes	50 – 70	70 – 75	above 70
schools, libraries, churches, hospitals, nursing homes, motels, hotels	50 – 70	70 – 80	above 80
auditoriums, concert halls, amphitheatres	50 – 70	***	above 65
sports arenas, 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 – 77	Above 75	***
industrial, manufacturing, utilities, and agriculture	50 – 80	Above 75	***

Source: Draft L.A. CEQA Thresholds Guide, Section I.2.A. *** values not given in Thresholds Guide

A project would have a significant impact on community noise if the operations caused the ambient noise level at the property line of the affected uses to either:

- Increase by 5 dBA CNEL or more, or
- Increase by 3 dBA CNEL *and* rise into either the Normally Unacceptable or Clearly Unacceptable category.

These criteria apply to various noise sources, respond to heightened community annoyance caused by late-night or early-morning noise, and respond to varying sensitivity of communities under different ambient conditions to noise from projects.

The County of Los Angeles addresses noise in Chapter 12.08 (Noise Control) of the County Code. Section 12.08.390 lists exterior noise standards for various land use zones. These noise standards are listed in Table 3-3. The noise standards shown in Table 3-3 would apply at residential and commercial structures that are within the unincorporated County and adjacent to the portion of the Via Marina Alignment Alternative taking place in the unincorporated County.

Table 3-3. Los Angeles County Exterior Noise Standards

Noise Zone	Designated Noise Zone Land Use (Receptor property)	Time Interval	Exterior Noise Level (dBA)
I	Noise-Sensitive Area	Anytime	45
II	Residential Property	10:00 PM to 7:00 AM	45
		7:00 AM to 10:00 PM	50
III	Commercial Property	10:00 PM to 7:00 AM	55
		7:00 AM to 10:00 PM	60
IV	Industrial Property	Anytime	70

Source: Los Angeles County Code, Section 12.08.390

If any Project alignment alternative exceeded the relevant noise criteria for impact, then noise abatement actions would be considered. Noise from any Project alignment alternative that is predicted to exceed the criteria for impact under CEQA would result in a significant adverse effect. In such a case, feasible/effective noise mitigation measures would need to be considered. If feasible/effective mitigation actions were not available, then unavoidable adverse impacts would occur if the particular alternative were to be selected.

3.2.2 Construction Noise

Depending upon the method of construction chosen, short-term increases in noise from construction would result from the operation of heavy equipment needed to construct the tunnels or cut, dig and re-fill the trenches and insert the pipeline for the Project. The City of Los Angeles regulates noise from construction, and the contractor will be required to adhere to these regulations.

Construction screening criteria are given in the Los Angeles CEQA Guidelines. If the proposed project triggers a "yes response to the following questions, than further study would be required:

- 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 PM and 7:00 AM Monday Through Friday, before 8:00 AM or after 6:00 pm on Saturday, or at anytime on Sunday?

The City of Los Angeles Noise Ordinance (L.A.M.C. Section 112.03) regulates construction noise by referencing Section 41.40 of the Los Angeles Municipal Code. Section 41.40(a) prohibits use of any noise-producing device or powered equipment for construction or repair work on any building or structure between the hours of 9:00 PM and 7:00 AM on weekdays. Section 41.40(c) prohibits non-emergency grading or construction, other than by an individual homeowner on his/her own single-family residence, on or within 500 feet of residential land before 8:00 AM and after 6:00 PM on Saturdays and national holidays, and at any time on Sundays. These sections also prohibit operation, repair, or servicing of construction equipment and job-site delivering of construction materials during those hours.

The County of Los Angeles addresses noise from construction activities in Section 12.08.440 (Construction Noise) of the Los Angeles County Code. The operation of any tools used for construction or related activities such that a noise disturbance is created at a residential or commercial land use is prohibited on weekdays between 7:00 PM and 7:00 AM or at any time on Sundays or holidays. The noise standards listed in Table 3-4 are applicable to construction activities conducted within the unincorporated County. The only exception to this is in the case of emergency work of public service utilities or by variance issued by the County health officer.

Table 3-4. Los Angeles County Noise Standards for Mobile Construction Equipment

	Single-Family Residential	**Multi-Family Residential**	**Semi-Residential/ Commercial**
Daily, except Sundays and legal holidays, 7:00 AM to 8:00 PM	75 dBA	80 dBA	85 dBA
Daily, 8:00 PM to 7:00 AM and all day Sundays and legal holidays	60 dBA	64 dBA	70 dBA

Source: Los Angeles County Code, Section 12.08.440

3.2.3 Construction and Operations Vibration

The City of Los Angeles does not have a quantified standard or threshold for vibration that is applicable to the construction or operations phase of this project.

The County of Los Angeles addresses vibration in Section 12.08.560 of the County Code. Vibration from any device is prohibited that creates vibration above the threshold of perception at a distance of 150 feet from the source if the source is on a public space or public right-of-way. The threshold of perception is defined as 0.01 inch per second over the range of 1 to 100 Hertz.

4.0 IMPACT RESULTS

Section 4.1 addresses the results of the evaluation of Project noise impacts, and Section 4.2 addresses the results of the evaluation of Project vibration impacts.

4.1 NOISE

Project-related noise effects are presented for the two major phases of the project: operations and construction

4.1.1 Operations Noise

No-Build Alternative (No Project)

Under the No-Build Alternative, no new pipelines would be installed and the sewer system would continue to operate in the current manner. No significant noise effect is anticipated from the No-Build Alternative.

All "Build" Alignment Alternatives: Marquesas Way / Via Marina Alignment; Pacific Avenue Alignment; Dockweiler Beach / Pacific Avenue Alignment; Dockweiler Beach Alignment

No additional powered, noise-producing machinery such as pumps, compressors, motors etc. will be installed as part of this project. The physical elements of the project would consist of underground sewer pipe, which under normal operation would not produce audible or measurable noise at nearby noise-sensitive land uses. No significant noise effect is anticipated from operation of this project for any of the alignment alternatives.

Once in operation, the proposed underground sewer line would not generate noise in the surrounding community. No new stationary source noise equipment (such as pumps or motors) would be added as part of this project. Further, the project would not include additional dwellings or nonresidential development, nor would it have the potential to generate additional average daily vehicle trips; thus, no operational noise impacts would result from this project.

4.1.2 Construction Noise

Construction operations have the potential to temporarily increase noise levels at noise-sensitive land uses located near the project alignment or along construction vehicle routes.

Potential noise impacts from the construction phase of the various project alignment alternatives were assessed for each of the applicable construction methods (open trench, microtunneling, and large-diameter tunneling) and are summarized below.

4.1.2.1 No-Build Alternative (No Project)

Under the No-Build Alternative, no new pipeline would be installed and the construction would not occur. No significant noise effect is anticipated from the No-Build Alternative.

4.1.2.2 Marquesas Way / Via Marina Alignment

Open Trench Method: The open trench method (also known as cut-and-cover) for underground pipeline installation would include driving of sheet-piles, trenching (approximately 8 feet wide by up to 12 feet deep), pipe installation and backfill, compaction and repaving. Construction of the proposed 3,200 foot long Marquesas Way/Via Marina Alignment is expected to result in temporary increases in noise levels in the vicinity of construction sites for a period of up to two weeks around each active open trench zone, up to two months around the micro-tunneling jacking and extraction shafts between the estimated start (Year 2008) and end (Year 2010) of construction. Based upon construction worker and equipment information supplied by the project team, typical open trench activities for the project would require up to 28 workers on site per day, approximately 15 different types of equipment (i.e., concrete saw, pavement breaker, pile driver, crane, water truck, sweeper, haul truck, etc.), and approximately 15 round-trip truck loads per day for muck removal and supply delivery.

The construction of the pipeline would proceed in a sequential fashion from one section of pipe to the next, although more than one construction team may be at work along the alignment at any one time; it is assumed that approximately 40 feet of pipe installation would occur per day. Thus, construction noise will be taking place at different locations along the route at any given time, and noise impacts at any one point are short-term, typically lasting less than two weeks. Construction is planned to take place during normal weekday working hours. Table 4-1 lists the predicted noise levels from pipeline construction activities for the project at a reference distance of 50 feet. As Table 4-1 shows, the predicted noise levels from pipeline construction range from approximately 87 to 108 dBA at a distance of 50 feet.

TABLE 4-1
NOISE LEVELS FROM TYPICAL
OPEN TRENCH CONSTRUCTION ACTIVITIES

Construction Activity[1]	Average Noise Level @ 50 feet (dBA)
Pile Driving (Impact)	Varies; up to 108
Trench Excavation	87
Pipe Laying	87
Pipe Bedding and Backfill	88
1 – Note that each of these activities are inclusive of the typical number and type of equipment necessary for that activity, and.would take place separately from the standpoint of any one noise-sensitive receiver	
Source: Acentech, 1999 (all levels except pile driving. For pile driving noise level, Technical European Sheet Piling Association, 2001)	

The pipeline alignment along the Marquesas Way/Via Marina Alignment would result in open trench construction activities taking place within approximately 25 feet of adjacent residences. Because construction noise increases and decreases at a rate of approximately 6 decibels per doubling (or halving) of distance, residences that are directly adjacent to an active open trench zone would experience noise levels of approximately 93 to 114 dBA. Residences at a distance of 100 feet from the construction activity would experience noise levels of approximately 81 dBA to 102 dBA. Noise levels of this magnitude would violate the County of Los Angeles noise standards for construction activities taking place within the unincorporated County (i.e., at Marquesas Way and Via Marina), and would constitute a short-term but significant impact unless mitigation measures are implemented. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because of the proximity of noise-sensitive land uses to the construction work area, the noise levels at residences along the entire Marquesas Way/Via Marina Alignment would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for open trench construction activities are listed in Section 5.1.2.

Based upon the construction noise data, noise levels on the construction site could exceed federal Occupational Safety and Health Act (OSHA) and California Department of Industrial Relations, Division of Occupational Safety and Health (Cal OSHA) regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, §5095, et seq.) for worker noise exposure. Compliance with Cal/OSHA regulations will ensure that construction personnel are adequately protected from potential noise hazards. The noise exposure level to protect hearing of workers is regulated at 90 dBA Time-Weighted Average (TWA) over an eight-hour work shift. Areas above 85 dBA sound pressure level will be posted as high noise level areas and hearing protection will be provided and required to be worn. The project owners will implement or require implementation of a hearing conservation program for applicable employees as outlined in Cal/OSHA regulations.

The incremental increase in traffic volumes associated with the project alternative using open-trench construction was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using open-trench construction is expected to result in a peak worker trip generation of approximately 28 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 15 round-trip truckloads per day for excess material and supplies would not constitute a significant

noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

Micro-Tunneling Method: Micro-tunneling is a trenchless construction method which utilizes hydraulic jacks to push pipes through the ground behind a remotely operated Tunnel Boring Machine (TBM). Unlike conventional open trenching techniques that require excavation for the entire length of pipeline, excavation for micro-tunneling is limited to the endpoints of each drive at designated launching (jacking) and receiving pits. The launching pit contains the hydraulic jacks used to push the pipes. The receiving pit is used to recover the TBM at the end of each drive. The excavated material is carried via augers and conveyors, or by recycled slurry through closed-system pipelines to the surface for processing and disposal. Work can proceed intermittently, although it is sometimes necessary to proceed continuously at the end of long drives through sticky soils to prevent the pipe from getting stuck short of the receiving pit. Removal of the excavated soil materials from the drilling mud is accomplished by vibrating screens and cyclones installed at the surface near the jacking pit. The waste material is hauled away for disposal offsite. The remote control cabin for operating the TBM, as well as cranes and other construction equipment are at the surface near the jacking pit. The equipment setup is site specific, depending upon the available space. The jacking pipe, which is made of reinforced concrete or steel, serves as temporary tunnel liner. Upon completion of the tunnel drive, the carrier pipe is inserted and the annular space between it and the jacking pipe is filled with grout.

Based upon construction worker and equipment information supplied by the project team, typical micro-tunneling activities for the project would require 10 to 17 workers on site per day, approximately 9 different types of equipment (i.e., hydraulic jack, crane, generator/air compressor, tunneling machine etc.), and approximately 8 round-trip truck loads per day for muck removal and supply delivery. Because of the nature of the work (i.e., to preclude the possibility that the TBM could get stuck if left in place without rotating), micro-tunneling operations may extend beyond normally permitted hours for construction activities.

Unlike the open trench method of pipeline installation, in which noise-sensitive land uses along the entire alignment would be exposed to noise from construction activities, micro-tunneling would expose only the noise-sensitive uses in the vicinity of the launch and receiving pits to construction noise. However, the duration of noise exposure at any one affected noise-sensitive land use location would be longer for micro-tunneling than from the open trench method. Construction noise emissions from micro-tunneling would be dominated by stationary equipment (generators to power the TBM, a crane and trucks to move and load pipe segments, etc.). Assuming five pieces of heavy equipment operating simultaneously (the power unit for the TBM, a crane, a supply truck and two air compressors), the typical noise level from micro-tunneling activity would be approximately 88 dBA at a distance of 50 feet, as shown in Table 4-2.

TABLE 4-2
NOISE LEVELS FROM TYPICAL

MICRO-TUNNELING EQUIPMENT OPERATIONS

Equipment Type	Average Noise Level @ 50 feet (dBA)
Power Unit for TBM	84
Crane	81
Supply or Muck Truck	81
Generator/Air Compressors (2)	80
Combined Noise Level	**88**
Source: Boyle Engineering, 2003.	

The proposed locations of the launch and receiving pit work areas for the Marquesas Way/Via Marina Alignment would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Via Marina) to 100 feet (at the receiving pit located near the Venice Pumping Plant at Hurricane Street) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience noise levels of approximately 88 dBA. Because construction noise decreases at a rate of approximately 6 decibels per doubling of distance, residences located 100 feet from the micro-tunneling activity would experience noise levels of approximately 82 dBA. Noise levels of this magnitude would violate the County of Los Angeles noise standards for construction activities taking place within the unincorporated County (i.e., at Marquesas Way and Via Marina), and would constitute a short-term but significant impact unless mitigation measures are implemented. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because construction may extend beyond these hours and because of the proximity of noise-sensitive land uses to the micro-tunneling work areas, the noise levels at residences adjacent to the launch and receiving pit work areas would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for micro-tunneling construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using micro-tunneling was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using micro-tunneling is expected to result in a peak worker trip generation of approximately 17 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively

small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 8 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

4.1.2.3 Pacific Avenue Alignment – North and South

Similarly to the Marquesas Way/Via Marina Alignment, the Pacific Avenue Alignment project alternative was assessed for both the open-trench and the micro-tunneling construction method, as described in Section 4.1.2.2.

Open Trench Method: The pipeline alignment along the Pacific Avenue Alignment would result in open trench construction activities taking place within approximately 25 feet of adjacent residences along most of the project alignment. Because construction noise increases and decreases at a rate of approximately 6 decibels per doubling (or halving) of distance, residences that are directly adjacent to an active open trench zone would experience noise levels of approximately 93 to 114 dBA. Residences at a distance of 100 feet from the construction activity would experience noise levels of approximately 81 dBA to 102 dBA. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because of the proximity of noise-sensitive land uses to the construction work area, the noise levels at residences along the entire Pacific Avenue Alignment would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for open trench construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using open-trench construction was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using open-trench construction is expected to result in a peak worker trip generation of approximately 28 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 15 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

Micro-Tunneling Method: The proposed locations of the launch and receiving pit work areas for the Pacific Avenue Alignment would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Pacific Avenue) to 150 feet (at the launch pit located just south of the Ballona Creek channel) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience noise levels of approximately 88 dBA. Because construction noise decreases at a rate of approximately 6 decibels per doubling of distance, residences located 150 feet from the micro-tunneling activity would experience noise levels of approximately 78 dBA. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because construction may extend beyond these hours and because of the proximity of noise-sensitive land uses to the micro-tunneling work areas, the noise levels at residences adjacent to the launch and receiving pit work areas would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for micro-tunneling construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using micro-tunneling was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using micro-tunneling is expected to result in a peak worker trip generation of approximately 17 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 8 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

4.1.2.4 Dockweiler Beach Alignment – North and South

Similarly to the Marquesas Way/Via Marina and Pacific Avenue Alignments, the Dockweiler Beach Alignment project alternative was assessed for both the open-trench and the micro-tunneling construction method, as described in Section 4.1.2.2.

Open Trench Method: The pipeline alignment along the Dockweiler Beach Alignment would result in open trench construction activities taking place within approximately 25 feet of adjacent residences along Hurricane Street, and within approximately 100 feet of residences along The Strand. Because construction noise increases and decreases at a rate of approximately 6 decibels per doubling (or halving) of distance, residences that are directly adjacent to an active open trench zone would experience noise levels of approximately 93 to 114 dBA. Residences at a

distance of 100 feet from the construction activity would experience noise levels of approximately 81 dBA to 102 dBA. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because of the proximity of noise-sensitive land uses to the construction work area, the noise levels at residences along the entire Dockweiler Beach Alignment would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for open trench construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using open-trench construction was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using open-trench construction is expected to result in a peak worker trip generation of approximately 28 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 15 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

Micro-Tunneling Method: The proposed locations of the launch and receiving pit work areas for the Dockweiler Beach Alignment would result in construction activities taking place within approximately 100 feet (at the receiving pits located near the Venice Pumping Plant, at the west end of Hurricane Street and at the southern end of Pacific Avenue) to 150 feet (at the launch pit located just south of the Ballona Creek channel) of adjacent residences. Because construction noise decreases at a rate of approximately 6 decibels per doubling of distance, residences located 100 feet from the construction activity would experience noise levels of approximately 82 dBA. Residences located 150 feet from the micro-tunneling activity would experience noise levels of approximately 78 dBA. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because construction may extend beyond these hours and because of the proximity of noise-sensitive land uses to the micro-tunneling work areas, the noise levels at residences adjacent to the launch and receiving pit work areas would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for micro-tunneling construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using micro-tunneling was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the project alternative using micro-tunneling is expected to result in a peak worker trip generation of approximately 17 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 8 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

4.1.2.5 Marina Del Rey Channel Alignments

The Marina del Rey and Ballona Creek channels would be crossed using micro-tunneling construction methods, as described in Section 4.1.2.2 (Micro-Tunneling Method). For any combination of north and south alignments, the launching shaft would be located on the southern shore of the channel and the receiving shaft would be on the northern shore of the channel. Depending upon which of the six potential alignments is selected, the length of the channel crossing would be approximately 1,300 feet to 1,900 feet.

The proposed locations of the launch and receiving pit work areas for the Marina del Rey Channel Alignments would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Via Marina) to 150 feet (at the two launch pits just south of the Ballona Creek channel) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience noise levels of approximately 88 dBA. Because construction noise decreases at a rate of approximately 6 decibels per doubling of distance, residences located 150 feet from the micro-tunneling activity would experience noise levels of approximately 78 dBA. Noise levels of this magnitude would violate the County of Los Angeles noise standards for construction activities taking place within the unincorporated County (i.e., at Marquesas Way and Via Marina), and would constitute a short-term but significant impact unless mitigation measures are implemented. Providing that construction activities take place within the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance (i.e., 7:00 AM to 9:00 PM on weekdays, 8:00 AM to 6:00 PM on Saturdays and national holidays, and at no time on Sundays), construction taking place within the City of Los Angeles would not violate the Noise Ordinance. However, because construction may extend beyond these hours and because of the proximity of noise-sensitive land uses to the micro-tunneling work areas, the noise levels at residences adjacent to the launch and receiving pit work areas would be of a magnitude that would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for micro-tunneling construction activities are listed in Section 5.1.2.

The incremental increase in traffic volumes associated with the project alternative using micro-tunneling was examined for the potential to increase offsite traffic noise levels. As for the Marquesas Way/Via Marina, Pacific Avenue and Dockweiler Beach Alignment alternatives, project-related construction traffic would not materially affect traffic noise levels. There would be no significant traffic noise impact.

4.1.2.6 Large-DiameterTunneling Alignment Alternatives

The four full-length large-diameter tunneling alignments with short open trench segments were evaluated as part of this project. In contrast to small-diameter micro tunnels, which are constructed by remote controlled pipe-jacking, full-size tunnels (i.e. minimum excavated diameter = 8 to 10 feet) allow for manned operations at the tunnel face. Whereas micro tunnels must be constructed in relatively small increments (with intermediate shafts usually spaced no more than about 1,000 ft apart) full-size tunnels may be constructed at any length. The following tunnel alignment alternatives are being evaluated:

1. Beach alignment with open trench connections to Venice Pumping Plant (VPP) in the north and Coast Interceptor Sewer (CIS) along Vista del Mar in the south.

2. Beach alignment with open trench connection to VPP and direct tunnel connection to North Outfall Sewer (NOS) or CIS - via a shaft on LAX property.

3. Beach alignment with direct tunnel connections to VPP and NOS or CIS - via a shaft on LAX property.

4. Direct (inland) tunnel connection between VPP and NOS or CIS - via a shaft on LAX property.

The majority of the large-diameter tunnel alignment would be constructed at a depth of 80 to 100 feet beneath the surface. Based upon construction worker and equipment information supplied by the project team, typical large-diameter tunneling activities for the project would require 25 workers on site per shift, approximately 16 different types of equipment (i.e., tunnel boring machine, diesel locomotive, muck cars, crane, fans, pumping system, etc.), and approximately 18 round-trip truck loads per day for muck removal and supply delivery. Large-diameter tunnel operations would likely continue around the clock, although nighttime activities would be arranged so as to avoid noisy and otherwise disturbing events at nearby sensitive receptors whenever practicable.

Activities from large-diameter tunnel construction would be similar in type but larger in scale, compared with micro-tunneling. Crew size and equipment type and number would be greater, although much of the equipment (such as the diesel locomotive) and crew would remain underground while in operation and thus would not materially contribute to above-ground noise levels. Additionally, as listed above two of the four large-diameter tunnel alignment alternatives would include a limited amount (approximately 50 to 300 feet) of open trench work at the north and south connection points, which would result in noise levels comparable to those listed in the open-trench noise analysis above. Assuming ten pieces of heavy equipment operating simultaneously (the power unit for the TBM, a crane, supply trucks, fans and generators/air compressors), the typical noise level from large-diameter tunneling activity would be approximately 91 dBA at a distance of 50 feet, as shown in Table 4-3.

TABLE 4-3
NOISE LEVELS FROM TYPICAL
LARGE-DIAMETER TUNNELING EQUIPMENT OPERATIONS

Equipment Type	Average Noise Level @ 50 feet (dBA)
Power Unit for TBM	87
Crane	81
Supply Trucks (2)	84
Fans (2)	77
Generator/Air Compressors (4)	83
Combined Noise Level	**91**

Source: Boyle Engineering, 2003, URS Corporation, 2005.

The proposed locations of the tunnel construction shafts would result in construction activities taking place within approximately 100 feet (near the Venice Pumping Plant at Hurricane Street) to 200 feet (at the proposed shaft on LAX property) of adjacent residences. Because construction noise decreases at a rate of approximately 6 decibels per doubling of distance, residences located 100 feet from the large-diameter tunneling activity would experience noise levels of approximately 82 dBA. Residences located 200 feet from an active large-diameter tunneling work area would experience noise levels of approximately 76 dBA. Because large-diameter tunneling activities are expected to take place outside the proscribed hours of operation set forth in the City of Los Angeles Noise Ordinance and because of the proximity of noise-sensitive land uses to the work areas, construction noise would constitute a short-term but significant impact unless mitigation measures are implemented. Mitigation measures for large-diameter tunneling construction activities are listed in Section 5.1.2.

Based upon the construction noise data, noise levels on the construction site could exceed federal Occupational Safety and Health Act (OSHA) and California Department of Industrial Relations, Division of Occupational Safety and Health (Cal OSHA) regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, §5095, et seq.) for worker noise exposure. Compliance with Cal/OSHA regulations will ensure that construction personnel are adequately protected from potential noise hazards. The noise exposure level to protect hearing of workers is regulated at 90 dBA Time-Weighted Average (TWA) over an eight-hour work shift. Areas above 85 dBA sound pressure level will be posted as high noise level areas and hearing protection will be provided and required to be worn. The project owners will implement or require implementation of a hearing conservation program for applicable employees as outlined in Cal/OSHA regulations.

The incremental increase in traffic volumes associated with the large-diameter tunneling project construction alternative was examined for the potential to increase offsite traffic noise levels. Based upon the traffic analysis conducted for the project (Kaku, 2005), the large-diameter project construction alternative is expected to result in a peak worker trip generation of approximately 25 worker trips. Because of the widespread nature of the work force, these worker trips are expected to originate from the north, east and south, and thus would enter and exit the project area from a variety of major roadways, all carrying relatively large volumes of traffic. The effect of this relatively small increase in vehicle trips on levels of local traffic noise would not be audible or measurable, and thus would not be a significant impact. Similarly, the estimated 18 round-trip truckloads per day for excess material and supplies would not constitute a significant noise impact, given the relatively high traffic volumes along the designated truck routes that the trucks would use.

4.2 VIBRATION

4.2.1 Operational Vibration

No additional powered machinery such as pumps, motors etc. will be installed as part of this project. Thus the operation of the pipeline is not anticipated to cause measurable or perceptible levels of vibration at adjacent land uses.

4.2.2 Construction Vibration

Groundborne vibration from heavy equipment operations during project construction were evaluated and compared with relevant vibration impact criteria. Ground-borne vibration is a small, rapidly fluctuating motion transmitted through the ground. Ground-borne vibration diminishes (or "attenuates") fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily "sandy" soils) do not. The Federal Transit Authority's (FTA's) *Transit Noise and Vibration Impact Assessment Manual* (1995) provides vibration impact criteria and recommended methodologies and guidance for assessment of vibration effects.

Vibration resulting from activities during project construction were analyzed, using the methodology contained in Section 10.2 of the FTA Manual. Vibration source levels for a variety of typical construction equipment types are supplied in Table 10-4 of the Manual in terms of peak particle velocity (PPV) in inches per second at a reference distance of 25 feet from the source. The reference source vibration level is then adjusted for the actual distance of interest using the equation

$$PPV_{equip} = PPV_{ref}\left(\frac{25}{D}\right)^{1.5}$$

where PPV_{equip} is the predicted vibration level at the receptor, PPV_{ref} is the reference source level, and D is the distance from the construction activity to the receptor.

The following discussion summarizes the results of the analysis conducted for each of the alternative construction methods, by alignment alternatives.

4.2.2.1 No-Build Alternative (No Project)

Under the No-Build Alternative, no new pipelines would be installed and the sewer system would continue to operate in the current manner. No significant vibration effect is anticipated from the No-Build Alternative.

4.2.2.2 Marquesas Way / Via Marina Alternative

The Marquesas Way / Via Marina Alignment project alternative was assessed for both the open-trench and the micro-tunneling construction methods.

Open Trench Method: The pipeline alignment along the Marquesas Way/Via Marina Alignment would result in open trench construction activities taking place within approximately 25 feet of

adjacent residences. If conventional pile-driving methods were utilized to install the sheet-piles during open-trench construction, the predicted vibration level at a distance of 25 feet would be approximately 0.644 inches per second assuming "typical" vibration levels for impact pile-driving. Thus, the FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would be exceeded. The Los Angeles County vibration standard of 0.01 inches per second would also be exceeded at a distance of 150 feet as specified in the County Code. At a distance of 150 feet, the predicted vibration level from conventional pile-driving would be approximately 0.044 inches per second. Thus a significant impact would result from pile-driving activities during open-trench work, unless mitigation measures are implemented. Other activities associated with open-trench construction, such as loaded truck movements, backhoe loader/compactor, etc., would result in vibration levels of 0.076 inches per second at 25 feet or less, and 0.005 inches per second or less at 150 feet. Thus, there would be no significant vibration impact from construction activities other than pile-driving. Mitigation measures for pile-driving during open trench construction are listed in Section 5.2.2.

Micro-Tunneling Method: The proposed locations of the launch and receiving pit work areas for the Marquesas Way/Via Marina Alignment would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Via Marina) to 100 feet (at the receiving pit located near the Venice Pumping Plant at Hurricane Street) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience vibration levels of approximately 0.031 inches per second. Residences located 100 feet from the micro-tunneling activity would experience vibration levels of approximately 0.011 inches per second. FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would not be exceeded. At 150 feet (the County of Los Angeles' distance criteria for vibration impact), the vibration level would be approximately 0.006 inches per second, which is below the County vibration standard. No significant vibration impact from micro-tunneling activities are predicted for the Marquesas Way/Via Marina Alignment.

4.2.2.3 Pacific Avenue Alignment – North and South

Similarly to the Marquesas Way/Via Marina Alignment, the Pacific Avenue Alignment project alternative was assessed for both the open-trench and the micro-tunneling construction methods.

Open Trench Method: The pipeline alignment along the Pacific Avenue Alignment would result in open trench construction activities taking place within approximately 25 feet of adjacent residences along most of the project alignment. Residences that are directly adjacent to an active open trench zone would experience vibration levels of up to 0.644 inches per second from conventional pile-driving. Residences at a distance of 100 feet from the construction activity would experience vibration levels of approximately 0.081 inches per second from pile-driving. Thus a significant impact would result from pile-driving activities during open-trench work, unless mitigation measures are implemented. Other activities associated with open-trench

construction, such as loaded truck movements, backhoe loader/compactor, etc., would result in vibration levels of 0.076 inches per second at 25 feet or less, and 0.010 inches per second or less at 100 feet. Thus, there would be no significant vibration impact from construction activities other than pile-driving. Mitigation measures for pile-driving during open trench construction are listed in Section 5.2.2.

Micro-Tunneling Method: The proposed locations of the launch and receiving pit work areas for the Pacific Avenue Alignment would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Pacific Avenue) to 150 feet (at the launch pit located just south of the Ballona Creek channel) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience vibration levels of approximately 0.031 inches per second. Residences located 150 feet from the micro-tunneling activity would experience vibration levels of approximately 0.006 inches per second. FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would not be exceeded. No significant vibration impact from micro-tunneling activities are predicted for the Pacific Avenue Alignment.

4.2.2.4 Dockweiler Beach Alignment – North and South

Similarly to the Marquesas Way/Via Marina and Pacific Avenue Alignments, the Dockweiler Beach Alignment project alternative was assessed for both the open-trench and the micro-tunneling construction methods.

Open Trench Method: The pipeline alignment along the Dockweiler Beach Alignment would result in open trench construction activities taking place within approximately 25 feet of adjacent residences along Hurricane Street, and within approximately 100 feet of residences along The Strand. . Residences that are directly adjacent to an active open trench zone would experience vibration levels of up to 0.644 inches per second from conventional pile-driving. Residences at a distance of 100 feet from the construction activity would experience vibration levels of approximately 0.081 inches per second from pile-driving. Thus a significant impact would result from pile-driving activities during open-trench work, unless mitigation measures are implemented. Other activities associated with open-trench construction, such as loaded truck movements, backhoe loader/compactor, etc., would result in vibration levels of 0.076 inches per second at 25 feet or less, and 0.010 inches per second or less at 100 feet. Thus, there would be no significant vibration impact from construction activities other than pile-driving. Mitigation measures for pile-driving during open trench construction are listed in Section 5.2.2.

Micro-Tunneling Method: The proposed locations of the launch and receiving pit work areas for the Dockweiler Beach Alignment would result in construction activities taking place within approximately 100 feet (at the receiving pits located near the Venice Pumping Plant, at the west end of Hurricane Street and at the southern end of Pacific Avenue) to 150 feet (at the launch pit

located just south of the Ballona Creek channel) of adjacent residences. Residences located 100 feet from the micro-tunneling activity would experience vibration levels of approximately 0.011 inches per second. Residences located 150 feet from the micro-tunneling activity would experience vibration levels of approximately 0.006 inches per second. FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would not be exceeded. No significant vibration impact from micro-tunneling activities are predicted for the Dockweiler Beach Alignment.

4.2.2.5 Marina Del Rey Channel Alignments

The proposed locations of the launch and receiving pit work areas for the Marina del Rey Channel Alignments would result in construction activities taking place within approximately 50 feet (at the receiving pit located at the southern end of Via Marina) to 150 feet (at the two launch pits just south of the Ballona Creek channel) of adjacent residences. Residences located 50 feet from an active micro-tunneling work area would experience vibration levels of approximately 0.031 inches per second. Residences located 150 feet from the micro-tunneling activity would experience vibration levels of approximately 0.006 inches per second. FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would not be exceeded. No significant vibration impact from micro-tunneling activities are predicted for the Marina Del Ray Channel Alignments.

4.2.2.6 Large-DiameterTunneling Alignment Alternatives

The proposed locations of the tunnel construction shafts would result in construction activities taking place within approximately 100 feet (near the Venice Pumping Plant at Hurricane Street) to 200 feet (at the proposed shaft on LAX property) of adjacent residences. Residences located 100 feet from the large-diameter-tunneling activity would experience vibration levels of approximately 0.011 inches per second. Residences located 200 feet from the large-diameter tunneling activity would experience vibration levels of approximately 0.004 inches per second. FTA criteria levels for potential damage to fragile structures (0.20 inches per second) would not be exceeded. No significant vibration impact from large-diameter tunneling activities are predicted for this alternative.

5.0 MITIGATION MEASURES

Sections 5.1 and 5.2 address noise and vibration mitigation measures, respectively. Each section addresses operational and construction impacts separately.

5.1 NOISE MITIGATION MEASURES

5.1.1 Operational Noise

Operational noise levels from the No Build Alternative and the proposed alignments are predicted to be less than significant. Therefore no abatement measures are recommended for the operational phase of the project.

5.1.2 Construction Noise

The following construction noise mitigation measures shall be implemented to the extent practicable. Use of these mitigation measures would reduce construction noise to a level below significance.

1. All construction activities shall be limited to the hours of 7:00 AM to 9:00 PM Monday through Friday (7:00 AM. to 7:00 PM for construction within the unincorporated County of Los Angeles), and 8:00 AM. to 6:00 PM. on Saturday. No construction or construction-related activities shall take place on any Sunday or national holiday.
2. Trucks shall be limited to designated truck routes and shall avoid residential streets to the extent practicable.
3. All noise-producing project equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) shall be equipped with shrouds and noise control features that are readily available for such type of equipment.
4. All mobile or fixed noise-producing equipment used on the project, and that is regulated for noise output by a local, state, or federal agency, shall comply with such regulation while in the course of project activity.
5. Pile-driving: "Press-in" pile drivers shall be utilized rather than impact or vibratory pile-drivers, if feasible. Use of this alternative pile driving technology would reduce pile-driving noise to a level below significance.
6. Temporary soundwall barriers shall be erected for launch and receiving pits and large-diameter tunnel shaft work areas. Such soundwall barriers shall be of a sufficient height, length and configuration so as to provide substantial noise reduction and effectively block the line-of-sight between nearby noise-sensitive receivers and the work zone.
7. Electrically-powered equipment shall be used instead of pneumatic or internal combustion powered equipment where feasible.
8. Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.

9. Construction site and haul-road speed limits shall be established and enforced during the construction period.
10. The use of noise-producing signals, including horns, whistles, alarms, and bells shall be for safety warning purposes only.
11. No project-related public address or music system shall be audible at any adjacent receptor.
12. The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to the Bureau of Engineering shall be established prior to construction commencement that will allow for resolution of noise problems that cannot be immediately solved by the site supervisor.
13. The contractor shall develop a project noise control plan, which shall have been approved by the owner or designated noise control professional and implemented prior to commencement of any construction activity.

5.2 VIBRATION MITIGATION MEASURES

5.2.1 Operational Vibration

Because no vibration impacts are predicted for operation of the project, no mitigation measures are necessary or recommended for the operational phase of the project.

5.2.2 Construction Vibration

The only vibration impact identified for the construction phase of the project was from pile-driving during open-trench type construction. Use of this mitigation measure would reduce construction noise to a level below significance.

1. Pile-driving: "Press-in" pile drivers shall be utilized rather than impact or vibratory pile-drivers, if feasible. Use of this alternative pile driving technology would reduce vibrations from pile-driving to a level below significance.

6.0 INDIRECT AND CUMULATIVE EFFECTS

Adverse indirect effects are not anticipated as a result of the project. Similarly, the project, when combined with other past, present and reasonably foreseeable future actions would not cause adverse cumulative noise effects. The project is consistent with all Federal, State and local land use plans. The project would not create unavoidable adverse environmental noise or vibration effects.

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Appendix A

Introduction to Noise, Construction Noise and Construction Vibration

Appendix A INTRODUCTION TO NOISE, CONSTRUCTION NOISE, AND CONSTRUCTION VIBRATION

In two primary sections, this appendix provides general information regarding the fundamentals of noise and construction noise and vibration. Section A-3 presents the references for this appendix.

A-1 Fundamentals of Noise

Noise is the common term used to describe "unwanted sound". The terms 'noise' and 'sound' are used interchangeably in this assessment.

A-1.1 A-Weighted Sound Level

The unit of sound pressure level measurement is the decibel (dB). It is a unit describing the amplitude of sound pressure compared to a reference pressure. Commonly encountered sound levels range from slightly above the threshold of hearing and very quiet (around 20 dBA) to very loud sounds at 130 dBA. The sound pressure level is mathematically equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to a reference pressure, which is 20 micropascals for acoustical analyses in air.

The most common descriptor of sound and noise associated with community noise measurements is the A-weighted sound pressure level, which is abbreviated as dBA. It is defined as the sound pressure level in decibels as measured on a sound meter using the A-weighting filter network. The A-weighted frequency filter de-emphasizes the very low and very high frequency components of sound in a manner similar to the frequency response of human hearing, and correlates well with people's group reactions to sound and environmental noise. All sound levels in this report are A-weighted. A-weighted sound pressure levels of typical sources of noise are shown in Table A-1.

Table A-1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft) Civil Defense Siren (100 ft)	140 130	Aircraft Carrier Flight Deck	
Commercial Jet Take-off (200 ft)	120		Threshold of Pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft)	100		Very Loud *8 times as loud
Motorcycle (25 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck, 40 mph (50 ft)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft) Vacuum Cleaner (10 ft)	70		Moderately Loud *70 decibels (Reference Loudness)
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Very Quiet
	10		
	0		Threshold of Hearing

Source: Compiled by URS Corporation

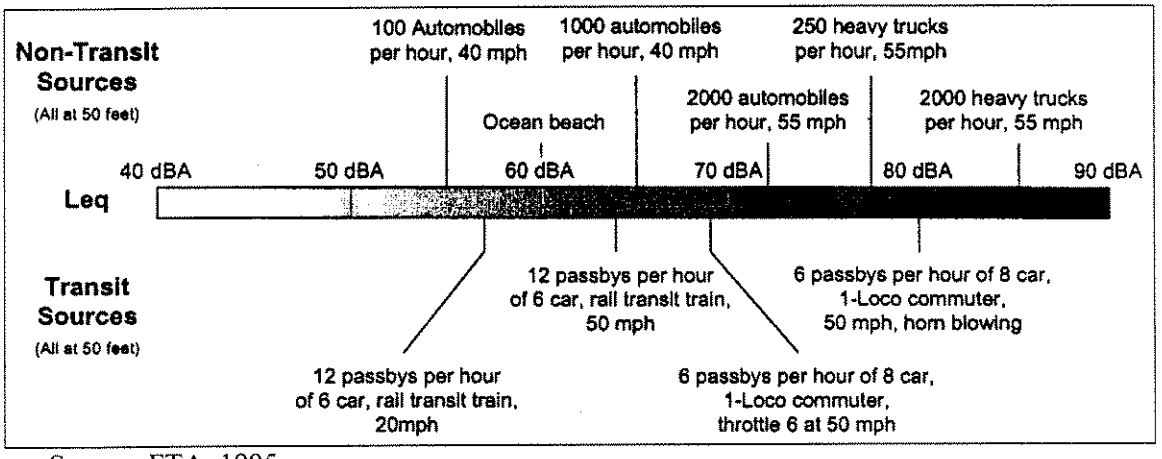
A-1.2 Equivalent Sound Level and Community Noise Equivalent Sound Level

The A-weighted sound levels of long-term noise-producing activities within and around a community vary with time. Certain noise descriptors are preferred for use in describing community noise environments. These descriptors are based upon noise energy and are called the Equivalent Noise Level (L_{eq}), and the Community Noise Equivalent Level (CNEL). CNEL is utilized by many jurisdictions within California, in lieu of the Day-Night Average Sound Level (DNL or L_{dn}). L_{eq} is defined as the continuous steady-state noise level that would have the same total acoustical energy as the real fluctuating noise measured during the same period. Although L_{eq} can be measured or computed for any period, it is typically specified for one hour ($L_{eq}(h)$) or 24 hours ($L_{eq}(24h)$). DNL is the same as a 24-hour L_{eq} except that noise occurring during the nighttime hours (10:00 p.m. – 6:59 a.m.) is weighted or penalized by 10

dBA. The nighttime penalty accounts for the increased annoyance of noise during typical sleeping hours. Both L_{eq} and DNL account for the tempo (operational frequency), acoustic magnitude, duration and time of day of noise events. CNEL differs from DNL only in that CNEL adds an additional penalty to the evening hours (7:00 p.m. to 10:00 p.m.). Many agencies and jurisdictions use the CNEL and DNL noise metrics interchangeably, because the difference between the two noise metrics is small in most cases (generally less than 1 dBA).

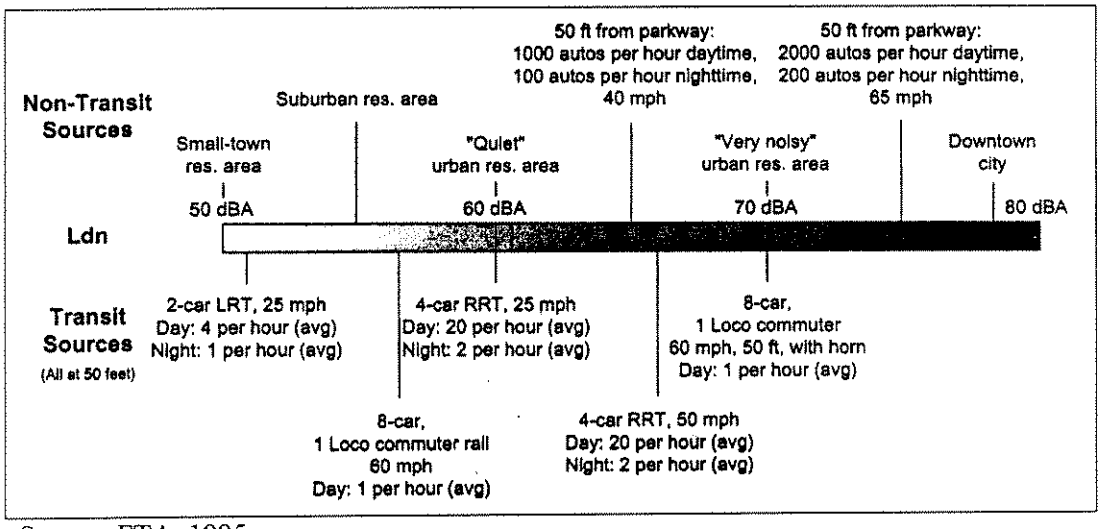
Both L_{eq} and CNEL/DNL descriptors are approved by various regulatory agencies for noise-related land use planning. The unit for each of these descriptors is dBA. Figure A-1 and Figure A-2 show typical L_{eq} and L_{dn}, respectively, for a variety of noise sources.

Figure A-1. Typical Hourly L_{eq}



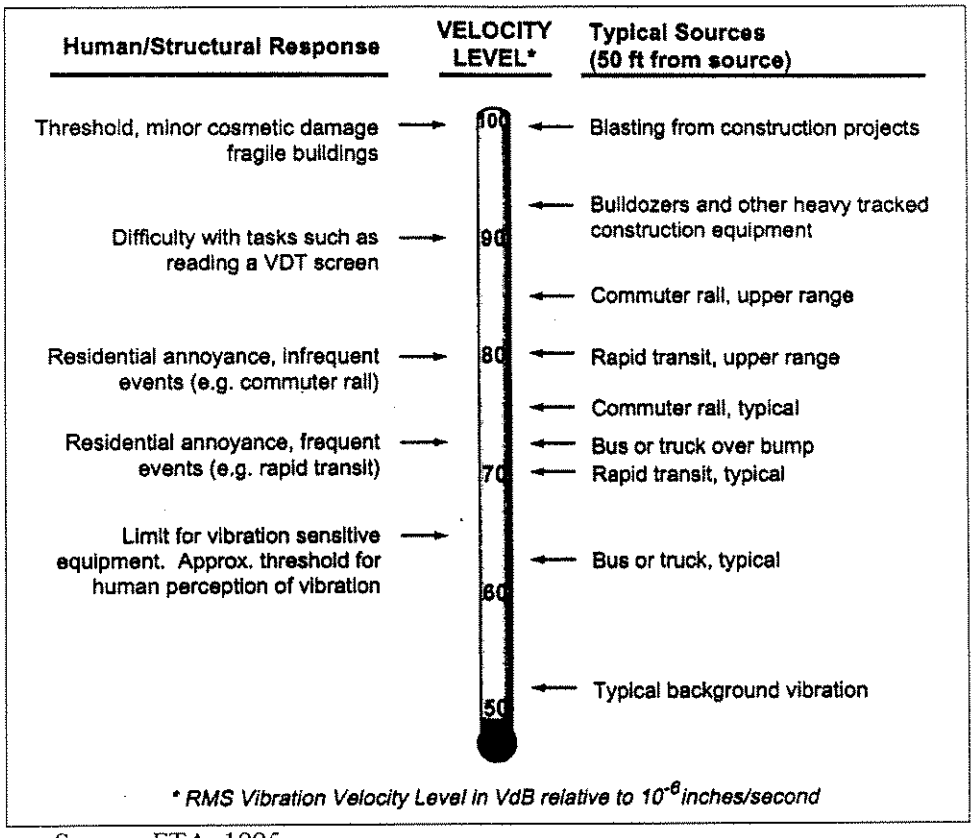
Source: FTA, 1995

Figure A-2. Typical L_{dn} Values



Source: FTA, 1995

Figure A-3. Typical Levels of Ground-Borne Vibration



Source: FTA, 1995

A-1.3 Insertion Loss

The insertion loss (abbreviated IL) is a measure of the effectiveness of a sound barrier. It is the noise level reduction at a specific receiver due to construction of a noise barrier between the noise source (such as traffic) and the receiver. Generally, it is the net effect of the (noise) barrier attenuation and the loss of ground effects.

A-1.4 Perception of Noise

Evaluating differences between an existing and total predicted future noise environment assesses the potential responses of persons to changes in their noise environment. The following relationships of perception and response to quantifiable increases in long-term sound level are used as a basis for assessing potential effects of transit noise:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a 3 dBA change is considered perceptible.

- An increase of 5 dBA is considered readily perceptible and would generally result in a change in community response to its noise environment.
- A 10 dBA increase is perceived as a doubling in loudness and would likely result in a widespread community response.

A-2 Vibration

Ground-borne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of ground-borne vibration diminishes (or "attenuates") fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily "sandy" soils) do not. There are several basic measurement units commonly used to describe the intensity of ground vibration. The descriptors used by the Federal Transit Administration (FTA), one of the agencies which has thoroughly examined and set forth criteria and methodologies for community vibration analysis, are peak particle velocity, abbreviated PPV, in units of inches per second and the velocity decibel, abbreviated VdB. The velocity parameter (rather than acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings and sensitive equipment to vibration is described in this section in terms of the root-mean square (RMS) velocity level in VdB units relative to one micro-inch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction).

A comparison of common ground-borne vibration levels is shown on Figure 2-3. Typical background vibration levels are between 50 and 60 VdB, whereas the levels for minor cosmetic damage to fragile buildings or blasting are generally 100 VdB.

A-3 References

United States Department of Labor, Occupational Safety and Health Administration, Office of Information. 1980. *Noise Control.* Washington, DC.

United States Department of Transportation, Federal Railroad Administration (FRA). December 1998. *High-Speed Ground Transportation Noise and Vibration Impact Assessment, Final Draft.*

United States Department of Transportation, Federal Transit Administration (FTA). April 1995. *Transit Noise and Vibration Impact Assessment.* DOT-T-95-16. Prepared under contract by Harris, Miller, Miller and Hanson. Burlington, MA.

United States Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.* Prepared under contract by Bolt, Beranek & Newman, Boston, MA. Washington, DC.

Appendix B
List of Field Instrumentation

Appendix B LIST OF FIELD INSTRUMENTATION FOR JUNE 2005 MEASUREMENTS

Sound Level Meters

- Larson-Davis Laboratories Model 820 Type 1 Sound Level Meter, Serial Number 0775
- Brüel & Kjær Model 2236 Type 1 Precision Integrating Sound Level Meter, Serial Number 2015788

Community Noise Analyzers

- Metrosonics Model dB-308 Type 2 Sound Analyzer, Serial Number 2881
- Metrosonics Model dB-308 Type 2 Sound Analyzer, Serial Number 3068

Acoustical Calibrators

- Metrosonics Model CL-304 Acoustical Calibrator, Serial Number 2551
- Metrosonics Model CL-304 Acoustical Calibrator, Serial Number 3316
- Bruel & Kjaer Model 4231 Sound Level Calibrator, Serial Number 1850301

Meteorology Instrumentation

- Mannix Model CMM 880 Digital Thermometer/Hygrometer, Serial Number 8821784
- Kestrel Model K3000 Pocket Weather Meter, Serial Number 359744
- Sims Model DIC Digital Anemometer, Serial Number 95022
- Maximum Model DIC Digital Anemometer

Other Equipment

- 100-Foot Surveyor Tape Measures
- Laptop Computer

Appendix C
Instrument Calibration Certificates

Certificate of Calibration and Conformance

Certificate Number 2004-63864

Instrument Model 820, Serial Number 0775, was calibrated on 11-09-2004. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 11-09-2004
Calibration due: 11-09-2006

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0589 / 0103	12 Months	12/04/2004	2003-54896
Larson Davis	PRM828	1302	12 Months	02/03/2005	2004-56474

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 25 ° Centigrade

Relative Humidity: 32 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data same as shipped data.

Signed: Keith Driskill

Technician: Keith Driskill

Larson Davis A PCB GROUP CO.

Larson Davis, Inc. is an ISO 9001-2000 Registered Company

1681 West 820 North • Provo, UT 84601 U.S.A. • 801.375.0177 • Fax: 801.375.0182 • www.larsondavis.com

CERTIFICATE OF CONFORMANCE
13315-1
FOR BRÜEL & KJÆR INTEGRATING SOUND LEVEL METER

Model **2236**

Serial No. **2015788**
ID No. **N/A**

With Microphone Model **4188**
Serial No. **1740589**

Customer: **URS Corporation**
Santa Ana, CA 92705

P.O. # **Verbal**

was tested and met factory specifications
according to the Referenced Test Procedure

on **24 May, 2005**

BY HAROLD LYNCH
Service Manager

As received condition: Within Specification.
Re-calibration due on: **24 May, 2007**

Certified References*

Mfg.	Type	Serial No.	Date Due
B&K	2636	1324114	15 JUL 2005
B&K	1049	1464545	29 JUL 2005
HP	34401A	MY41031678	22 JUL 2005
HP	3458A	2823A17713	15 JUL 2005
HP	34970A	CRN001301	29 JAN 2006
B&K	4226	1774068	31 MAR 2006
B&K	4231	1770857	19 JUL 2005

Performed in Compliance with ANSI, NCSL Z-540-1 (which also covers MIL STD 45662A) and ISO 17025, ISO 9001:2000 Certification NQA No. 11252
*References are traceable to NIST (National Institute of Standards and Technology).

Note: For calibration data see enclosed pages.
The data represent both "as found" and "as left."

Reference Test Procedure: **ACCT Procedure 2236 Ver. 1.3**

Brüel & Kjær Factory Service Instructions: **2236** Rev. Apr. 1985

Temperature	Relative Humidity	Barometric Pressure
23°C	**37**%	**985.58** hPa

Note: This calibration report shall not be reproduced, except in full, without written consent by Odin Metrology, Inc..

Signed: Harold Lynch

ODIN METROLOGY, INC.

CALIBRATION OF BRÜEL & KJÆR INSTRUMENTS
3533 OLD CONEJO ROAD; SUITE 125 THOUSAND OAKS CA 91320
PHONE: (805) 375-0830 FAX: (805) 375-0405

Excalibur Engineering
11 Musick
Irvine, CA 92618
Phone : (949) 454-6603
Fax : (949) 454-6642

Certificate Of Calibration

Customer	URS CORPORATION	**Dept.**	N/A
Report #	31623-4	**Bar Code #**	
Date Received	THURSDAY, MARCH 18, 2004	**P.O. #**	CREDIT CARD
Manufacturer	METROSONIC	**Serial #**	2881
Model #	DB308	**Asset #**	WCC-2
Description	DOSIMETER		

Calibration Information

Date Calibrated 3/23/2004 **Calibration Due Date** 3/23/2006 **Calibration Interval** 24

Maintenance Procedure 4226

Temperature 22 ° C **Humidity** 50 % **Calibration Performed By** 21

Accuracy ANSI TYPE 2

Condition Received

Received In Tolerance

Remarks

Condition Returned

Returned In Tolerance

Remarks

Standards Employed

ID #	Manufacturer	Model #	Description	Cycle	Calibration Expires
878	BRUEL & KJAER	4226	SLM CALIBRATOR	12	10/24/2004
610	BRUEL & KJAER	4228	PISTONPHONE	12	6/11/2004

Excalibur Engineering, Inc. certifies that the instrument specified above meets the manufacturer's specifications and has been calibrated using Standards and instruments also listed above whose accuracies are traceable to the National Institute of Standards and Technology(NIST), and the calibration systems and records are in compliance to ISO-10012 and ANSI Z540-1-1994.

This certificate/report shall not be reproduced without written approval of Excalibur Engineering, Inc.

EE QA 4 MAR 2 3 2004

Approved By

Excalibur Engineering is not liable for any damages, consequences or any remedy regarding this certification with the exception of the calibration within 30 days

Excalibur Engineering
11 Musick
Irvine, CA 92618
Phone : (949) 454-6603
Fax : (949) 454-6642

Certificate Of Calibration

Customer	URS CORPORATION	**Dept.**	N/A
Report #	31623-5	**Bar Code #**	
Date Received	THURSDAY, MARCH 18, 2004	**P.O. #**	CREDIT CARD
Manufacturer	METROSONIC	**Serial #**	3068
Model #	DB308	**Asset #**	WCC-3
Description	DOSIMETER		

Calibration Information

Date Calibrated 3/23/2004 **Calibration Due Date** 3/23/2006 **Calibration Interval** 24

Maintenance Procedure 4226

Temperature 22 ° C **Humidity** 50 % **Calibration Performed By** 21

Accuracy ANSI TYPE 2

Condition Received

Received In Tolerance

Remarks

Condition Returned

Returned In Tolerance

Remarks

Standards Employed

ID #	Manufacturer	Model #	Description	Cycle	Calibration Expires
878	BRUEL & KJAER	4226	SLM CALIBRATOR	12	10/24/2004
610	BRUEL & KJAER	4228	PISTONPHONE	12	6/11/2004

Excalibur Engineering, Inc. certifies that the instrument specified above meets the manufacturer's specifications and has been calibrated using Standards and instruments also listed above whose accuracies are traceable to the National Institute of Standards and Technology(NIST), and the calibration systems and records are in compliance to ISO-10012 and ANSI Z540-1-1994.

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Approved By EEQA 4 MAR 2 3 2004

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Excalibur Engineering
11 Musick
Irvine, CA 92618
Phone : (949) 454-6603
Fax : (949) 454-6642

Certificate Of Calibration

Customer	URS CORPORATION	**Dept.**	N/A
Report #	36856-2	**Bar Code #**	
Date Received	WEDNESDAY, MARCH 2, 2005	**P.O. #**	01158213.00061
Manufacturer	METROSONIC	**Serial #**	2551
Model #	CL304	**Asset #**	NAN
Description	ACOUS.CALIBRATOR		

Calibration Information

Date Calibrated 3/4/2005 **Calibration Due Date** 3/4/2006 **Calibration Interval** 12
Maintenance Procedure 1211
Temperature 22 ° C **Humidity** 47 % **Calibration Performed By** 21
Accuracy ±.3dB

Condition Received

Received In Tolerance
Remarks SEE ATTACHED DATA

Condition Returned

Returned In Tolerance
Remarks

Standards Employed

ID #	Manufacturer	Model #	Description	Calibration Expires
043	BRUEL & KJAER	4190	MICROPHONE	3/22/2005
051	BRUEL & KJAER	2639	PREAMPLIFIER	1/13/2006
610	BRUEL & KJAER	4228	PISTONPHONE	9/13/2005
713	FLUKE	8920A	TRUE RMS VOLTMETER	7/10/2005
938	AGILENT	8903B	AUDIO ANALYZER	1/3/2006
949	BRUEL & KJAER	2636	MEASURING AMPLIFIER	12/3/2005

Excalibur Engineering, Inc. certifies that the instrument specified above meets the manufactruer's specifications and has been calibrated using Standards and instruments also listed above whose accuracies are traceable to the National Institute of Standards and Technlogy(NIST), and the calibration systems and records are in compliance to ISO-10012 and ANSI Z540-1-1994.

This certificate/report shall not be reproduced without written approval of Excalibur Engineering, Inc.

Approved By EEQA 8 MAR 4 2005

Excalibur Engineering is not liable for any damages, consequences or any remedy regarding this certification with the exception of the calibration within 30 days

Excalibur Engineering
11 Musick
Irvine, CA 92618
Phone : (949) 454-6603
Fax : (949) 454-6642

Certificate Of Calibration

Customer	URS CORPORATION	**Dept.**	N/A
Report #	36856-1	**Bar Code #**	
Date Received	WEDNESDAY, MARCH 2, 2005	**P.O. #**	01158213.00061
Manufacturer	METROSONIC	**Serial #**	3316
Model #	CL304	**Asset #**	NAN
Description	ACOUS.CALIBRATOR		

Calibration Information

Date Calibrated 3/4/2005 **Calibration Due Date** 3/4/2006 **Calibration Interval** 12

Maintenance Procedure 1211

Temperature 22 ° C **Humidity** 48 % **Calibration Performed By** 21

Accuracy ±.3dB

Condition Received

Received In Tolerance

Remarks SEE ATTACHED DATA

Condition Returned

Returned In Tolerance

Remarks

Standards Employed

ID #	Manufacturer	Model #	Description	Calibration Expires
043	BRUEL & KJAER	4190	MICROPHONE	3/22/2005
051	BRUEL & KJAER	2639	PREAMPLIFIER	1/13/2006
610	BRUEL & KJAER	4228	PISTONPHONE	9/13/2005
713	FLUKE	8920A	TRUE RMS VOLTMETER	7/10/2005
938	AGILENT	8903B	AUDIO ANALYZER	1/3/2006
949	BRUEL & KJAER	2636	MEASURING AMPLIFIER	12/3/2005

Excalibur Engineering, Inc. certifies that the instrument specified above meets the manufactruer's specifications and has been calibrated using Standards and instruments also listed above whose accuracies are traceable to the National Institute of Standards and Technlogy(NIST), and the calibration systems and records are in compliance to ISO-10012 and ANSI Z540-1-1994.

This certificate/report shall not be reproduced without written approval of Excalibur Engineering, Inc.

EEQA 8 MAR 4 2005

Approved By

Excalibur Engineering is not liable for any damages, consequences or any remedy regarding this certification with the exception of the calibration within 30 days

CERTIFICATE OF CALIBRATION FOR BRÜEL & KJÆR

Sound Level Calibrator Type 4231

The Sound Pressure Level has been measured by comparison with Standard Reference Pistonphone.

Type 4220 serial No. **1048473** and
Type 4220 serial No. **1048795**

Calibrated by: **TS** (BRÜEL & KJÆR)
Date of calibration: **02 AUG 2004**
Re-calibration due : **02 AUG 2005**

The calibrator type **4231**

Serial number **1850301**
ID number **N/A**

has been found to be **within** the specifications listed below.
Sound Pressure Level produced in the coupler terminated by a loading volume of 1.333 cm^3:
94.0 dB ± 0.2 dB
Level step: SPL increase of: **20 dB ± 0.1 dB**
Frequency: **1000 Hz ± 0.1 %**
Distortion: **< 1%**

For: **URS Corporation**
Santa Ana, CA 92705

Certificate: **13097-1** PO #: **Letter**

CONDITION OF TEST

Ambient Pressure:	**993.37**	hPa
Temperature	**23°**	C
Relative Humidity	**44**	%
Date of Calibration	**07 MAR 2005**	
Re-calibration due on	**07 MAR 2006**	

Calibration procedure: Brüel & Kjær 4231, Rev. 15 DEC 2004

PERFORMANCE AS RECEIVED:

Frequency	**999.8**	Hz
SPL	**93.97**	dB
SPL + 20 dB	**114.04**	dB
Distortion (at 94 dB)	**+0.3**	%
Battery voltage	**1.4**	Volt

Was frequency and SPL adjusted for improvement? **No!**
Was battery replaced with new alkaline type? **Yes!**

UNCERTAINTY OF MEASUREMENT:

A: Estimated Uncertainty of comparison:+/-0.09 dB at 99 % Confidence Level
B: Estimated Uncertainty of Ref. 4220: +/-0.09 dB at 99 % Confidence Level
C: Total Uncertainty : 0.13 dB (calculated as the Square root of the summed squares of a and b) at 99 % Confidence Level

FINAL PERFORMANCE:

Frequency	**999.8**	Hz
SPL	**93.97**	dB
SPL + 20 dB	**114.04**	dB
Distortion (at 94 dB)	**+0.3**	%

Note: This calibrator was **within** Mfg. Specifications as received.

Performed on a test system which operates in compliance with ANSI/ NCSL Z540-1(also covering MIL STD 45662A), ISO 17025, and ISO 9001:2000 Certification NQA No. 11252.
Reference standards pistonphones calibrated traceable to NIST with, NIST test no.**822/268655-03, D1192**

Calibration performed by: Harold Lynch
Harold Lynch, Service Manager

ODIN METROLOGY, INC.
CALIBRATION OF BRÜEL & KJÆR INSTRUMENTS
3533 OLD CONEJO ROAD, SUITE # 125
THOUSAND OAKS, CA 91320
PHONE: (805) 375-0830 FAX: (805) 375-0405

Note: This calibration report shall not be reproduced, except in full, without written consent by Odin Metrology, Inc.

```
1
<kk                                          t        t
 kk                                         tt       tt
 kk  kk pp ppp  rr rrr   aaaa    ttttt    ttttt
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 kkkk    pp  pp  rr  rr  aaaaa     tt       tt
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<kk  kk  pp     rrrr     aaa aa     tt       tt
         pppp
```

```
 2222    00000   9999
22  22  00   00 99  99
    22  00  000 99  99
  222   00 0000  99999
 22     0000 00     99
22  22  000  00    99
222222   00000   999
```

10/21/05

Appendix D
Noise Field Measurement Data Sheets

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

ID

SITE IDENTIFICATION: LT-1 OBSERVER(s): M. Greene, R. Romond, W. Conklin
START DATE & TIME: 6/8/05 12:15 END DATE & TIME: 6/9/05 14:00
ADDRESS: Fence @ Back P/L of 6206 S Pacific Ave, E. end of 62nd Ave, by N. end of Del Mar Lagoon

Weather

TEMP: 78 °F HUMIDITY: 39 % R.H. WIND: CALM LIGHT MODERATE (VARIABLE)
WINDSPEED: 3-6 MPH DIR: N NE E SE S SW (W) NW STEADY ~~GUSTY~~
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: ~~LD 820~~ dB-308 TYPE: 1 (2) SERIAL #: 2881 WCC-2
CALIBRATOR: Metrosonic CL304 SERIAL #: 2551
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.0 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	~~Duration~~ Start time							
☆	12:30	L_{eq} 55.7	L_{max} 92.3	L_{min} <43	L_{90} 43	L_{50} 49	L_{10} 55	
	1 day 1:21"	L_{eq}	L_{max} @ 11:39:15	L_{min}	L_{90}	L_{50}	L_{10}	
	0	L_{eq}	L_{max} 6/8/05	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS: dB-308 system clock set 1 hour behind
☆ New guy set meter 1 hr early (11:30 start time)

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:
COUNT DURATION: ____-MINUTE

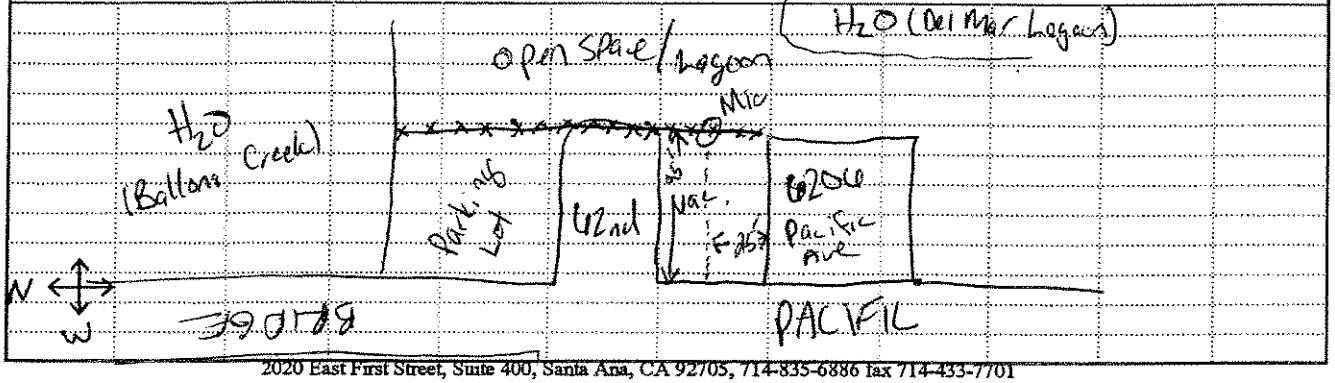
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	____ / ____	____ / ____	____ / ____	____ / ____
MED. TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
HVY TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
BUSES:	____ / ____	____ / ____	____ / ____	____ / ____
MOTORCYCLES:	____ / ____	____ / ____	____ / ____	____ / ____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) (RUSTLING LEAVES) distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

ID

SITE IDENTIFICATION: LT-2 OBSERVER(s): M. Greene, R. Romano, W. Conklin
START DATE & TIME: 6/8/05 13:10 END DATE & TIME: 6/9/05 14:30
ADDRESS: W. Side of Vista del Mar @ Waterview St.

Weather

TEMP: 75 °F HUMIDITY: 39 % R.H. WIND: CALM LIGHT MODERATE (VARIABLE)
WINDSPEED: 8-10 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: Metrosonic ~~dB-308~~ TYPE: 1 (2) SERIAL #: 3068 (WCC-3)
CALIBRATOR: Metrosonics CL-304 SERIAL #: 02551
CALIBRATION CHECK: PRE-TEST ~~94~~ 103 dBA SPL POST-TEST 104.8 104 dBA SPL WINDSCREEN ~~Y/N~~ Yes
SETTINGS (A-WEIGHTED) SLOW FAST FRONTAL RANDOM (ANSI) OTHER:

Rec # / ~~Duration~~ Start Time							
:13:30 :	L_{eq} 64.1,	L_{max} 92.7,	L_{min} 45.4,	L_{90} 50.4,	L_{50} 60.1,	L_{10} 67.5,	
: :	L_{eq} ____,	L_{max} ____,	L_{min} ____,	L_{90} ____,	L_{50} ____,	L_{10} ____,	
:14 :	L_{eq} 69.9,	L_{max} 107.8,	L_{min} ____,	L_{90} ____,	L_{50} ____,	L_{10} ____,	
:0:47:08:	L_{eq} 69.9,	L_{max} ____,	L_{min} ____,	L_{90} ____,	L_{50} ____,	L_{10} ____,	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC / AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE: 2 Lane undivided

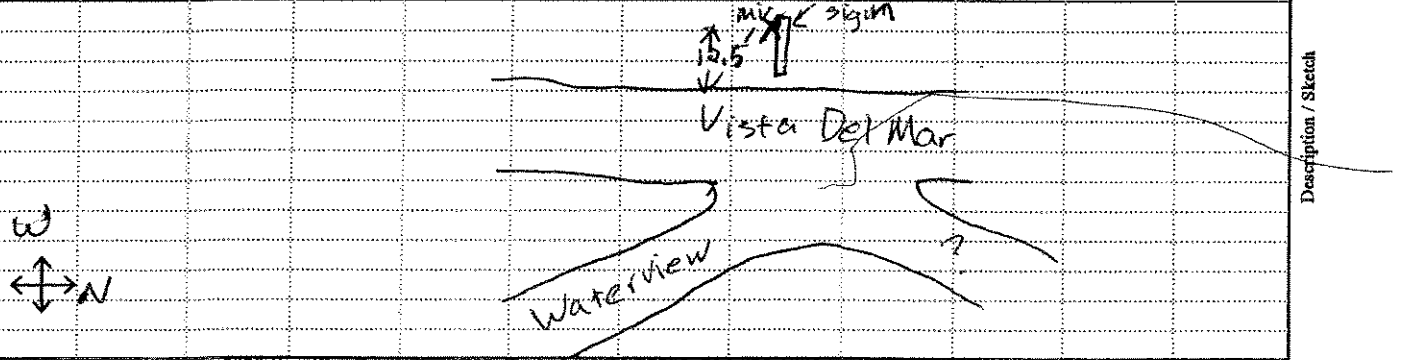
COUNT DURATION: ____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	~~0~~ / ____	~~0~~ / ____	____ / ____	____ / ____
MED. TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
HVY TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
BUSES:	____ / ____	____ / ____	____ / ____	____ / ____
MOTORCYCLES:	~~0~~ / ____	____ / ____	____ / ____	____ / ____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) (RUSTLING LEAVES) distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / (distant TRAFFIC) / distant LANDSCAPING / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: X
OTHER COMMENTS / SKETCH:



measurements.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

ID

SITE IDENTIFICATION: LT-3 OBSERVER(s): Wade & Rachel
START DATE & TIME: 6/9/05 15:15 END DATE & TIME: 6/10/05 17:00
ADDRESS: Hurricane St @ Grand Canal

Weather

TEMP: 94 °F HUMIDITY: 44 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 3-4 MPH DIR: ~~N NE~~ E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Acoustic Measurements

INSTRUMENT: DB 308 TYPE: 1 (2) SERIAL #: (WCC 2) 2881
CALIBRATOR: LL 304 SERIAL #: 2551
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.2 dBA SPL WINDSCREEN X
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER: _____

Rec #	Duration							
	24hr	L_{eq}	L_{max}	L_{min}	L_{90} 43	L_{50} 50	L_{10} 55	
	1d 1:47:26	L_{eq} 53.2	L_{max} 83.3	L_{min}	L_{90} 43	L_{50} 50	L_{10} 55	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER: _____
ROADWAY TYPE: Alley
COUNT DURATION: _____-MINUTE

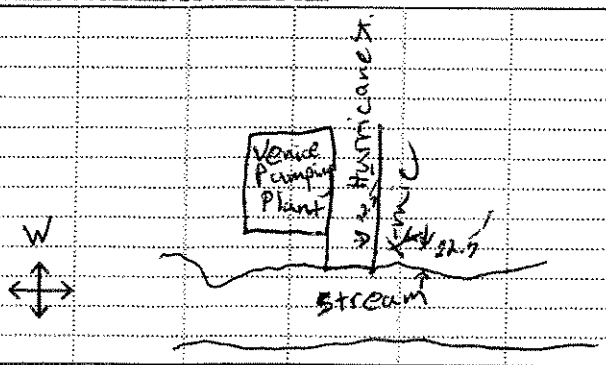
	SPEED (mph)	#2 COUNT:	SPEED (mph)
	NB / EB / SB / WB	NB EB / SB WB	NB / EB / SB / WB	NB EB / SB WB
AUTOS:	____ / ____ / ____ / ____	____ / ____	____ / ____ / ____ / ____	____ / ____
MED. TRUCKS:	____ / ____ / ____ / ____	____ / ____	____ / ____ / ____ / ____	____ / ____
HVY TRUCKS:	____ / ____ / ____ / ____	____ / ____	____ / ____ / ____ / ____	____ / ____
BUSES:	____ / ____ / ____ / ____	____ / ____	____ / ____ / ____ / ____	____ / ____
MOTORCYCLES:	____ / ____ / ____ / ____	____ / ____	____ / ____ / ____ / ____	____ / ____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: A/C unit @ plant (fan)

Description / Sketch

TERRAIN: HARD SOFT (MIXED) FLAT OTHER: _____
PHOTOS: X
OTHER COMMENTS / SKETCH:



meastorm5.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

SITE IDENTIFICATION: LT-4 **OBSERVER(s):** Wade, Rachel & Mike
START DATE & TIME: 6/9/05 16:00 **END DATE & TIME:** 6/10/05 17:14:58
ADDRESS: Ballona Lagoon, N of Via Marina & Marina del Rey Channel
SW~~ern~~ cnr of

ID

TEMP: 74 °F HUMIDITY: 44 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 3-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Weather

INSTRUMENT: DB304 **TYPE:** 1 (2) **SERIAL #:** WCCZ (13068)
CALIBRATOR: CC304 **SERIAL #:** ~~2554~~ 2551

CALIBRATION CHECK: **PRE-TEST** 101.9 **dBA SPL** **POST-TEST** 101.8 **dBA SPL** **WINDSCREEN** N

SETTINGS: **A-WEIGHTED** (SLOW) FAST FRONTAL (RANDOM) ANSI OTHER: _____

Rec #	Duration							
___	24hr	L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	___
___	~~1d~~	L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	___
___	1d 1:19:45	L_{eq} 62.7	L_{max} 99.9	L_{min} ___	L_{90} 42	L_{50} 54	L_{10} 69	___
___	___	L_{eq} ___	L_{max} ___	L_{min} ___	L_{90} ___	L_{50} ___	L_{10} ___	___

COMMENTS:

Acoustic Measurements

PRIMARY SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER: _____
ROADWAY TYPE: _____

COUNT DURATION: _____-MINUTE

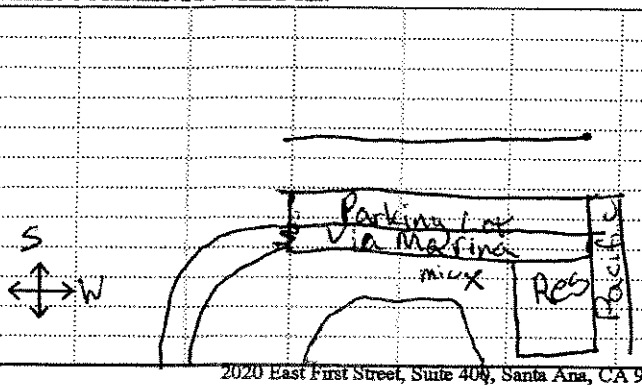
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	___ / ___	25 / 25	___ / ___	___ / ___
MED. TRUCKS:	___ / ___	___ / ___	___ / ___	___ / ___
HVY TRUCKS:	___ / ___	___ / ___	___ / ___	___ / ___
BUSES:	___ / ___	___ / ___	___ / ___	___ / ___
MOTORCYCLES:	___ / ___	___ / ___	___ / ___	___ / ___

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

Source Info and Traffic Counts

OTHER NOISE SOURCES: distant AIRCRAFT overhead / (RUSTLING LEAVES) / distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: _____

TERRAIN: HARD SOFT (MIXED) FLAT OTHER: _____
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



Description / Sketch

mx-cmu01.sw

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-1 OBSERVER(s): Wade & Mike
START DATE & TIME: 6/8/05 15:31 END DATE & TIME: 15:46 6/8/05
ADDRESS: Parking Lot abutting Vista Del Mar

Weather

TEMP: 79.0 °F HUMIDITY: 43.5 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 0-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: Larson Davis Model 820 TYPE (1) 2 SERIAL #: 0775
CALIBRATOR: CL 304 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102 " dBA SPL WINDSCREEN X
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
15:30 :	15 mins:	L_{eq} 65.5,	L_{max} 80.7,	L_{min} 45.8,	L_{90} 55.6	L_{50} 63.2,	L_{10} 68.7,	
15:45 :	:	L_{eq} ,	L_{max} ,	L_{min} ,	L_{90} ,	L_{50} ,	L_{10} ,	
:	:	L_{eq} ,	L_{max} ,	L_{min} ,	L_{90} ,	L_{50} ,	L_{10} ,	
:	:	L_{eq} ,	L_{max} ,	L_{min} ,	L_{90} ,	L_{50} ,	L_{10} ,	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: 2 lane undivided

COUNT DURATION: 15 -MINUTE

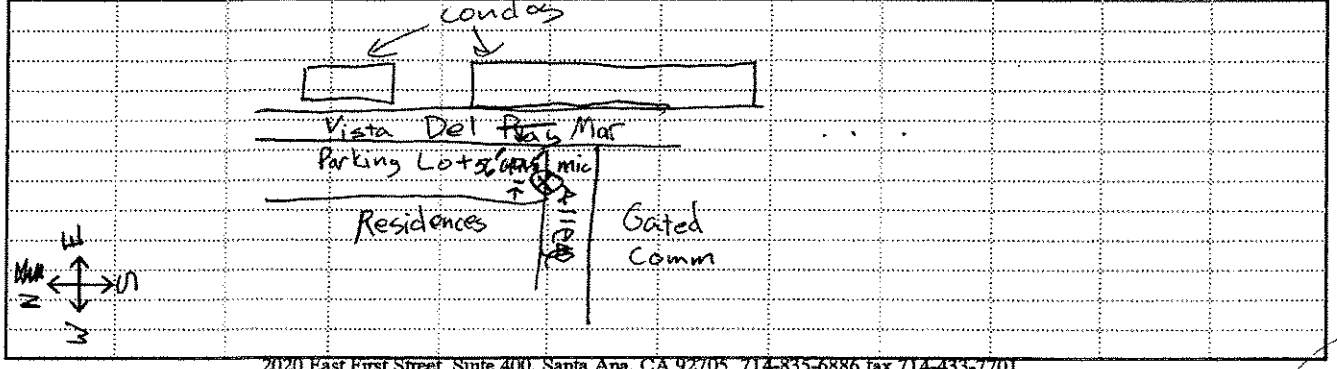
	NB / EB / (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	127 / 205	35 / 35	/	/
MED. TRUCKS:	/ 4	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	4 / 2	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / (OBSERVER)

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) (RUSTLING LEAVES) / distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / (distant LANDSCAPING) / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: X
OTHER COMMENTS / SKETCH:



measurements.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-2 OBSERVER(s): R. Romero
START DATE & TIME: 6/8/05 13:40 END DATE & TIME: 6/8/05 16:05
ADDRESS: ~~Backgrounds~~ Ocean front patios of condos S. of Surf St. (@ S. end of project area)

Weather

TEMP: 68 °F HUMIDITY: 44 % R.H. WIND: CALM LIGHT (MODERATE) VARIABLE
WINDSPEED: 7-9 MPH DIR: N NE E SE S SW (W) NW (STEADY) GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: B+K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B+K 4231 SERIAL #: 1850301
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN X
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

	Rec #	Duration	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
15:45	1	15:12	62.8	80.2	42.9	46.0	50.0	64.5	

COMMENTS: dominated by aircraft overflights

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:

COUNT DURATION: ____-MINUTE

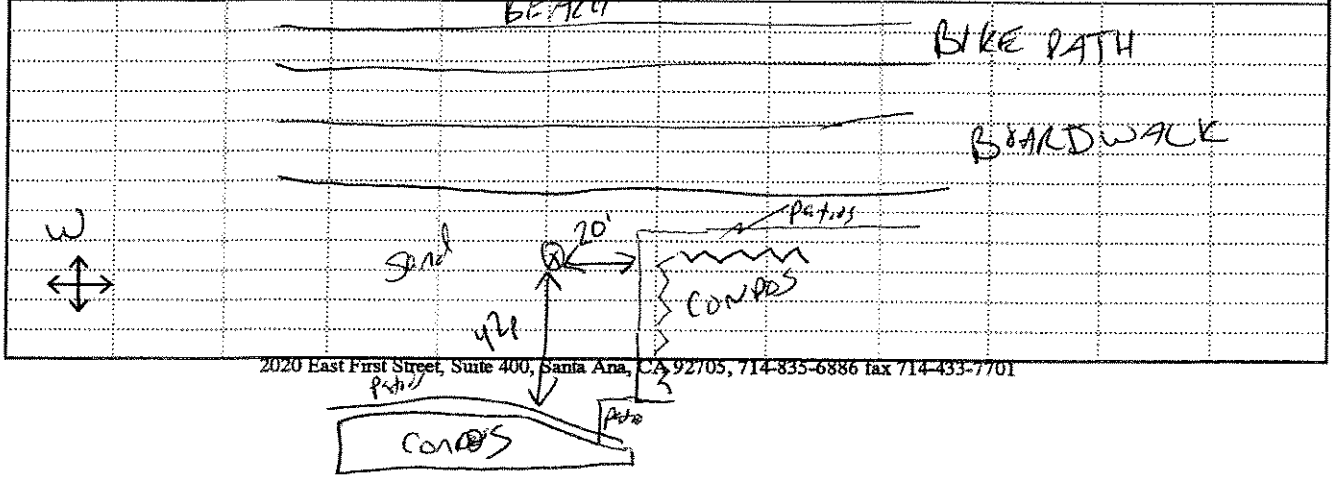
	SPEED (mph) NB / EB / SB (WB)	NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
~~AUTOS:~~ take offs Planes	/ HHAIII	/	/	/
MED. TRUCKS:	/ II	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES: flybys →	/ II	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER Visible traffic

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS Vacuuming inside condo, leaf blower, light
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: Wind waves & LAX aircraft takeoffs overflights, bikers people passing on boardwalk

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER:
PHOTOS: NO
OTHER COMMENTS / SKETCH:



2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770 20000

ID

SITE IDENTIFICATION: ST-3 OBSERVER(s): Wade & Mike
START DATE & TIME: 6-8-05 @ 15:45 END DATE & TIME: 6-8-05 @ 16:00
ADDRESS: Montreal st @ Pacific Ave / Vista Del Mar

Weather

TEMP: 71.3 °F HUMIDITY: 58 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 1-3 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Acoustic Measurements

INSTRUMENT: LD 820 TYPE: (1) 2 SERIAL #: 0775
CALIBRATOR: CL 304 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.0 dBA SPL WINDSCREEN X
SETTINGS (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER: _____

Rec #	Duration							
15:45-16:00	15 min	L_{eq} 64.1	L_{max} 81.7	L_{min} 45.4	L_{90} 50.4	L_{50} 60.1	L_{10} 67.5	
:_____	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:_____	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:_____	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS: _____

Source Info and Traffic Counts

PRIMARY SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER: _____
ROADWAY TYPE: 2 Lane Road

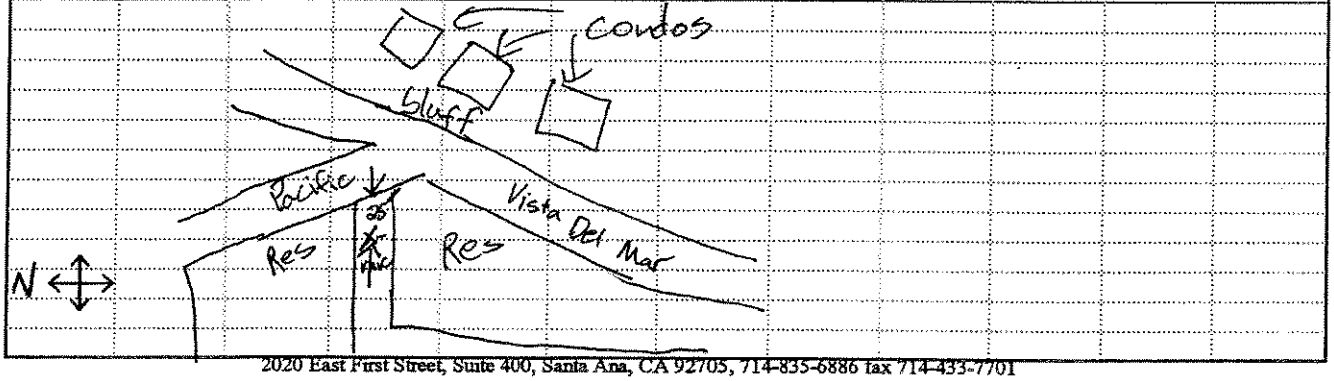
COUNT DURATION: ____-MINUTE	(NB) / EB	/ (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	/ SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	212	/ 121	____ / ____	_____	/ _____	____ / ____
MED. TRUCKS:	_____	/ _____	____ / ____	_____	/ _____	____ / ____
HVY TRUCKS:	_____	/ _____	____ / ____	_____	/ _____	____ / ____
BUSES:	_____	/ _____	____ / ____	_____	/ _____	____ / ____
MOTORCYCLES:	2	/ 1	____ / ____	_____	/ _____	____ / ____

SPEED ESTIMATED BY: RADAR / DRIVING / (OBSERVER)

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) (RUSTLING LEAVES) (distant BARKING DOGS) BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: _____

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER: _____
PHOTOS: X
OTHER COMMENTS / SKETCH:



mcastro\ntx\current

FIELD NOISE MEASUREMENT DATA

URS Project: VENICE FORCE MAIN Job #: 29401770.20000

ID

SITE IDENTIFICATION: ST-4 OBSERVER(s): R. Romond
START DATE & TIME: 6/8/05 16:10 END DATE & TIME: 6/8/05 16:35
ADDRESS: Back Patio of house between 699517 + 699719 Trolleyway Dr.

Weather

TEMP: 72 °F HUMIDITY: 58 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 4-6 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: B+K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B+K 4231 SERIAL #: 1850501
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.1 dBA SPL WINDSCREEN Y
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
16:15 2	15:42	L_{eq} 61.8	L_{max} 77.4	L_{min} 42.6	L_{90} 46.0	L_{50} 50.0	L_{10} 63.5	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:

COUNT DURATION: ____-MINUTE

	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
takeoff AUTOS: ~~1200/0~~	8X / IIII/IIII	____/____	____/____	____/____
MED. TRUCKS:	____/____	____/____	____/____	____/____
HVY TRUCKS:	____/____	____/____	____/____	____/____
possibly BUSES: →	____/IIII	____/____	____/____	____/____
MOTORCYCLES:	____/____	____/____	____/____	____/____

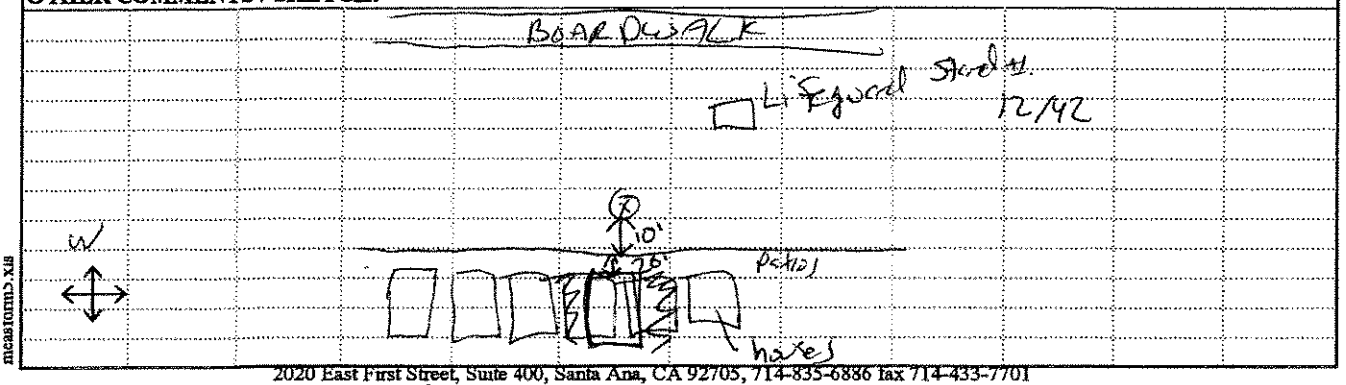
helicopter possible shark

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant (AIRCRAFT overhead) RUSTLING LEAVES / distant BARKING DOGS (BIRDS) hammering sounds
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS waves
OTHER: aircraft taking off Long Beach, dist. surf, dist. workers talking

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER:
PHOTOS: no
OTHER COMMENTS / SKETCH:



← TROLLEY WAY →

RX-CUSTOMER

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job #: 29401770.20000

ID

SITE IDENTIFICATION: ST-05 OBSERVER(s): Wade & Mike
START DATE & TIME: 6/9/05 @ 16:10 END DATE & TIME: 6/9/05 @ 16:25
ADDRESS: Park S. of Del Rey Lagoon

Weather

TEMP: 71 °F HUMIDITY: 52 % R.H. WIND: CALM LIGHT MODERATE (VARIABLE)
WINDSPEED: 2-6 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 TYPE: (1) 2 SERIAL #: 0775
CALIBRATOR: CL 304 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.0 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
16:10 / 16:25	15 mins:	L_{eq} 57.2	L_{max} 69.8	L_{min} 45.4	L_{90} 47.9	L_{50} 50.9	L_{10} 59.9	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC (AIRCRAFT) RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:

COUNT DURATION: ____-MINUTE

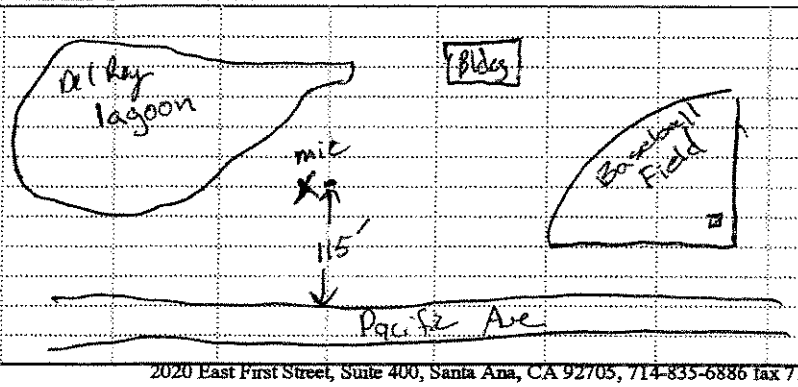
	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	____/____	____/____	____/____
MED. TRUCKS:	____/____	____/____	____/____
HVY TRUCKS:	____/____	____/____	____/____
BUSES:	____/____	____/____	____/____
MOTORCYCLES:	____/____	____/____	____/____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead (RUSTLING LEAVES) / distant BARKING DOGS / BIRDS
(distant CHILDREN PLAYING) / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: Loud guy in background (baseball coach?)

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER:
PHOTOS: X
OTHER COMMENTS / SKETCH:



measform.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Fonce MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-6 OBSERVER(s): R. Romond
START DATE & TIME: 17:00 6/8/05 END DATE & TIME: 17:0 6/8/05
ADDRESS: Ocean patio of 3rd house S. of 66th Ave

Weather

TEMP: 73 °F HUMIDITY: 52 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 4 MPH DIR: N NE E SE S SW (W) NW (STEADY) GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: B+K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B+K 4231 SERIAL #: 850301
CALIBRATION CHECK: PRE-TEST 94.1 dBA SPL POST-TEST 94.1 dBA SPL WINDSCREEN Y
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

	Rec #	Duration	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
17:05	(3)	15:02	61.7	77.7	43.6	49.5	53.0	65.5	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:

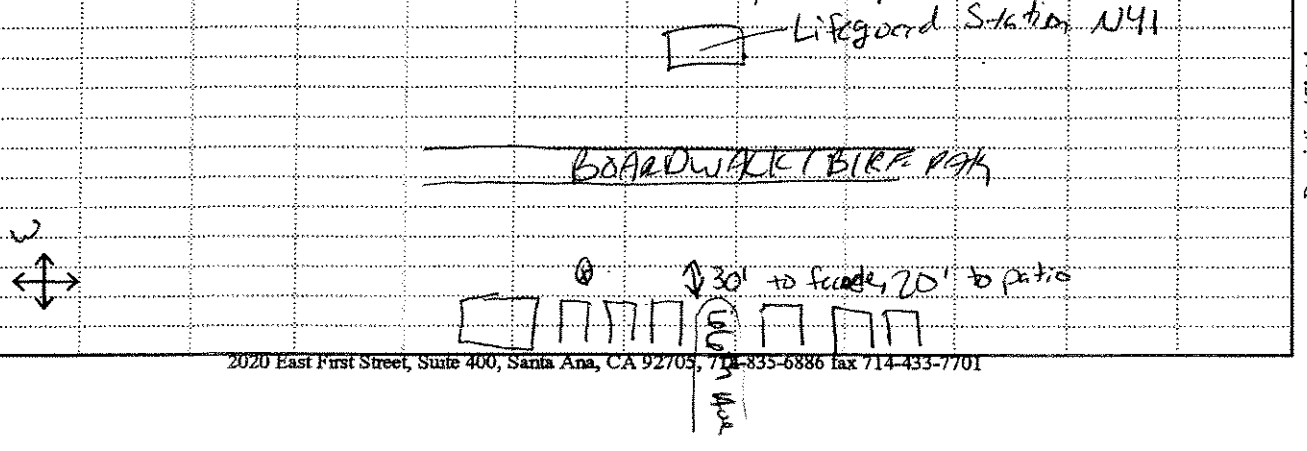
COUNT DURATION: ____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS: takeoff	////// /	/	/	/
MED. TRUCKS:	// /	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES: pass	1 /	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant (AIRCRAFT) overhead / (RUSTLING LEAVES) / distant BARKING DOGS / (BIRDS) distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS Helicopter over shore
OTHER: LAX takeoff aircraft, distant volleyball practice, waves, motorboat

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER:
PHOTOS: Yes
OTHER COMMENTS / SKETCH: Sig. to Rear use post Sonsat patio



SIX CHANNEL SYSTEM

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-7 OBSERVER(s): Wade & Mike
START DATE & TIME: 6/8/05 @ ~~16:17~~ 17:00 END DATE & TIME: 6/8/05 @ 17:15
ADDRESS: Park W. of Del Rey Lagoon, N of 64th St.

Weather

TEMP: 73 °F HUMIDITY: 52 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 2-5 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 TYPE: 1 2 SERIAL #: 0775
CALIBRATOR: CL304 SERIAL #: 3376
CALIBRATION CHECK: PRE-TEST 102 dBA SPL POST-TEST 102.2 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

Rec #	Duration							
17:00 17:15	15 min	L_{eq} 59.5	L_{max} 74.6	L_{min} 44.2	L_{90} 46.9	L_{50} 51.7	L_{10} 69.2	
~~16:17~~	~~16:32~~	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: 2 Lane

COUNT DURATION: 15-MINUTE

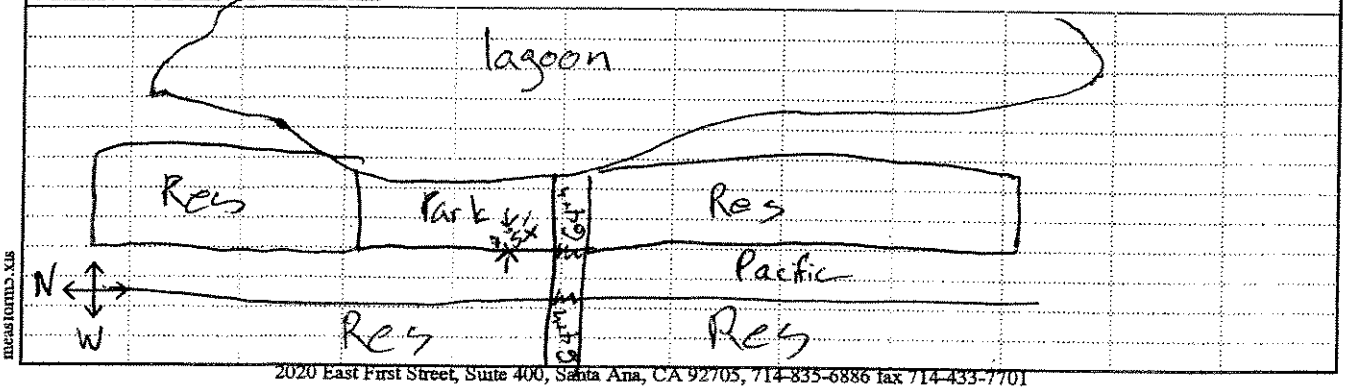
	NB / EB	SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	12	6	/	/		/
MED. TRUCKS:	/	/	/	/		/
HVY TRUCKS:	/	/	/	/		/
BUSES:	/	/	/	/		/
MOTORCYCLES:	/	1	/	/		/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: wind chimes in background

Description / Sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: X
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-8 OBSERVER(s): R. Romani
START DATE & TIME: 6/8/05 17:25 END DATE & TIME: 6/8/05 17:50
ADDRESS: back patio of 3rd Bldg S. of 2nd Ave

Weather

TEMP: 72 °F HUMIDITY: 52 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 4 MPH DIR: N NE E SE S SW (W) NW (STEADY) GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: B+K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B+K 4231 SERIAL #: 1850301
CALIBRATION CHECK: PRE-TEST 94.1 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN X
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
7:30 (92)	15:07	L_{eq} 55.9	L_{max} 69.8	L_{min} 41.4	L_{90} 43.5	L_{50} 49.0	L_{10} 60.0	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:

COUNT DURATION: ____-MINUTE

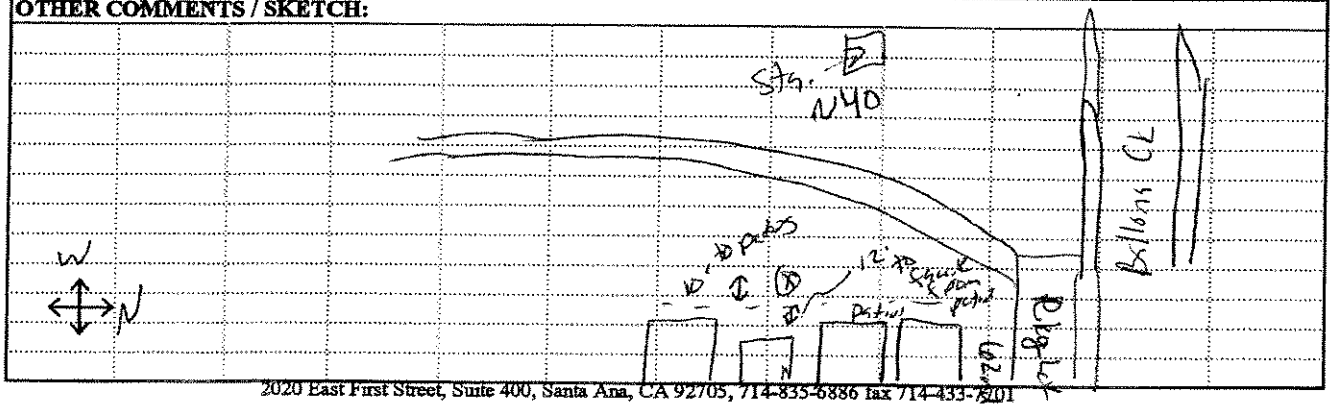
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS: (takeoffs)	||| /	/	/	/
MED. TRUCKS:	||| /	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES: (passby)	1 /	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / (BIRDS) bikes on bike path
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: LAX takeoffs, voices of people on Beach, distant radio

Description / Sketch

TERRAIN: HARD (SOFT) MIXED (FLAT) OTHER:
PHOTOS: yes
OTHER COMMENTS / SKETCH:


Sta. D
N40
W
N
Pkg Lot
Pkg Lot
Pkg Lot

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

SITE IDENTIFICATION: ST-9 **OBSERVER(s):** Wade & Mike
START DATE & TIME: 6/9/05 10:55 **END DATE & TIME:** 6/9/05 11:10
ADDRESS: 5111 (?) (Next to 5409 & house marked 4) Yawl & Anonymous Alley in between

Weather

TEMP: 69 °F HUMIDITY: 62 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 8-10 MPH DIR: N NE E SE S SW (W) NW STEADY (GUSTY)
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Acoustic Measurements

INSTRUMENT: LD820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: CL 304 **SERIAL #:** 3316
CALIBRATION CHECK: **PRE-TEST** 102.0 **dBA SPL** **POST-TEST** 102.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) SLOW FAST FRONTAL (RANDOM) ANSI **OTHER:** _____

Rec #	Duration							
:	15 min :	L_{eq} 55.4,	L_{max} 65.5,	L_{min} 46.3,	L_{90} 48.4,	L_{50} 52.2,	L_{10} 59.5	
:	:	L_{eq} _____,	L_{max} _____,	L_{min} _____,	L_{90} _____,	L_{50} _____,	L_{10} _____,	
:	:	L_{eq} _____,	L_{max} _____,	L_{min} _____,	L_{90} _____,	L_{50} _____,	L_{10} _____,	
:	:	L_{eq} _____,	L_{max} _____,	L_{min} _____,	L_{90} _____,	L_{50} _____,	L_{10} _____,	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: **TRAFFIC** (AIRCRAFT) **RAIL INDUSTRIAL AMBIENT OTHER:** _____
ROADWAY TYPE: _____

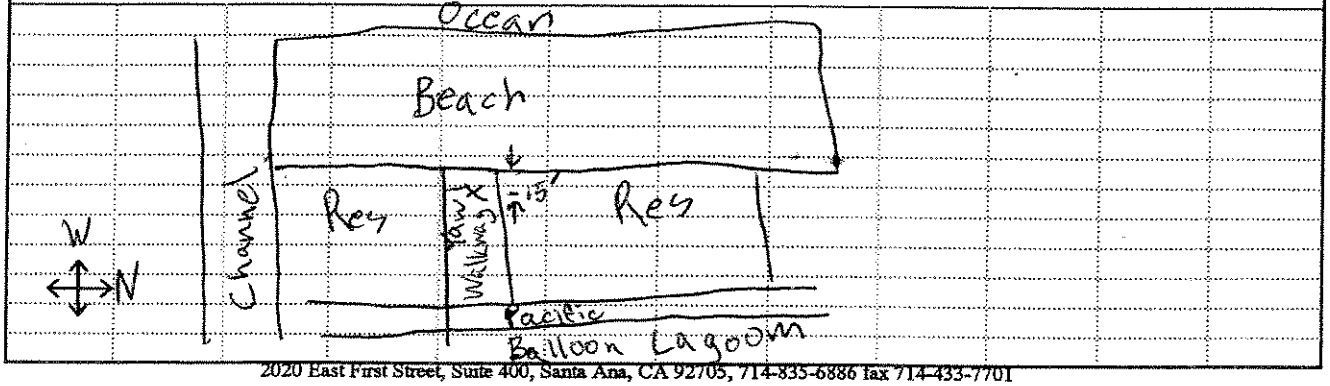
COUNT DURATION: _____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	_____ / _____	_____ / _____	_____ / _____	_____ / _____
MED. TRUCKS:	_____ / _____	_____ / _____	_____ / _____	_____ / _____
HVY TRUCKS:	_____ / _____	_____ / _____	_____ / _____	_____ / _____
BUSES:	_____ / _____	_____ / _____	_____ / _____	_____ / _____
MOTORCYCLES:	_____ / _____	_____ / _____	_____ / _____	_____ / _____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) (RUSTLING LEAVES) / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: People walking by & talking

Description / Sketch

TERRAIN: X **HARD SOFT** (MIXED) **FLAT OTHER:** _____
PHOTOS: X
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

URS Project: Venice Pump Main Job #: 29401770.20002

6/9/05 10:50

SITE IDENTIFICATION: ST-10 **OBSERVER(s):** R. Romero

START DATE & TIME: ~~ST:~~ **END DATE & TIME:** 6/9/05 11:15

ADDRESS: Parke S. Curve of Via Marina

ID

TEMP: 71 °F HUMIDITY: 62 % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)

WINDSPEED: 3-6 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY

SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Weather

INSTRUMENT: B+K 2236 **TYPE:** (1) 2 **SERIAL #:** 2015788

CALIBRATOR: B+K 4231 **SERIAL #:** 1850854

CALIBRATION CHECK: **PRE-TEST** 94.0 dBA SPL **POST-TEST** 93.9 dBA SPL **WINDSCREEN** X

SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) **OTHER:**

10:55

Rec #	Duration							
6	15:00	L_{eq} 57.9	L_{max} 70.4	L_{min} 47.3	L_{90} 51.0	L_{50} 55.5	L_{10} 61.0	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Acoustic Measurements

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:

ROADWAY TYPE: Curve of Via Marina

COUNT DURATION: 15 -MINUTE

	(NB) / EB / (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	33 / 25	/	/	/
MED. TRUCKS:	1 / 1	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/ 1	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead (RUSTLING LEAVES) distant BARKING DOGS (BIRDS) distant CHILDREN PLAYING / distant TRAFFIC (distant LANDSCAPING) distant TRAINS

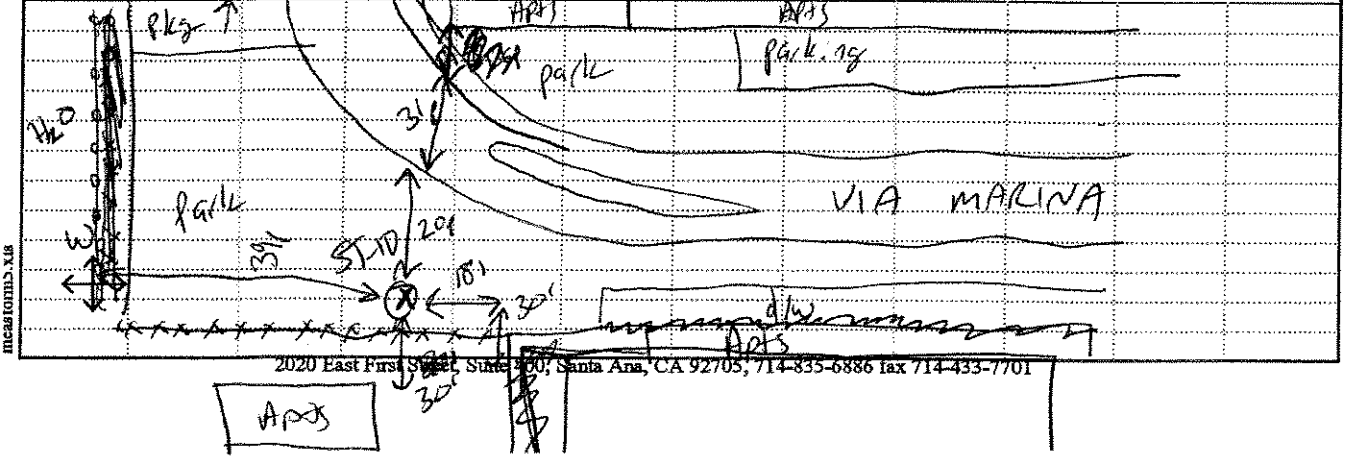
OTHER: dist. Back-up alarm

Source Info and Traffic Counts

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:

PHOTOS: 1/5

OTHER COMMENTS / SKETCH:



Description / Sketch

10:55 6" 2.5'

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force MAINE Job # 29401770.20000

SITE IDENTIFICATION: ST-11 **OBSERVER(s):** MC, WC
START DATE & TIME: 6/9/05 @ 11:10 **END DATE & TIME:** 6/9/05 @ 11:40
ADDRESS: @ WESTWARD ST & PACIFIC AVE S. OF 5315 PACIFIC AVE

ID

TEMP: 78 °F HUMIDITY: 47 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-1 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Weather

INSTRUMENT: L-D 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: CL 304 **SERIAL #:** 3316
CALIBRATION CHECK: **PRE-TEST** 102.0 **dBA SPL** **POST-TEST** 102.9 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) **OTHER:** _____

Rec #	Duration							
	11:25-11:40	L_{eq} 56.5	L_{max} 69.9	L_{min} 46.4	L_{90} 49.8	L_{50} 53.8	L_{10} 60.2	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Acoustic Measurements

PRIMARY SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER: _____
ROADWAY TYPE: PACIFIC AVE, 2-LANE UNDIV.

COUNT DURATION: _____-MINUTE

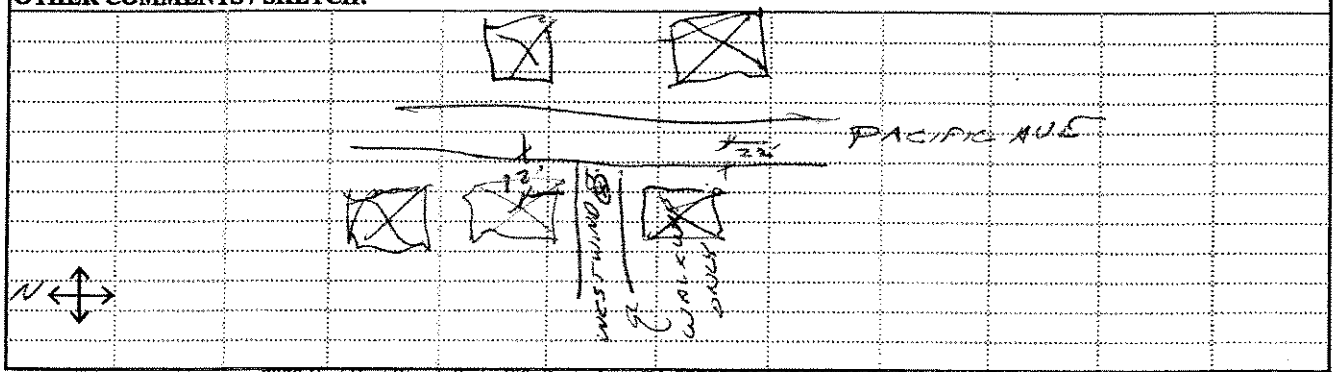
	(NB) / EB / (SB) / WB SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	22 / 22 — 25 / 25	_____ / _____	_____ / _____
MED. TRUCKS:	_____ / _____ — _____ / _____	_____ / _____	_____ / _____
HVY TRUCKS:	_____ / _____ — _____ / _____	_____ / _____	_____ / _____
BUSES:	_____ / _____ — _____ / _____	_____ / _____	_____ / _____
MOTORCYCLES:	_____ / _____ — _____ / _____	_____ / _____	_____ / _____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

Source Info and Traffic Counts

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: DISTANT HOME CONST. WORK

TERRAIN: (HARD) SOFT MIXED FLAT **OTHER:** _____
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



Description / Sketch

RTK CHUCK3.PRN

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-12 OBSERVER(s): R. Romond
START DATE & TIME: 6/9/05 11:45 END DATE & TIME: 6/9/05
ADDRESS: Via Marina @ Tahiti Way

Weather

TEMP: 73 °F HUMIDITY: 49 % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)
WINDSPEED: 2-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: B+K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B+K 4231 SERIAL #: 1850801
CALIBRATION CHECK: PRE-TEST 93.9 dBA SPL POST-TEST 93.9 dBA SPL WINDSCREEN X
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
11:45	15:12	L_{eq} 60.9	L_{max} 75.5	L_{min} 44.4	L_{90} 49.5	L_{50} 57.5	L_{10} 66.0	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE: Via Marina

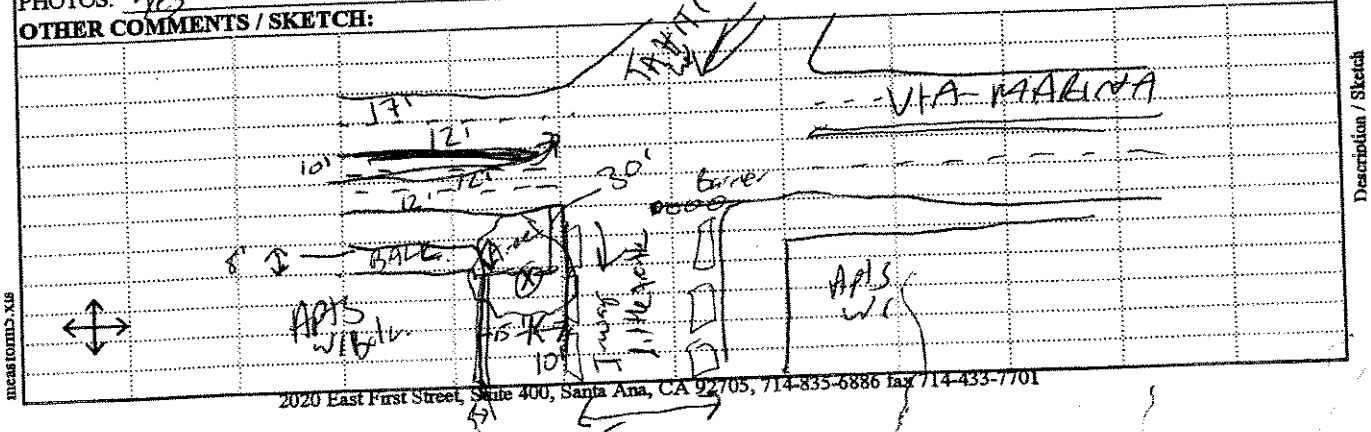
COUNT DURATION: ___-MINUTE	(NB) / EB / (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	113 / 97	___ / ___	___ / ___	___ / ___
MED. TRUCKS:	1 / 0	___ / ___	___ / ___	___ / ___
HVY TRUCKS:	0 / 0	___ / ___	___ / ___	___ / ___
BUSES:	0 / 0	___ / ___	___ / ___	___ / ___
MOTORCYCLES:	11 / 0	___ / ___	___ / ___	___ / ___

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / (BIRDS)
distant CHILDREN PLAYING / distant (TRAFFIC) / distant LANDSCAPING / distant TRAINS
OTHER: dist. saw

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: YES
OTHER COMMENTS / SKETCH:



measform3.xls

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS Project: VENICE FORCE MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-13 OBSERVER(s): MO, WC
START DATE & TIME: 6/9/05 @ 11:55 END DATE & TIME: 6/9/05 @ 12:10
ADDRESS: PACIFIC AVE @ OUTRIGGER ST. S. OF 27 OUTRIGGER ST.

Weather

TEMP: 80 °F HUMIDITY: 41 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 0-3 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: CO820 TYPE: (1) 2 SERIAL #: 0775
CALIBRATOR: CC304 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.1 dBA SPL WINDSCREEN ✓
SETTINGS: ~~A-WEIGHTED~~ ~~SLOW~~ FAST FRONTAL ~~RANDOM~~ (ANSI) OTHER:

Rec #	Duration							
	11:55-12:10	L_{eq} 61.8	L_{max} 77.6	L_{min} 43.2	L_{90} 45.5	L_{50} 51.5	L_{10} 66.7	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: ~~TRAFFIC~~ ~~AIRCRAFT~~ RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE: PACIFIC AVE (2-LN UNDIV.)

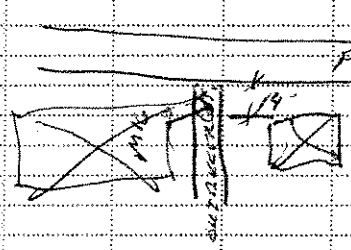
COUNT DURATION: ___-MINUTE	(NB) / EB / (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	21 / 31	34 30	/	/
MED. TRUCKS:	1 / 2	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / (OBSERVER)

OTHER NOISE SOURCES: (distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / ~~BIRDS~~
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



measforma.xls

FIELD NOISE MEASUREMENT DATA

URS Project: VENICE FORCE MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-14 OBSERVER(s): MG
START DATE & TIME: 6/9/05 @ 15:07 END DATE & TIME: 6/9/05 @ 15:16
ADDRESS: ADJ. TO CORNER OF VIA MARINA & MARESIAS WY

Weather

TEMP: 74 °F HUMIDITY: 52 % R.H. WIND: CALM LIGHT (MODERATE) VARIABLE
WINDSPEED: 3-5 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 TYPE: (1) 2 SERIAL #: 0775
CALIBRATOR: CL 305 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.0 dBA SPL WINDSCREEN ✓
SETTINGS: ~~A-WEIGHTED~~ ~~SLOW~~ FAST FRONTAL (RANDOM) (ANSI) OTHER:

Rec #	Duration							
:	15:00-15:15	L_{eq} 62.3	L_{max} 82.7	L_{min} 47.9	L_{90} 51.4	L_{50} 58.0	L_{10} 65.1	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE: PACIFIC AVE - 2 LANE EA DIR.

COUNT DURATION: ____-MINUTE

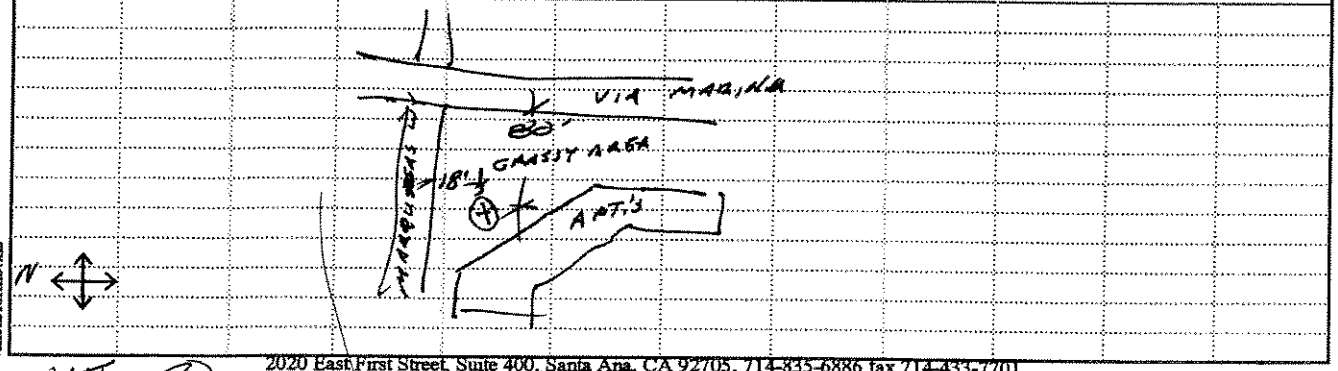
	(NB) / EB / (SB) / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: (MARGUERITE WY) NB / (EB) / SB / (WB)	SPEED (mph) NB EB / SB WB
AUTOS:	99 / 112	40 / 40	16 / 11	/
MED. TRUCKS:	(4) 1111 / 1111 (3)	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	2 / 1	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant ~~AIRCRAFT~~ overhead (RUSTLING LEAVES) / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



measforms.xls

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WB 58 63

FIELD NOISE MEASUREMENT DATA

URS Project: VENICE FOAM MAIN Job # 29401770.20000

ID

SITE IDENTIFICATION: ST-15 OBSERVER(s): MG
START DATE & TIME: 6/9/05 @ 16:10 END DATE & TIME: 6/9/05 @ 16:25
ADDRESS: BEACH @ OUTRIGGER ST. (N. OF OUTRIGGER ST.)

Weather

TEMP: 73 °F HUMIDITY: 49 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 5-7 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 TYPE: 1 2 SERIAL #: 0775
CALIBRATOR: CL304 SERIAL #: 3316
CALIBRATION CHECK: PRE-TEST 102.0 dBA SPL POST-TEST 102.0 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

Rec #	Duration							
:	16:10-16:25	L_{eq} 54.8	L_{max} 67.9	L_{min} 45.5	L_{90} 47.7	L_{50} 51.4	L_{10} 57.4	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
:	:	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:

COUNT DURATION: -MINUTE

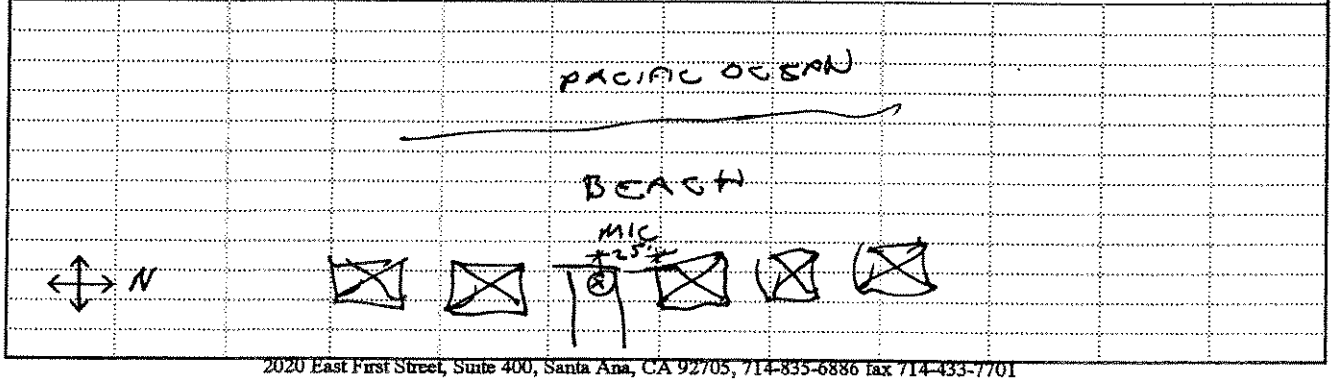
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Description / Sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



measform.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Venice Force Main Job # 29401720.20000

ID

SITE IDENTIFICATION: ST-14 16 OBSERVER(s): Wade & Rachel
START DATE & TIME: 6/9/05 16:15 END DATE & TIME: 6/9/05 16:30
ADDRESS: 5901 Speedway

Weather

TEMP: 73 °F HUMIDITY: 49 % R.H. WIND: CALM (LIGHT) MODERATE VARIABLE
WINDSPEED: 3-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) SUNNY FOG RAIN Other: _____

Acoustic Measurements

INSTRUMENT: B&K 2236 TYPE: (1) 2 SERIAL #: 2015788
CALIBRATOR: B&K 4231 SERIAL #: 1850301
CALIBRATION CHECK: PRE-TEST 93.9 dBA SPL POST-TEST 93.9 dBA SPL WINDSCREEN X
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

Rec #	Duration							
	15 min	L_{eq} 54.9	L_{max} 70.3	L_{min} 46.0	L_{90} 48.0	L_{50} 50.5	L_{10} 57.0	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	

COMMENTS:

Source Info and Traffic Counts

PRIMARY SOURCE: TRAFFIC (AIRCRAFT) RAIL INDUSTRIAL AMBIENT OTHER: _____
ROADWAY TYPE: _____

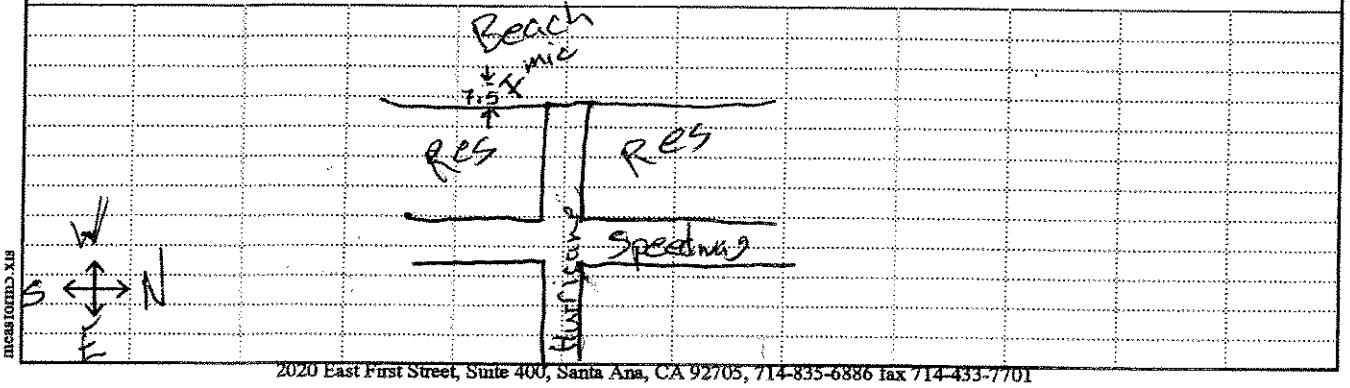
COUNT DURATION: _____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	___ / ___	___ / ___	___ / ___	___ / ___
MED. TRUCKS:	___ / ___	___ / ___	___ / ___	___ / ___
HVY TRUCKS:	___ / ___	___ / ___	___ / ___	___ / ___
BUSES:	___ / ___	___ / ___	___ / ___	___ / ___
MOTORCYCLES:	___ / ___	___ / ___	___ / ___	___ / ___

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) / RUSTLING LEAVES / (distant BARKING DOGS) / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: ocean

Description / Sketch

TERRAIN: HARD (SOFT) MIXED FLAT OTHER: _____
PHOTOS: X
OTHER COMMENTS / SKETCH:



BIX CHRISTENSEN

Appendix E
Hourly Noise Levels for Long-Term Measurement Sites

Figure E-1. Hourly Noise Levels: LT-1 (62nd Ave at Del Rey Lagoon) June 8-9, 2005

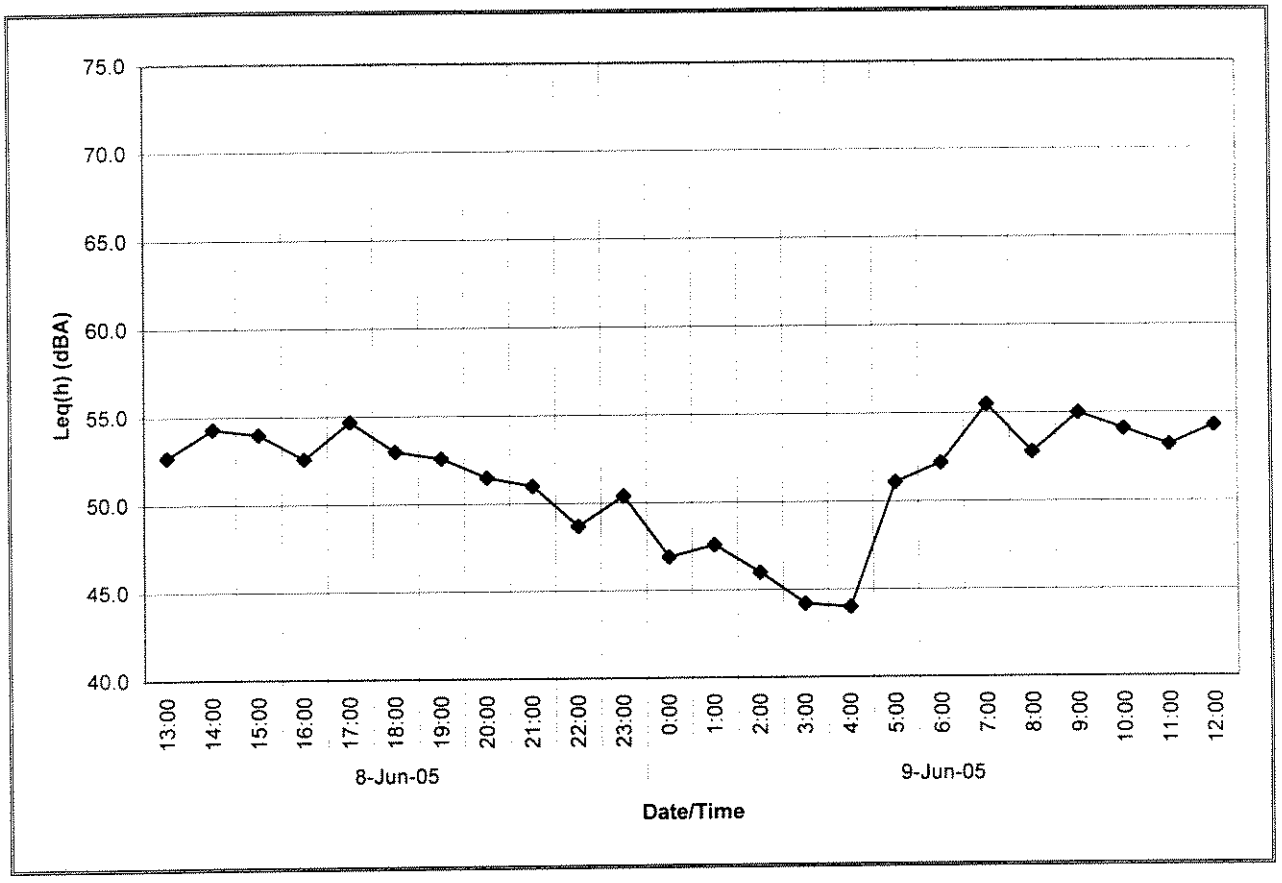


Figure E-2. Hourly Noise Levels: LT-2 (Vista Del Mar at Waterview St) June 8-9, 2005

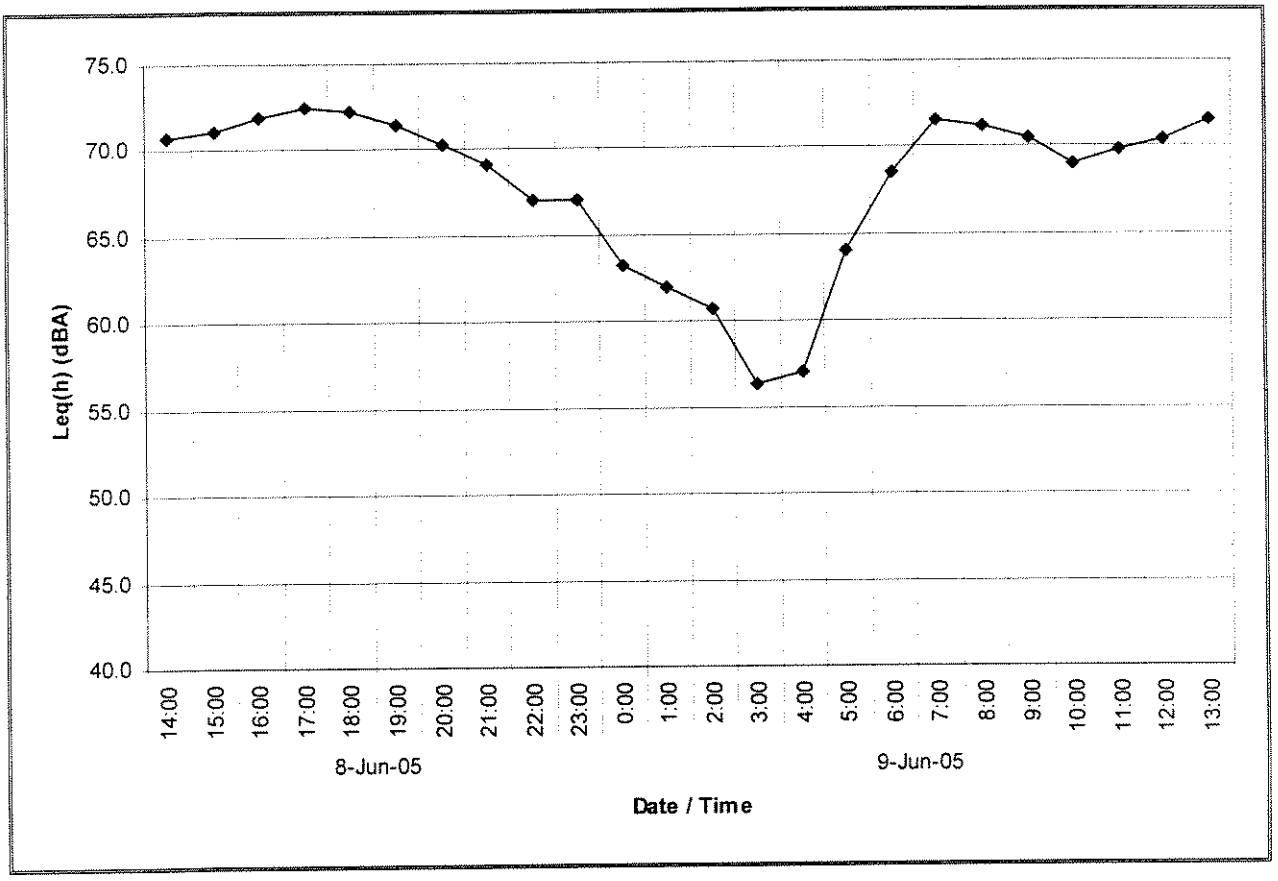


Figure E-3. Hourly Noise Levels: LT-3 (Hurricane St at Grand Canal) June 9-10, 2005

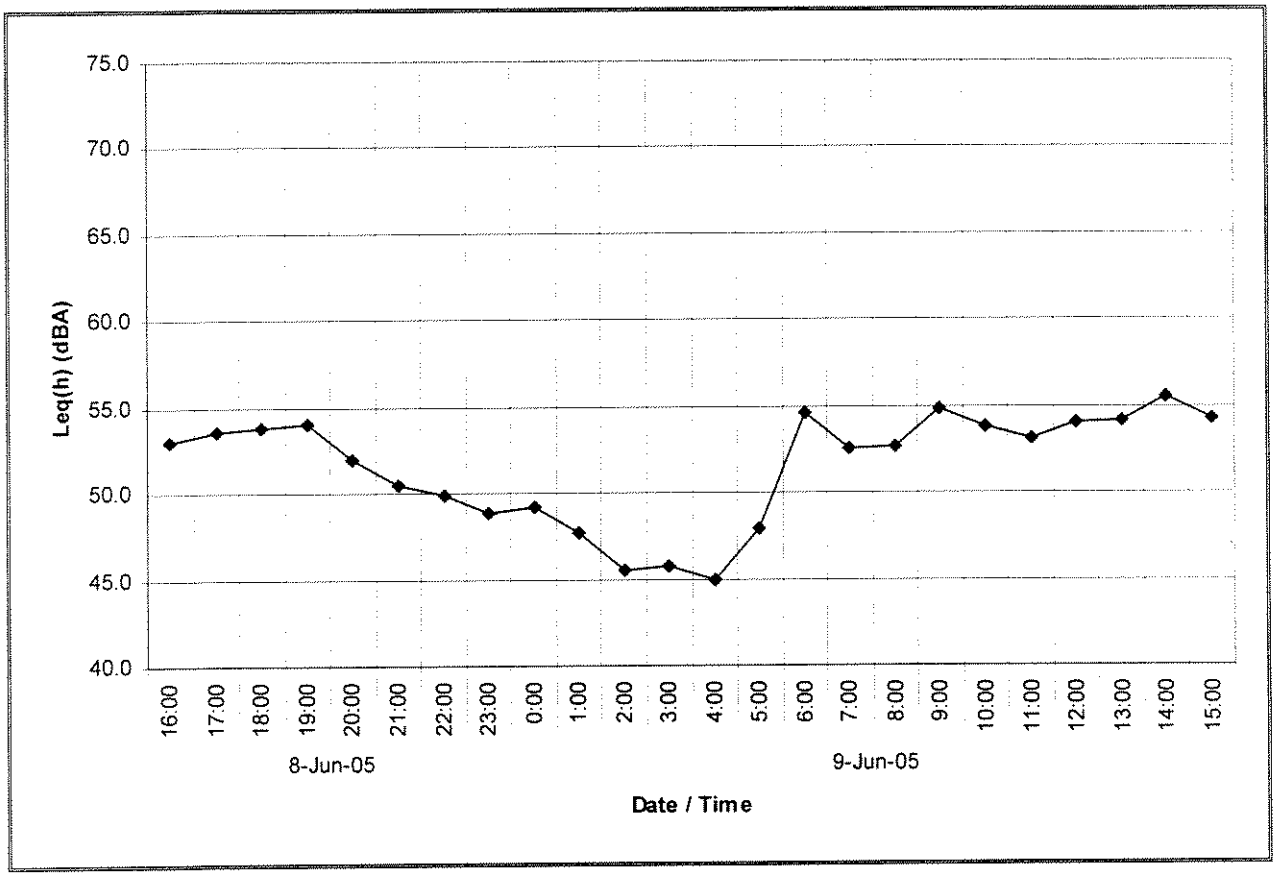
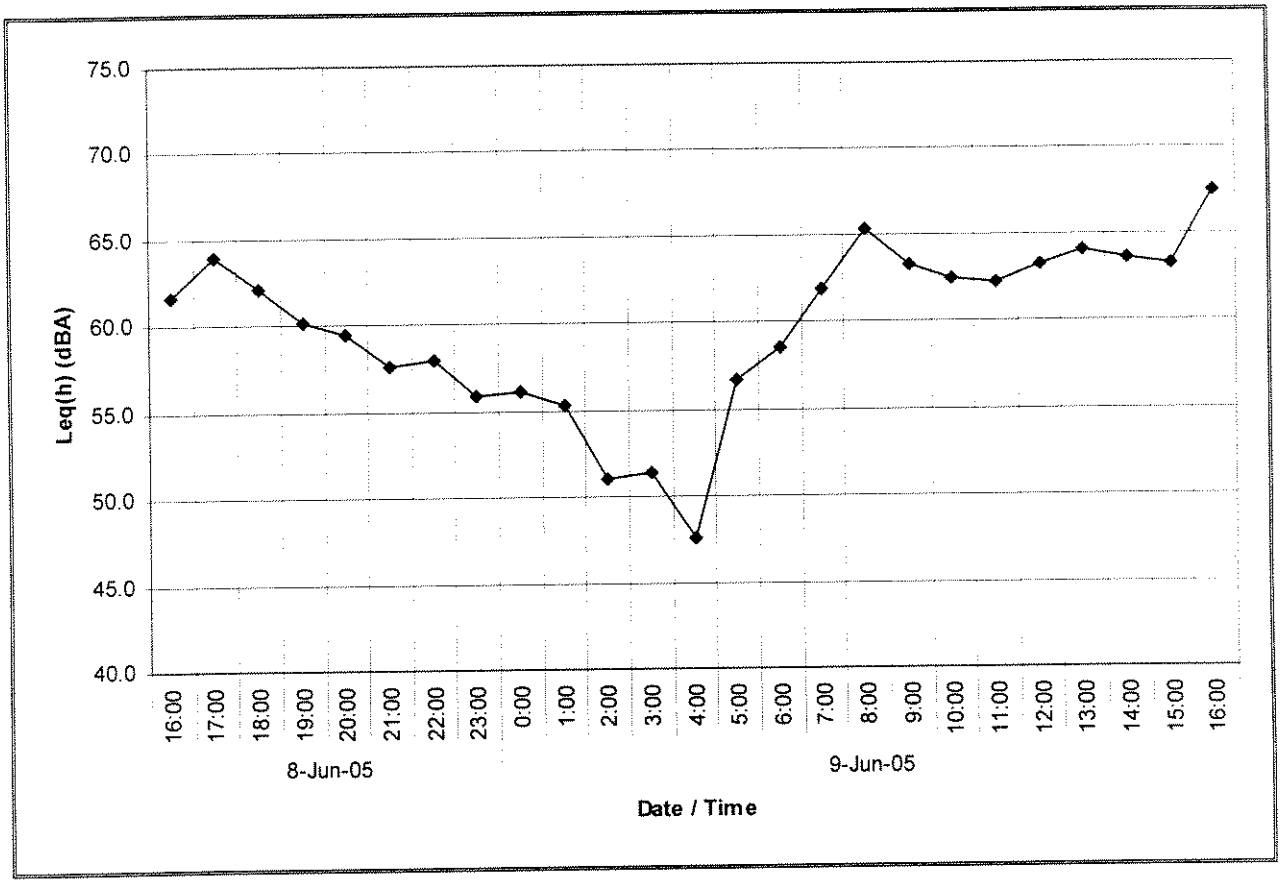


Figure E-4. Hourly Noise Levels: LT-4 (Via Marina at South end of Ballona Lagoon) June 9-10, 2005



File Name.....bin1
Test Location.....LT-1: Pacific Ave @ Lagoo
Employee Name.....
Employee Number...
Department.....
Comment Field 1...Venice Force Main
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-308 SN 2881 V2.3
REPORT PRINTED 06/09/05 AT 14:01:12

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION....100dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME.... 6/08/05 AT 12:23:34
PRE-TEST CALIBRATION RANGE... 43.3dB TO 139.3dB
Calibrator Type & Serial #...

Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN.... 6/08/05 AT 11:30:19
TEST LENGTH... 1 DAYS 1:21:53

Lav..... 55.7dB
SEL.....105.1dB
Lmax..... 92.3dB ON 6/08/05 AT 11:39:15
Lpk.....120 dB ON 6/08/05 AT 11:34:21
TIME OVER 115dB.. 0 DAYS 0:00:00.00

8 HR DOSE (80dB CUTOFF)..... 0.00%
8 HR DOSE (90dB CUTOFF)..... 0.00%

-- TABULAR TIME HISTORY REPORT --

OF PERIODS: 102 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 50.0% Ln(2): 90.0%

DATE: 6/08/05

INT	TIME	Lav	Lmx	Lpk	L1	L2
1	11:30:19	69	92.3	120.6	62	54
2	11:45:19	53.2	68.1	UNR	50	46
3	12:00:19	53.6	65.6	UNR	52	46
4	12:15:19	53.6	64	UNR	52	48
5	12:30:19	51.5	62.4	UNR	49	45
6	12:45:19	51.4	64.8	UNR	49	45

	7	13:00:19	52.3	63.7	UNR	51	47			
	8	13:15:19	52.8	62.6	UNR	51	46			
	9	13:30:19	51.3	64.4	UNR	49	46			
	10	13:45:19	57.6	68.8	UNR	52	47			
	11	14:00:19	52.8	69.1	UNR	48	45			
	12	14:15:19	55.8	68	UNR	53	49			
	13	14:30:19	53.3	69.8	UNR	49	46			
	14	14:45:19	53.2	64.2	UNR	51	45			
	15	15:00:19	52.9	63.5	UNR	50	46			
	16	15:15:19	52.6	63.8	UNR	50	45			
	17	15:30:19	52.9	64.4	UNR	51	48			
	18	15:45:19	51.9	63.9	UNR	49	44			
	19	16:00:19	55	66.2	UNR	51	47			
	20	16:15:19	57.6	74.2	UNR	51	47			
	21	16:30:19	49.9	62	UNR	48	45			
	22	16:45:19	52.7	63	UNR	50	44			
	23	17:00:19	52.9	63.5	UNR	50	47			
	24	17:15:19	50.9	64.6	UNR	49	44			
	25	17:30:19	50	60.6	UNR	48	45			
	26	17:45:19	55.9	71.4	UNR	53	48			
	27	18:00:19	51	61.3	UNR	49	48			
	28	18:15:19	53.1	61.2	UNR	51	48			
	29	18:30:19	52.8	71.9	UNR	50	47			
	30	18:45:19	53.2	66.3	UNR	52	49			
	31	19:00:19	53.8	66.7	UNR	51	49			
	32	19:15:19	50.5	62.4	UNR	48	47			
	33	19:30:19	48.3	59.2	UNR	47	46			
	34	19:45:19	51.6	65.1	UNR	49	46			
	35	20:00:19	51.4	62.9	UNR	48	44			
	36	20:15:19	50.4	61.1	UNR	48	45			
	37	20:30:19	52.4	66.8	UNR	47	44			
	38	20:45:19	49.4	64.4	UNR	44	43			
	39	21:00:19	47.8	62.2	UNR	45	43			
	40	21:15:19	49.8	62	UNR	46	43			
	41	21:30:19	47.1	64.7	UNR	45	43			
	42	21:45:19	49.4	61.1	UNR	47	43			
	43	22:00:19	51.3	62.9	UNR	46	43			
	44	22:15:19	52.2	72.3	UNR	45	43			
	45	22:30:19	47.4	61.6	UNR	44	43			
	46	22:45:19	49	67.3	UNR	45	43			
□	47	23:00:19	47.4	58.3	UNR	44	43			
	48	23:15:19	47.8	62.9	UNR	44	43			
	49	23:30:19	45.4	59.2	UNR	43	43			
	50	23:45:19	46.6	59.7	UNR	43	43			
	51	0:00:19	45.2	55	UNR	43	43			
	52	0:15:19	46.2	59.4	UNR	43	43			
	53	0:30:19	48.5	62.2	UNR	43	43			
	54	0:45:19	49.4	61.2	UNR	44	43			
	55	1:00:19	48.1	62.5	UNR	43	43			
	56	1:15:19	45.2	58	UNR	43	43			
	57	1:30:19	45.1	57.9	UNR	43	43			
	58	1:45:19	44.6	58.4	UNR	43	43			

	59	2:00:19	43.3	46.8	UNR	43	43			
	60	2:15:19	44.5	54	UNR	43	43			
	61	2:30:19	44.7	55.3	UNR	43	43			
	62	2:45:19	44.2	53.3	UNR	43	43			
	63	3:00:19	43.3	47.7	UNR	43	43			
	64	3:15:19	43.8	57.4	UNR	43	43			
	65	3:30:19	44.9	56.2	UNR	43	43			
	66	3:45:19	43.8	57.5	UNR	43	43			
	67	4:00:19	46.6	58	UNR	45	43			
	68	4:15:19	51.2	65.7	UNR	48	45			
	69	4:30:19	52.7	65.2	UNR	51	47			
	70	4:45:19	51.8	70.2	UNR	49	44			
	71	5:00:19	51.4	60.2	UNR	50	46			
	72	5:15:19	51.1	66.2	UNR	50	46			
	73	5:30:19	53.3	67.3	UNR	50	46			
	74	5:45:19	52.5	65.5	UNR	51	46			
	75	6:00:19	58.8	84.8	UNR	51	47			
	76	6:15:19	54.1	65.1	UNR	52	47			
	77	6:30:19	52.7	65	UNR	50	46			
	78	6:45:19	53.2	67.7	UNR	51	46			
	79	7:00:19	52.3	61.8	UNR	50	45			
	80	7:15:19	51.7	61.6	UNR	50	46			
	81	7:30:19	52.8	63.4	UNR	51	47			
	82	7:45:19	54	70.1	UNR	50	45			
	83	8:00:19	52.1	61.9	UNR	49	46			
	84	8:15:19	53.7	65.5	UNR	52	47			
	85	8:30:19	57.5	77.2	UNR	54	51			
	86	8:45:19	70.2	89.8	UNR	55	49			
	87	9:00:19	55.4	69.3	UNR	53	48			
	88	9:15:19	55.1	67.1	UNR	53	49			
	89	9:30:19	52	61.3	UNR	49	46			
	90	9:45:19	53.2	65.6	UNR	51	46			
	91	10:00:19	52.9	64.8	UNR	51	48			
	92	10:15:19	53.5	71.4	UNR	51	46			
	93	10:30:19	53.3	68.1	UNR	51	46			
	94	10:45:19	53	71	UNR	50	47			
	95	11:00:19	53.9	69.7	UNR	51	47			
	96	11:15:19	54.5	64.5	UNR	52	49			
	97	11:30:19	54.8	67.5	UNR	52	47			
	98	11:45:19	54	64.3	UNR	51	47			
	99	12:00:19	54.9	71.6	UNR	51	47			
	100	12:15:19	55.7	79	UNR	49	46			
	101	12:30:19	55	70.4	UNR	53	48			
	102	12:45:19	64.6	81	UNR	57	52			
	-- AMPLITUDE DISTRIBUTION REPORT --									
	TOTAL SAMPLES = 730511									
	dB	SAMPLES	% OF TOTAL							

	43	132300	**********	18.11						
	44	25337	***	3.47						
	45	33851	*****	4.63						
	46	43208	******	5.91						
	47	57972	********	7.94						
	48	54709	*******	7.49						
	49	57668	********	7.89						
	50	57347	********	7.85						
	51	53720	*******	7.35						
	52	48647	*******	6.66						
	53	39812	*****	5.45						
	54	32925	*****	4.51						
	55	22187	***	3.04						
	56	17674	**	2.42						
	57	16094	**	2.2						
	58	9944	*	1.36						
	59	7271	*	1						
	60	4619	*	0.63						
	61	3307	+	0.45						
	62	2523	+	0.35						
	63	1991	+	0.27						
	64	1177	+	0.16						
	65	1117	+	0.15						
	66	930	+	0.13						
	67	734	+	0.1						
	68	684	.	0.09						
	69	607	.	0.08						
	70	412	.	0.06						
	71	316	.	0.04						
	72	262	.	0.04						
	73	157	.	0.02						
	74	159	.	0.02						
	75	125	.	0.02						
	76	134	.	0.02						
	77	109	.	0.01						
	78	75	.	0.01						
	79	82	.	0.01						
	80	99	.	0.01						
	81	61	.	0.01						
	82	39	.	0.01						
	83	36	.	0						
	84	33	.	0						
	85	21	.	0						
	86	14	.	0						
	87	9	.	0						
	88	4	.	0						
	89	4	.	0						
	90	1	.	0						
	91	2	.	0						
	92	2	.	0						
	Ln(0.0) = 92dB									

Ln(10.0) = 55dB			
Ln(50.0) = 49dB			
Ln(99.9) = 43dB			
	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Leq	55.2dB	49.7dB	43.3dB
Ldod	52.6dB	43.3dB	43.3dB
Losha	51.5dB	43.3dB	43.3dB
Leq(6)	51.0dB	43.3dB	43.3dB

File Name.....bin1
Test Location.....LT-2 Vista D.M. @ WaterVu
Employee Name.....
Employee Number...
Department.....
Comment Field 1...Venice Force Main
Comment Field 2...
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-308 SN 3068 V3.0
REPORT PRINTED 06/09/05 AT 14:21:20

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME.... 6/08/05 AT 13:21:14
PRE-TEST CALIBRATION RANGE... 42.7dB TO 142.7dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN.... 6/08/05 AT 13:30:03
TEST LENGTH... 1 DAYS 0:47:08
TEST ENDED.... 6/09/05 AT 14:17:11
TEST INTERRUPTIONS...1

Lav..... 69.9dB
SEL.....119.2dB
Lmax.....107.8dB ON 6/09/05 AT 14:16:37
Lpk.....141.9dB ON 6/09/05 AT 14:16:37
TIME OVER 115dB.. 0 DAYS 0:00:00.00

8 HR DOSE (40dB CUTOFF)..... 2.98%
8 HR DOSE (40dB CUTOFF)..... 2.98%

-- TABULAR TIME HISTORY REPORT --

OF PERIODS: 100 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 50.0% Ln(2): 90.0%

DATE: 6/08/05

INT	TIME	Lav	Lmx	Lpk	L1	L2
1	13:30:03	70.5	82.4	127.5	66	55
2	13:45:03	68.2	79.7	UNR	63	52
3	14:00:03	69.9	79.5	UNR	65	55

	4	14:15:03	71.8	94.4	119.9	64	53				
	5	14:30:03	71.2	91.2	113.9	64	54				
	6	14:45:03	69.6	81.9	UNR	65	53				
	7	15:00:03	69.8	80	UNR	65	54				
	8	15:15:03	71.1	84.9	UNR	65	55				
	9	15:30:03	71.4	83.9	UNR	67	55				
	10	15:45:03	71.7	83.1	UNR	67	55				
	11	16:00:03	71.5	84	UNR	66	55				
	12	16:15:03	72.1	87.9	111	67	56				
	13	16:30:03	71.7	86.2	UNR	66	55				
	14	16:45:03	72.2	87.2	UNR	69	57				
	15	17:00:03	73	84.5	UNR	68	56				
	16	17:15:03	72.3	83.8	UNR	68	56				
	17	17:30:03	72.5	91.6	UNR	68	56				
	18	17:45:03	72.3	80.3	UNR	70	55				
	19	18:00:03	72.3	82.5	UNR	70	57				
	20	18:15:03	72.9	86.2	112.5	69	56				
	21	18:30:03	71.2	80.3	UNR	67	55				
	22	18:45:03	72.2	88.6	115	67	55				
	23	19:00:03	71.8	83.4	UNR	67	56				
	24	19:15:03	70.8	81.1	UNR	66	55				
	25	19:30:03	71.4	84.4	113.9	66	58				
	26	19:45:03	71.7	89	114.7	66	58				
	27	20:00:03	72.4	83.1	113.5	68	57				
	28	20:15:03	69.5	80.4	113	64	57				
	29	20:30:03	68.5	80.5	UNR	61	54				
	30	20:45:03	69.8	85.9	UNR	65	54				
	31	21:00:03	70.4	82.7	UNR	64	54				
	32	21:15:03	68.6	80.2	UNR	63	54				
	33	0.8958681	68.7	79.3	UNR	63	54				
	34	0.9062847	68.3	78.9	UNR	60	51				
	35	0.9167014	68.4	82.5	UNR	63	52				
	36	0.9271181	68.2	82.5	UNR	62	54				
	37	0.9375347	65.4	78	UNR	59	52				
	38	0.9479514	65.3	76.6	UNR	59	53				
	39	0.9583681	66.3	78.6	UNR	61	54				
	40	0.9687847	70.6	94.2	117	60	51				
	41	0.9792014	62.2	75.2	UNR	53	48				
	42	0.9896181	64	82.2	UNR	56	50				
	43	0:00:03	64.8	77.5	UNR	57	51				
	44	0:15:03	63.8	75.9	UNR	58	52				
	45	0:30:03	62.6	77.6	UNR	56	50				
	46	0:45:03	60.5	73.5	UNR	53	49				
	47	1:00:03	61.3	74.3	UNR	54	49				
	48	1:15:03	61.3	74.7	UNR	56	49				
	49	1:30:03	61.4	74.5	UNR	52	49				
	50	1:45:03	63.6	77.9	UNR	56	50				
	51	2:00:03	62.7	76.8	UNR	53	50				
	52	2:15:03	60.1	76.2	UNR	52	50				
	53	2:30:03	60.9	76.4	UNR	54	52				
	54	2:45:03	58	72.7	UNR	52	50				
	55	3:00:03	56.6	75.7	UNR	51	50				

	56	3:15:03	55.3	73.2	UNR	51	50					
	57	3:30:03	55	72.7	UNR	51	49					
	58	3:45:03	58.1	72.7	UNR	50	49					
	59	4:00:03	55.4	77.3	UNR	50	49					
	60	4:15:03	55.1	71.7	UNR	51	49					
	61	4:30:03	58	78.7	UNR	51	49					
	62	4:45:03	58.5	74.8	UNR	51	49					
	63	5:00:03	59.7	73.8	UNR	52	51					
	64	5:15:03	63.5	78.7	UNR	57	53					
	65	5:30:03	65.5	81	UNR	58	53					
	66	5:45:03	65.6	78.8	UNR	59	52					
	67	6:00:03	66.8	77.7	UNR	60	54					
	68	6:15:03	66.7	76.3	UNR	62	54					
	69	6:30:03	70	82.1	UNR	65	55					
	70	6:45:03	69.6	77.7	UNR	66	56					
	71	7:00:03	71.6	83.5	UNR	68	58					
	72	7:15:03	71.4	84.8	UNR	69	58					
	73	7:30:03	71.4	80.9	UNR	69	58					
	74	7:45:03	71.5	80.7	UNR	69	61					
	75	8:00:03	71.6	79.8	UNR	69	58					
	76	8:15:03	71	80.5	UNR	68	57					
	77	8:30:03	70.3	78.9	UNR	67	58					
	78	8:45:03	71.7	83.9	UNR	68	57					
	79	9:00:03	70.6	79.7	UNR	68	59					
	80	9:15:03	70.4	79.4	UNR	68	59					
	81	9:30:03	71.1	83.6	UNR	67	57					
	82	9:45:03	69.7	80.4	UNR	66	57					
	83	10:00:03	68.6	80.3	UNR	64	56					
	84	10:15:03	68.7	80.2	UNR	64	55					
	85	10:30:03	69.5	83.5	UNR	62	55					
	86	10:45:03	69.1	83.1	UNR	64	56					
	87	11:00:03	69.6	84.4	UNR	65	57					
	88	11:15:03	70	85.5	UNR	65	56					
	89	11:30:03	69.7	84.7	UNR	64	56					
	90	11:45:03	69.7	85.4	UNR	65	56					
	91	12:00:03	70.5	84.4	UNR	63	56					
	92	12:15:03	71.3	85.9	UNR	65	57					
	93	12:30:03	70	84.4	UNR	64	56					
	94	12:45:03	69.8	80.2	UNR	66	57					
	95	13:00:03	71.5	84.1	UNR	65	56					
	96	13:15:03	69	78.5	UNR	65	55					
	97	13:30:03	73.3	88	UNR	65	58					
	98	13:45:03	71.2	82.8	UNR	64	56					
	99	14:00:03	70.7	83.7	120.7	65	56					
	100	14:15:03	87.7	108	141.9	70	66					
	-- AMPLITUDE DISTRIBUTION REPORT --											
	TOTAL SAMPLES = 1427652											
	dB	SAMPLES	% OF TOTAL									

44	14	.	0							
45	153	.	0.01							
46	0:00:00	.	0.04							
47	2454	+	0.17							
48	6922	+	0.48							
49	24487	**	1.72							
50	52949	****	3.71							
51	62460	****	4.38							
52	55308	****	3.87							
53	50506	****	3.54							
54	50991	****	3.57							
55	55844	****	3.91							
56	54955	****	3.85							
57	53874	****	3.77							
58	56691	****	3.97							
59	56728	****	3.97							
60	50519	****	3.54							
61	52346	****	3.67							
62	46294	***	3.24							
63	51890	****	3.63							
64	44735	***	3.13							
65	45960	***	3.22							
66	46041	***	3.22							
67	50188	****	3.52							
68	48551	***	3.4							
69	48967	***	3.43							
70	49777	***	3.49							
71	53149	****	3.72							
72	51602	****	3.61							
73	51011	****	3.57							
74	46883	***	3.28							
75	39939	***	2.8							
76	27980	**	1.96							
77	15160	*	1.06							
78	8360	*	0.59							
79	4968	+	0.35							
80	2828	+	0.2							
81	1906	+	0.13							
82	1604	+	0.11							
83	901	.	0.06							
84	321	.	0.02							
85	230	.	0.02							
86	165	.	0.01							
87	105	.	0.01							
88	65	.	0							
89	46	.	0							
90	39	.	0							
91	35	.	0							
92	22	.	0							
93	21	.	0							
94	14	.	0							

95	4	.	0
96	4	.	0
97	4	.	0
98	4	.	0
99	4	.	0
100	4	.	0
101	4	.	0
102	4	.	0
103	4	.	0
104	4	.	0
105	3	.	0
106	4	.	0
107	5	.	0

Ln(1.0) = 78dB			
Ln(10.0) = 74dB			
Ln(50.0) = 62dB			
Ln(90.0) = 51dB			

	NO CUTOFF	40.0dB CUTOFF	40.0dB CUTOFF
Leq	69.4dB	69.4dB	69.4dB
Ldod	67.9dB	67.9dB	67.9dB
Losha	66.9dB	66.9dB	66.9dB
Leq(6)	66.2dB	66.2dB	66.2dB

File Name.....bin3
Test Location.....LT-3: Hurricane Street
Employee Name.....at stream by pump plant
Employee Number...
Department.....
Comment Field 1...29401770.20000 Venice
Comment Field 2...Dual Force Main EIR
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-308 SN 2881 V2.3
REPORT PRINTED 06/13/05 AT 11:38:49

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION....100dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME.... 6/08/05 AT 12:23:34
PRE-TEST CALIBRATION RANGE... 43.3dB TO 139.3dB
Calibrator Type & Serial #...
Calibrator Calibration Date..

-- OVERALL STATISTICS REPORT --

TEST BEGAN.... 6/09/05 AT 15:15:19
TEST LENGTH... 1 DAYS 1:47:26

Lav..... 53.2dB
SEL.....102.7dB
Lmax..... 83.3dB ON 6/09/05 AT 15:19:14
Lpk.....119 dB ON 6/09/05 AT 15:18:55
TIME OVER 115dB.. 0 DAYS 0:00:00.00

8 HR DOSE (80dB CUTOFF)..... 0.00%
8 HR DOSE (90dB CUTOFF)..... 0.00%

-- TABULAR TIME HISTORY REPORT --

OF PERIODS: 106 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 50.0% Ln(2): 90.0%

DATE: 6/09/05

INT	TIME	Lav	Lmx	Lpk	L1	L2
1	15:15:19	62.4	83.3	119.1	52	49
2	15:30:19	56.9	69.1	UNR	53	50
3	15:45:19	54	68.6	UNR	52	49
4	16:00:19	53.6	65.8	UNR	52	48
5	16:15:19	53.6	65.3	UNR	52	49
6	16:30:19	52.9	59.6	UNR	51	49

	7	16:45:19	51.7	58.5	UNR	50	48				
	8	17:00:19	52.9	65.6	UNR	50	48				
	9	17:15:19	55.2	67.4	UNR	53	49				
	10	17:30:19	53.4	65.4	UNR	51	48				
	11	17:45:19	52.6	59.6	UNR	51	48				
	12	18:00:19	54.1	62.6	UNR	52	48				
	13	18:15:19	52.4	58.8	UNR	51	49				
	14	18:30:19	55	68.3	UNR	52	49				
	15	18:45:19	53.3	60.8	UNR	52	49				
	16	19:00:19	52.8	60.9	UNR	51	49				
	17	19:15:19	52.3	62.1	UNR	50	48				
	18	19:30:19	55.9	71.7	UNR	51	47				
	19	19:45:19	54	66.3	UNR	50	47				
	20	20:00:19	52	59.5	UNR	50	47				
	21	20:15:19	53.2	60.5	UNR	52	47				
	22	20:30:19	51.4	59.5	UNR	49	46				
	23	20:45:19	51	58.1	UNR	49	45				
	24	21:00:19	51.1	58	UNR	49	47				
	25	21:15:19	50.8	60	UNR	48	46				
	26	21:30:19	49.9	56.1	UNR	48	45				
	27	21:45:19	50.1	58.3	UNR	48	45				
	28	22:00:19	51.5	71.9	118.3	49	46				
	29	22:15:19	49.4	60.8	UNR	48	45				
	30	22:30:19	50	61.7	UNR	47	44				
	31	22:45:19	48.1	55.1	UNR	46	44				
	32	23:00:19	49.3	57.8	UNR	47	44				
	33	23:15:19	48.6	61.5	UNR	46	43				
	34	23:30:19	47.2	54.9	UNR	45	43				
	35	23:45:19	50	61.7	UNR	46	44				
	36	0:00:19	48.9	63	UNR	45	44				
	37	0:15:19	50.9	66.6	UNR	48	44				
	38	0:30:19	48.2	57.1	UNR	45	43				
	39	0:45:19	48	64.4	UNR	45	44				
	40	1:00:19	48	57.4	UNR	45	43				
	41	1:15:19	47.9	59.3	UNR	44	43				
	42	1:30:19	47.3	55.3	UNR	44	43				
	43	1:45:19	47.5	67.2	UNR	43	43				
	44	2:00:19	45.4	52.7	UNR	43	43				
	45	2:15:19	45.4	53.7	UNR	43	43				
	46	2:30:19	45.5	53.3	UNR	43	43				
□	47	2:45:19	45.7	54.4	UNR	43	43				
	48	3:00:19	46.3	57.1	UNR	43	43				
	49	3:15:19	46.3	53.9	UNR	44	43				
	50	3:30:19	45	55	UNR	43	43				
	51	3:45:19	45	53.4	UNR	43	43				
	52	4:00:19	44.7	51.9	UNR	43	43				
	53	4:15:19	45.6	50.4	UNR	44	43				
	54	4:30:19	44.7	50.8	UNR	43	43				
	55	4:45:19	44.6	54.2	UNR	43	43				
	56	5:00:19	47.2	65.4	UNR	45	43				
	57	5:15:19	48.3	58.8	UNR	47	45				
	58	5:30:19	48.6	57.3	UNR	47	44				

	59	5:45:19	47.7	59.9	UNR	46	44				
	60	6:00:19	49.5	66.3	UNR	47	44				
	61	6:15:19	53.8	72.5	UNR	48	44				
	62	6:30:19	57.6	69.6	UNR	55	48				
	63	6:45:19	54.1	63.2	UNR	52	48				
	64	7:00:19	52.9	65.7	UNR	50	47				
	65	7:15:19	52.6	63.4	UNR	51	49				
	66	7:30:19	52.1	61.3	UNR	51	48				
	67	7:45:19	52.7	68.8	UNR	51	47				
	68	8:00:19	52.1	66.9	UNR	50	47				
	69	8:15:19	51.7	65.5	UNR	50	48				
	70	8:30:19	53.2	64.4	UNR	52	49				
	71	8:45:19	53.7	63.6	UNR	52	49				
	72	9:00:19	53.6	62.6	UNR	52	48				
	73	9:15:19	55.9	66.6	UNR	55	51				
	74	9:30:19	61.9	83.3	UNR	54	50				
	75	9:45:19	55.2	65	UNR	53	50				
	76	10:00:19	55.6	71.2	UNR	52	50				
	77	10:15:19	53	62.2	UNR	52	48				
	78	10:30:19	52	63.1	UNR	51	47				
	79	10:45:19	53.7	77.1	UNR	51	48				
	80	11:00:19	53.3	64.1	UNR	51	49				
	81	11:15:19	53.4	63.9	UNR	52	49				
	82	11:30:19	53.6	63.1	UNR	52	49				
	83	11:45:19	52	68.4	UNR	50	48				
	84	12:00:19	52.8	62.4	UNR	51	48				
	85	12:15:19	52.1	59	UNR	51	48				
	86	12:30:19	52.9	64.1	UNR	51	48				
	87	12:45:19	56.5	74.5	UNR	53	49				
	88	13:00:19	53.3	62.2	UNR	52	49				
	89	13:15:19	54.3	62.2	UNR	52	49				
	90	13:30:19	55	61.6	UNR	54	49				
	91	13:45:19	54.1	62	UNR	52	49				
	92	14:00:19	57.5	74.2	UNR	53	50				
	93	14:15:19	54.9	72.3	UNR	52	50				
	94	14:30:19	52.5	61.6	UNR	51	48				
	95	14:45:19	55.6	71.5	UNR	52	49				
	96	15:00:19	56.2	69.7	UNR	53	49				
	97	15:15:19	53.8	62.4	UNR	53	50				
	98	15:30:19	53.7	63.5	UNR	52	50				
	99	15:45:19	52.9	62.8	UNR	52	49				
	100	16:00:19	53.4	59.2	UNR	52	49				
	101	16:15:19	52.5	62.2	UNR	51	48				
	102	16:30:19	53	62.6	UNR	52	50				
	103	16:45:19	52.8	68.4	UNR	51	49				
	104	17:00:19	58.1	72.4	UNR	53	50				
	DATE: 6/10/05										
	INT	TIME	Lav	Lmx	Lpk	L1	L2				
	105	17:03:00	51.9	53.3	UNR	51	50				

DATE: 6/10/05

INT	TIME	Lav	Lmx	Lpk	L1	L2
106	17:03:08	53.7	54.1	UNR	53	53

-- AMPLITUDE DISTRIBUTION REPORT --

TOTAL SAMPLES = 742774

dB	SAMPLES	% OF TOTAL	
43	71364	**********	9.61
44	37095	*****	4.99
45	30311	****	4.08
46	29148	****	3.92
47	40753	*****	5.49
48	50579	*******	6.81
49	73468	**********	9.89
50	72973	**********	9.82
51	71627	**********	9.64
52	67928	*********	9.15
53	59806	********	8.05
54	49413	*******	6.65
55	29976	****	4.04
56	18049	**	2.43
57	15372	**	2.07
58	9235	*	1.24
59	5620	*	0.76
60	2819	+	0.38
61	1918	+	0.26
62	1354	+	0.18
63	1047	+	0.14
64	725	.	0.1
65	593	.	0.08
66	351	.	0.05
67	241	.	0.03
68	209	.	0.03
69	193	.	0.03
70	132	.	0.02
71	113	.	0.02
72	78	.	0.01
73	70	.	0.01
74	46	.	0.01
75	26	.	0
76	22	.	0
77	21	.	0
78	19	.	0
79	14	.	0
80	23	.	0
81	24	.	0
82	13	.	0

	83	6	.	0							
	Ln(0.0) = 83dB										
	Ln(10.0) = 55dB										
	Ln(50.0) = 50dB										
	Ln(99.9) = 43dB										
		NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF							
	Leq	52.8dB	43.3dB	43.3dB							
	Ldod	51.7dB	43.3dB	43.3dB							
	Losha	51.3dB	43.3dB	43.3dB							
	Leq(6)	51.0dB	43.3dB	43.3dB							

File Name.....bin4
Test Location.....LT-4: Via Marina @ S end
Employee Name.....@ S end of Grand Channel
Employee Number...by Marina Del Rey Chanel
Department.....
Comment Field 1...29401770.20000 Venice
Comment Field 2...Dual Force Main EIR
Numeric Code #1... #2... #3... #4... #5...

METROSONICS db-308 SN 3068 V3.0
REPORT PRINTED 06/13/05 AT 11:45:37

EXCHANGE RATE..... 3dB FILTER.....A WGHT
DOSE CRITERION.... 90dB RESPONSE...SLOW
PRE-TEST CALIBRATION TIME.... 6/08/05 AT 13:21:14
PRE-TEST CALIBRATION RANGE... 42.7dB TO 142.7dB
NO POST-TEST CALIBRATION
Calibrator Type & Serial #..._____

Calibrator Calibration Date.._____

-- OVERALL STATISTICS REPORT --

TEST BEGAN.... 6/09/05 AT 16:00:03
TEST LENGTH... 1 DAYS 1:14:45
TEST ENDED.... 6/10/05 AT 17:14:48
TEST INTERRUPTIONS...1

Lav..... 62.7dB
SEL.....112.1dB
Lmax..... 99.9dB ON 6/10/05 AT 13:01:01
Lpk.....127.4dB ON 6/09/05 AT 16:00:03
TIME OVER 115dB.. 0 DAYS 0:00:00.00

8 HR DOSE (40dB CUTOFF)..... 0.57%
8 HR DOSE (40dB CUTOFF)..... 0.57%

-- TABULAR TIME HISTORY REPORT --

OF PERIODS: 101 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 50.0% Ln(2): 90.0%

DATE: 6/09/05

INT	TIME	Lav	Lmx	Lpk	L1	L2
1	16:00:03	61.1	78.5	127.4	57	50
2	16:15:03	61.8	78.2	UNR	58	50
3	16:30:03	62.7	79.8	UNR	56	49

	4	16:45:03	60.8	80.5	UNR	55	49			
	5	17:00:03	67.7	88.1	UNR	56	49			
	6	17:15:03	59.2	69.5	UNR	56	50			
	7	17:30:03	63.5	79.5	UNR	58	51			
	8	17:45:03	59.9	75.2	UNR	57	48			
	9	18:00:03	62.1	77.7	UNR	57	50			
	10	18:15:03	64.3	89.5	UNR	55	50			
	11	18:30:03	60.8	74.9	UNR	57	51			
	12	18:45:03	60	73.9	UNR	57	51			
	13	19:00:03	61.2	76.2	UNR	57	50			
	14	19:15:03	59.4	71.8	UNR	55	50			
	15	19:30:03	60.6	73.3	UNR	57	47			
	16	19:45:03	59.5	71.8	UNR	55	46			
	17	20:00:03	60	74.7	UNR	55	47			
	18	20:15:03	60.1	76.1	UNR	54	49			
	19	20:30:03	60	75.7	UNR	55	47			
	20	20:45:03	57.6	68.7	UNR	52	44			
	21	21:00:03	57.3	71.2	UNR	53	46			
	22	21:15:03	57.5	74	UNR	51	43			
	23	21:30:03	58.6	78.9	UNR	50	43			
	24	21:45:03	57	69.6	UNR	51	43			
	25	22:00:03	58.6	75.5	UNR	53	44			
	26	22:15:03	57.9	71.2	UNR	54	46			
	27	22:30:03	57.9	70.7	UNR	50	42			
	28	22:45:03	57.4	71.1	UNR	53	45			
	29	23:00:03	56.5	67.9	UNR	52	43			
	30	23:15:03	54.9	67.5	UNR	47	43			
	31	23:30:03	52.9	65.5	UNR	45	42			
	32	23:45:03	57.8	74.4	UNR	47	42			
	33	0:00:03	57.5	72.2	UNR	49	42			
	34	0:15:03	55.3	72.7	UNR	48	42			
	35	0:30:03	56.3	72.5	UNR	48	42			
	36	0:45:03	54.8	67.2	UNR	47	42			
	37	1:00:03	55.9	68.3	UNR	50	42			
	38	1:15:03	55.7	69.2	UNR	49	42			
	39	1:30:03	55.2	68.4	UNR	49	42			
	40	1:45:03	54.4	67.1	UNR	42	42			
	41	2:00:03	49.9	64.1	UNR	42	42			
	42	2:15:03	49.3	66.3	UNR	42	42			
	43	2:30:03	52.6	71.4	UNR	42	42			
	44	2:45:03	51.8	73.8	UNR	42	42			
	45	3:00:03	54.3	73.5	UNR	42	42			
	46	3:15:03	48.8	68.3	UNR	42	42			
□	47	3:30:03	49.2	65.7	UNR	42	42			
	48	3:45:03	50.8	69.1	UNR	42	42			
	49	4:00:03	49.9	66.3	UNR	43	42			
	50	4:15:03	47.2	66	UNR	42	42			
	51	4:30:03	43	48.3	UNR	42	42			
	52	4:45:03	47.7	64.1	UNR	42	42			
	53	5:00:03	50.2	64.4	UNR	44	42			
	54	5:15:03	55.9	75.1	UNR	45	43			
	55	5:30:03	59.2	77.9	UNR	49	44			

	56	5:45:03	57.3	77.6	UNR	46	44			
	57	6:00:03	57.9	80.8	UNR	46	42			
	58	6:15:03	57.6	78.3	UNR	50	45			
	59	6:30:03	58.8	78.8	UNR	51	46			
	60	6:45:03	59.4	78.5	UNR	55	48			
	61	7:00:03	58	73.9	UNR	54	49			
	62	7:15:03	62.6	82.4	UNR	56	51			
	63	7:30:03	64.2	82.3	UNR	56	49			
	64	7:45:03	60.5	79.2	UNR	57	47			
	65	8:00:03	70.3	97.2	121.8	56	48			
	66	8:15:03	58.9	70.8	UNR	55	48			
	67	8:30:03	59.8	74.7	UNR	55	50			
	68	8:45:03	60.4	75	UNR	55	49			
	69	9:00:03	59.3	70.5	UNR	55	48			
	70	9:15:03	61.6	81	UNR	57	49			
	71	9:30:03	65.9	85	UNR	59	50			
	72	9:45:03	63.2	80.9	UNR	56	47			
	73	10:00:03	62.7	77.9	UNR	58	50			
	74	10:15:03	62.6	79.5	UNR	57	49			
	75	10:30:03	63.3	76.1	UNR	59	51			
	76	10:45:03	61.2	76.7	UNR	56	50			
	77	11:00:03	62.6	79.2	UNR	58	50			
	78	11:15:03	62.8	73.6	UNR	58	51			
	79	11:30:03	62.6	79.3	UNR	57	51			
	80	11:45:03	60.6	72.8	UNR	53	47			
	81	12:00:03	64.7	84.1	UNR	60	52			
	82	12:15:03	63	78.6	UNR	58	51			
	83	12:30:03	62.8	78.3	UNR	58	51			
	84	12:45:03	61.8	77.5	UNR	58	52			
	85	13:00:03	76.2	99.9	111	60	54			
	86	13:15:03	62.9	76.7	UNR	58	51			
	87	13:30:03	63.9	77.1	UNR	60	54			
	88	13:45:03	65.3	84.3	UNR	58	52			
	89	14:00:03	63.9	81.2	UNR	58	51			
	90	14:15:03	63	79.8	UNR	59	52			
	91	14:30:03	63	78.9	UNR	57	51			
	92	14:45:03	64.2	81.5	UNR	59	52			
	93	15:00:03	63.3	77.7	UNR	58	52			
	94	15:15:03	62.8	78.9	UNR	58	52			
	95	15:30:03	64	79.5	UNR	58	53			
	96	15:45:03	62.6	76.8	UNR	59	52			
	97	16:00:03	67.9	77.1	UNR	63	53			
	98	16:15:03	68.4	88.7	112.1	61	52			
	99	16:30:03	64.5	77.3	UNR	59	51			
	100	16:45:03	68.1	89.6	111.5	58	52			
	101	17:00:03	62.5	78.2	UNR	58	51			
	-- AMPLITUDE DISTRIBUTION REPORT --									
	TOTAL SAMPLES = 1454173									

dB	SAMPLES	% OF TOTAL	
42	162817	**********	11.2
43	44285	***	3.05
44	38597	***	2.65
45	38620	***	2.66
46	32846	**	2.26
47	40174	***	2.76
48	35924	**	2.47
49	48603	***	3.34
50	53602	****	3.69
51	61297	****	4.22
52	67961	*****	4.67
53	65244	****	4.49
54	67383	*****	4.63
55	70659	*****	4.86
56	65796	*****	4.52
57	63802	****	4.39
58	68262	*****	4.69
59	64791	****	4.46
60	57917	****	3.98
61	56716	****	3.9
62	47785	***	3.29
63	46376	***	3.19
64	36022	**	2.48
65	29692	**	2.04
66	23375	**	1.61
67	17587	*	1.21
68	12056	*	0.83
69	8847	*	0.61
70	6728	+	0.46
71	4904	+	0.34
72	3757	+	0.26
73	3032	+	0.21
74	2237	+	0.15
75	1760	+	0.12
76	1448	.	0.1
77	844	.	0.06
78	622	.	0.04
79	510	.	0.04
80	344	.	0.02
81	205	.	0.01
82	170	.	0.01
83	106	.	0.01
84	75	.	0.01
85	46	.	0
86	56	.	0
87	55	.	0
88	68	.	0
89	37	.	0
90	10	.	0
91	10	.	0

	92	11	.	0							
	93	11	.	0							
	94	11	.	0							
	95	12	.	0							
	96	13	.	0							
	97	12	.	0							
	98	16	.	0							
	99	27	.	0							
	Ln(1.0) = 72dB										
	Ln(10.0) = 64dB										
	Ln(50.0) = 54dB										
	Ln(90.0) = 42dB										
		NO CUTOFF	40.0dB CUTOFF	40.0dB CUTOFF							
	Leq	62.2dB	62.2dB	62.2dB							
	Ldod	59.5dB	59.5dB	59.5dB							
	Losha	58.2dB	58.2dB	58.2dB							
	Leq(6)	57.4dB	57.4dB	57.4dB							

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APPENDIX I

VISUAL AND AESTHETIC RESOURCES

VENICE PUMPING PLANT

DUAL FORCE MAIN PROJECT EIR

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Appendix I

VISUAL/AESTHETIC RESOURCES

1.0 Overview

This report assesses the potential for the construction of the Venice Pumping Plant Dual Force Main (the Proposed Project) to adversely impact the Visual/Aesthetic Resources (Visual Resources) in the project vicinity and the significance of such impacts. The analytical approach to addressing these concerns is compliant with the requirements of CEQA and addresses the City of Los Angeles Draft CEQA Threshold Guide for determining impact significance. Accordingly, the visual resources assessment:

- Identifies those views potentially affected by the Project over which the public is most likely to express concern (critically sensitive public views);
- Describes the existing character and quality of those potentially affected critically sensitive views;
- Estimates the intensity of possible adverse visual impacts on those views;
- Evaluates the significance of the possible impacts; and
- As applicable, considers possible mitigation measures that could lessen the impacts to negligible levels of intensity.

2.0 Environmental Setting

2.1 Visual Sensitivity

2.1.1 Technical Approach

The technical approach to this visual impact assessment is presented in detail in Attachment A. The following is a summary of the approach to assessing Visual Sensitivity, the first attribute of the affected landscape to be addressed. Sensitivity is the social setting for visual resources. As applied to visual impact analyses, sensitivity refers to public attitudes about specific views, or interrelated views, and is the key to assessing how important a visual impact may be and whether or not it represents a significant

impact. To assess visual sensitivity, indicators of public concern were identified and sensitivity rated accordingly. The indicators are listed in Table K-1 of Attachment A and reflect the concepts and methods of several federal agencies that treat sensitivity as a function of viewer activity, awareness, values, and goals.

The four levels of sensitivity are high, moderate, low and no sensitivity.

- **High Sensitivity.** High sensitivity suggests that at least some part of the public is likely to react strongly to a threat to visual quality. A highly concerned public is assumed to be more aware of any given level of adverse change and less tolerant than a public that has little concern. A small modification of the existing landscape may be visually distracting to a highly sensitive public and represent a substantial reduction in visual quality.
- **Moderate Sensitivity.** Moderate sensitivity suggests that the public would probably voice some concern over substantial visual impacts. Often the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.
- **Low Sensitivity.** Low sensitivity is considered to prevail where the public is expected to have little or no concern about changes in the landscape. This may be because the affected views are not "public" (not accessible to the public) or because there are no indications that the public values the affected views.
- **No Sensitivity**. There is no sensitivity where the potentially affected views are not "public" (not accessible to the general public) or because there are no indications that the affected views are valued by the public.

2.1.2 Sensitivity of Project Locale

By definition (Table K-1, Attachment A), views from areas serving residential, recreational and tourism land uses, as well as from the transportation routes serving those land uses, are considered to be highly sensitive. The public is expected to value such views and potentially to react strongly to adverse changes in the visual character and quality of their surroundings.

The Coastal Commission's primary concern over visual resources within the Coastal Zone is:

> "...the protection of ocean and coastal views from public areas such as highways, roads, beaches, parks, coastal trails and accessways, vista points, coastal streams and waters used for recreational purposes, and other public preserves rather than coastal views from private residences where no public vistas are involved."

The last statement notwithstanding, this assessment considers the collective views from homes within residential areas and those from the roads serving as primary access to them to be highly sensitive and important to the consideration of the significance of visual impacts.

The Proposed Project Alternative Alignments are, with one exception, located in the City of Los Angeles within what are primarily residential areas in the communities of Venice, Westchester and Playa del Rey. The exception is an alternative alignment which would

pass through Marina del Rey, an unincorporated area within Los Angeles County. The Venice, Westchester, Playa del Rey and Marina del Rey areas also feature commercial, industrial, and tourism/recreation land uses. Views from residential and recreation land use areas are highly sensitive (Table K-1, Attachment A), and such areas flank, or are near, the Venice and Marina del Rey Alternative Alignments, as well as the Westchester/Playa del Rey Alignment Alternative

Large Diameter (Mined) Tunnel alignment alternatives would primarily present limited areas of disturbance above ground, these being the Starter and Extraction Shaft sites. These sites are within view of beach recreation sites and residential areas. Also, some aspects of the Project Alternatives would be within the field of view of recreation marine traffic passing along the Marina del Rey Entrance Channel. Further, certain roads within the marina area and one in Playa del Rey are part of routes that have been designated as Scenic Highways and, in one case, also as a Scenic Drive.

Marina Del Rey Alignment

Marquesas Way/Via Marina

Sensitivity. Figure 1 shows the viewing positions used in this assessment. There are numerous highly sensitive viewing positions within and around Marina del Rey, given its scenic, recreation and tourist-oriented attractions. Foremost among these are views from Via Marina, Admiralty Way and Fiji Way, which form a route designated as a Scenic Highway and also to be designated as a Scenic Drive (Scenic Highway Element, Los Angeles County General Plan; see Section 3.1, Coastal Plan Policies). Of specific importance to the Proposed Project is Via Marina, from its intersection with Marquesas Way to where it turns sharply to the southwest to parallel the entrance channel for the marina. Along this stretch of road there would be cut-and-cover pipeline installation, as well as the construction of receive and Push Sites for micro-tunneling.

A number of recreation and tourist attractions are to be found in the marina: Burton Chace Park, Fisherman's Village, Admiralty Park, Mother's Beach, and the picturesque marina itself. Views from these locations, however, are not important to the analysis, as they do not include Project construction activities and sites. On the other hand, at the southeast end of Via Marina, where it turns to the southwest, there is a small park called Aubrey E. Austin Park. There, too, is the northeast end of the North Jetty Promenade, a popular walk along the scenic Marina del Rey Entrance Channel. Views from Aubrey Park and the Promenade are also, by definition, highly sensitive, and the receive site for the micro-tunneling connection to the Marina del Rey Alignment would be within full view of these recreation resources across Via Marina.

A moderately high-density multi-family residential area lines both sides of Marquesas Way and the west side of Via Marina. Both of these roads serve as the primary access to the residential areas flanking Ballona Lagoon and the Grand Canal to the west. The collective views from the residences on Via Marina and Marquesas Way are highly sensitive. Because these roads are part of the primary access to these residential areas, road-based views would be considered to be highly sensitive. As noted, Via Marina is also highly sensitive due to its Scenic Highway/Scenic Drive status.

Also, some aspects of the Project Alternatives would be seen from boats passing along the Entrance Channel, and such views, being recreation oriented, are highly sensitive.

Critical Views. Critical views are partly defined as those that are the most sensitive, as described in the previous section. Where the public is considered to be potentially moderately to highly sensitive to changes in visual quality, there is likely to be a substantial concern over noticeably adverse visual impacts.

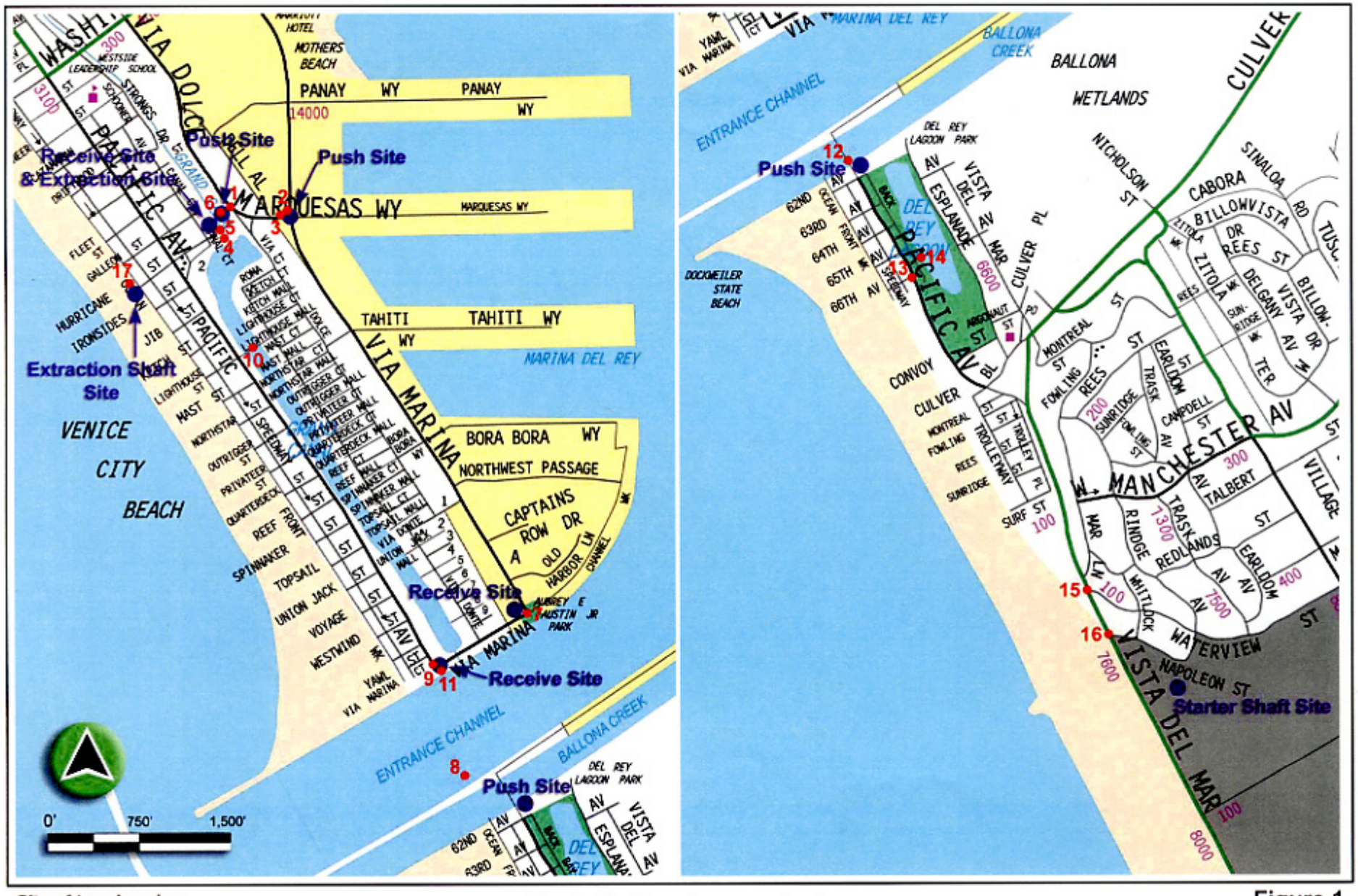
Critical views also are defined as being those which would be most affected by the subject action (e.g., the greatest intensity of impact due to viewer proximity to the project, duration of the affected view, the frequency of viewing, etc.). Consideration is also given to having the views be representative of the public experience; i.e., that they be from viewing positions frequently used by the public and readily located, based on the description and photographs presented in the visual impact assessment. The views critical to the analysis of visual impacts due to the Marina del Rey Alternative Alignment are those from Via Marina, a scenic highway and scenic drive, from Marquesas Way to where it turns to the southwest to flank the channel; from the residences bordering this road and Marqessas Way; from the residences lining the east side of the Grand Canal near the Venice Pumping Plant; from the Grand Canal in this vicinity; from the residences at the northeast end of Hurricane St., next to the Pumping Plant; from Aubrey E. Austin Park; from the east end of North Jetty Promenade; and from the Marina del Rey Entrance Channel. The Proposed construction activities would be in the foreground of these views.

Figures 2 and -3, show representative views of Marquesas Way and Via Marina, in the vicinity of the two optional Push Sites for micro-tunneling under Ballona Lagoon to the receive site opposite the Venice Pumping Plant. Also shown in these figures are optional construction/laydown areas that would support the construction and operation of the two alternative Push Sites. Figure 4 shows the receive site at the Venice Pumping Plant, which is in the vacant lot opposite the Plant, as well as Push Site Option 2, in the vacant lot on the east side of the canal. These sites would be within full view from the residences lining the east side of Ballona Lagoon/Grand Canal across from the Plant, as well as those walking along the lagoon/canal or boating on it.

Figure 5 is a panoramic view from a residence along the east bank of the Grand Canal across from the Venice Pumping Station. This view shows the point where the canal becomes "Ballona Lagoon," which is at the left corner of the Plant, in the upper image. Recreationists walking along the canal and the lagoon, or boating on these waters, would be expected to be highly sensitive to visual impacts. As noted above, the receive site for the Marquesas Way/Via Marina alignment alternative would be in the vacant lot shown in Figure 5.

Figure 6 shows the view from Aubrey E. Austin Park, looking to the northwest along Via Marina. This view shows the location of one option for the receive site for the under-channel micro-tunneling construction alternative. The site is within the parking lot shown in the upper image, and the construction/laydown area would also be within this parking lot. The view shown also represents that from the North Jetty Promenade and Via Marina.

Figure 7 is a panoramic view from the Entrance Channel that includes the Via Marina receive site as well as Aubrey E. Austin Park. Views from the channel would not be the most critical, as they would be comparatively distant, relative to views from Via Marina, Aubrey E. Austin Park, and the North Jetty Promenade. While boats may pass along the northwest side of the channel and be within about 240 ft of the nearest Project feature, the North Jetty would block such views. From points nearer the center of the Channel but



City of Los Angeles
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Dual Force Main Project

Viewing Positions Corresponding to
Figures 2 - 15

Figure 1

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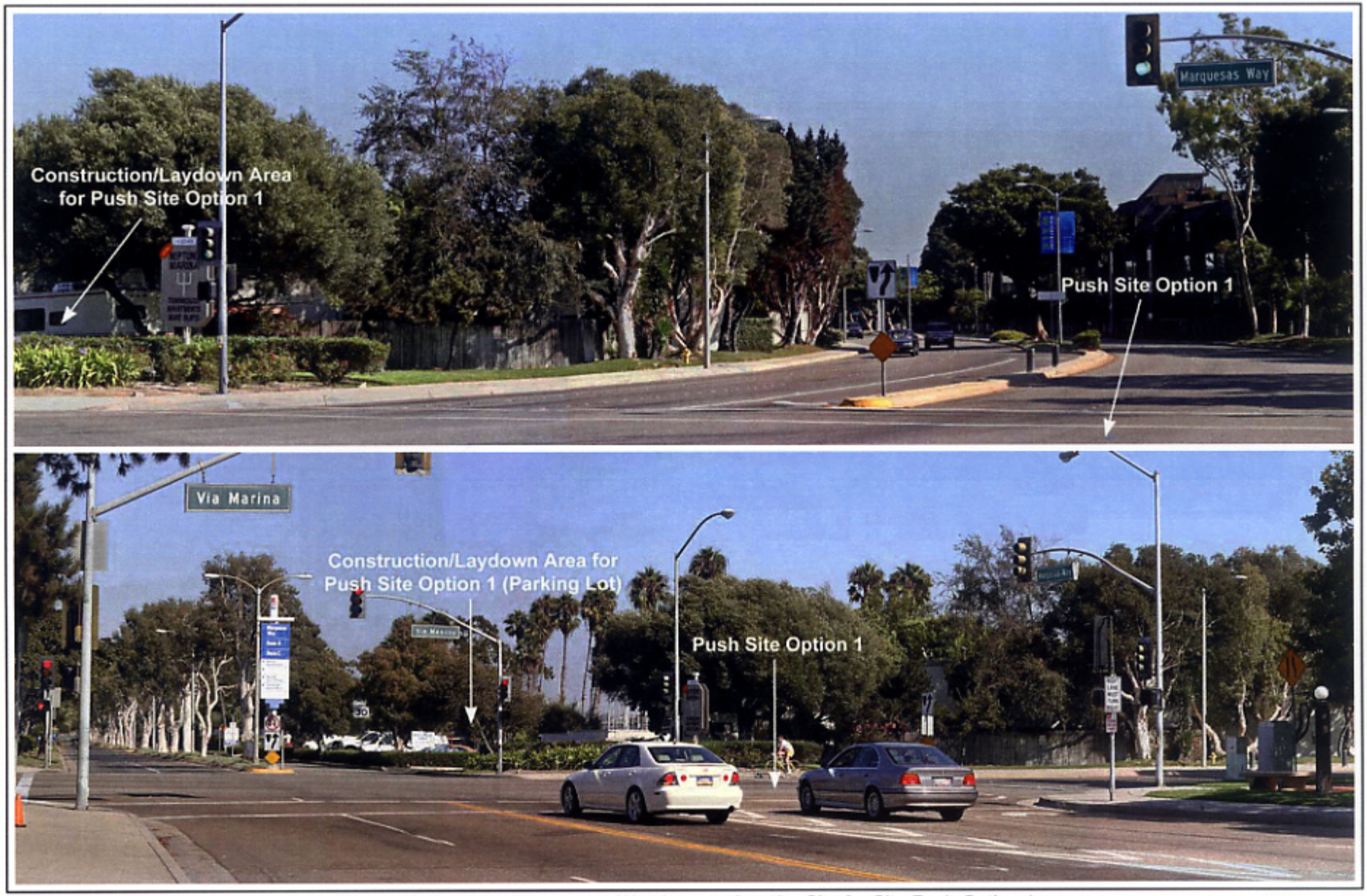
Panorama Showing Site for Push Option 2 for
Marquesas Way/Via Marina Cut-and-Cover Alternative,
Seen from Marquesas Way/Via Dolce Intersection (VP 1).

Figure 2



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Views of Via Marina/Marquesas Way Intersection, the Site for Site Push Option 1 for Marquesas Way/Via Marina Cut-and-Cover Alternative, Seen from, and near, Marquesas Way/Via Dolce Intersection (VPs 2 and 3).

Figure 3

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(Top): View along the Grand Canal Showing Residences from Which Receive and Push Sites, Cut-and-Cover, or Extraction Shaft Construction Activities Would Be Seen (VP 4). **(Bottom):** Hurricane St. at the Venice Pumping Plant, Showing Receive and Alternative Extraction Shaft Sites (VP 5).

Figure 4

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View from Residence on East Side of Ballona Lagoon/Grand Canal Showing the Venice Pumping Plant, a Receive Site for Micro-Tunneling, and Optional Mined Tunneling Extraction Site (VP 6).

Figure 5

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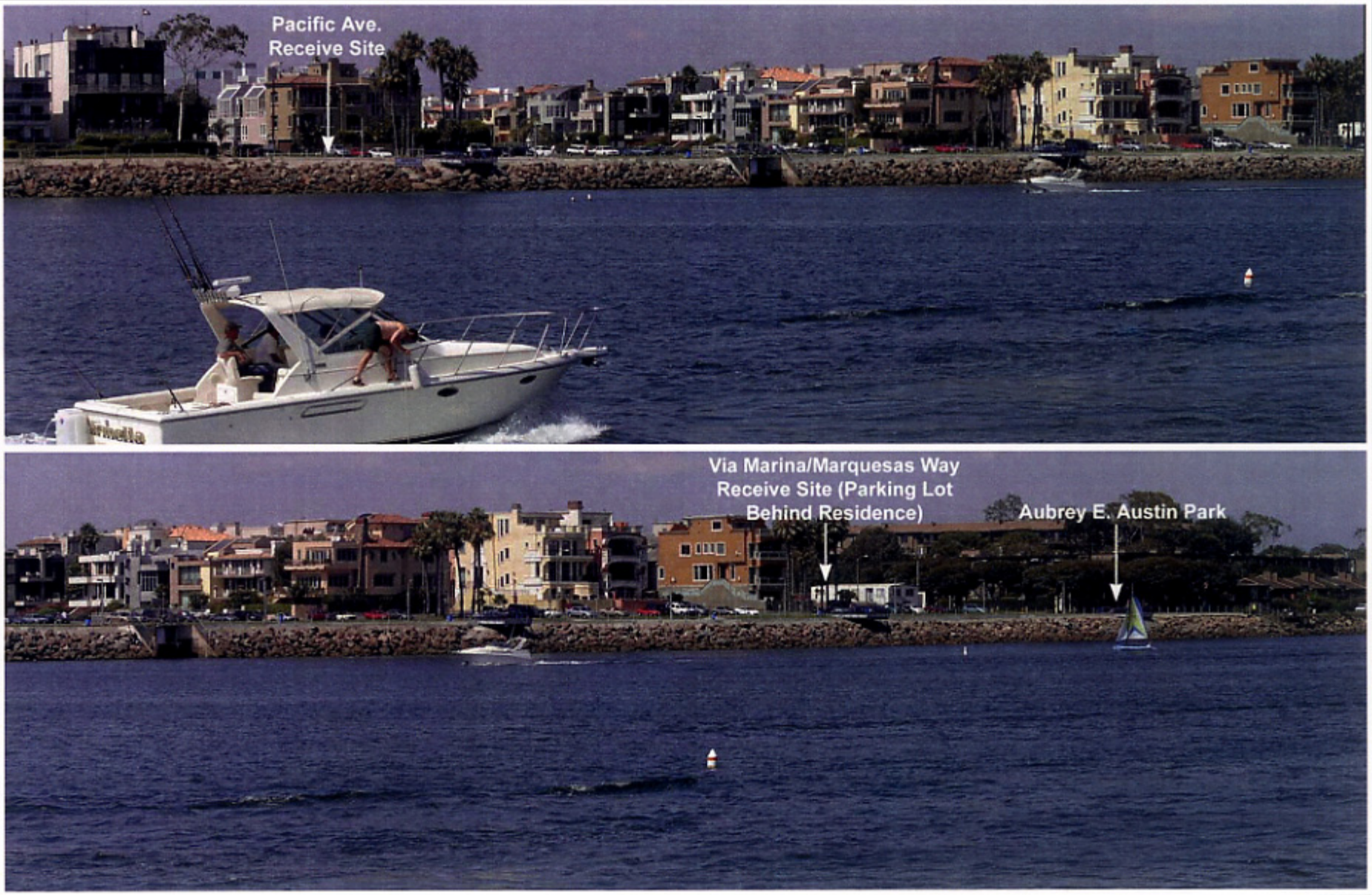
Panoramic View from Aubrey E. Austin Park, Looking Northwest along Via Marina. **(Top):** The Receive Site and Cut-and-Cover Construction for the Via Marina/Marqesas Way Alignment Alternative would be in the Parking Lot (VP 7)

Figure 6



City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

A Panoramic View from the Marina del Rey Entrance Channel, Showing the Locations of the Receive Sites at Pacific Ave. and Via Marina, the Entrance to the Grand Canal, and Aubrey E. Austin Park (VP 8).

Figure 7

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

(Top): Looking Northwest along Pacific Ave. from the Intersection with Via Marina (VP 9). **(Bottom):** Looking Southeast along Ballona Lagoon and Pacific Ave. from the Pedestrian Bridge at Lighthouse St.(VP 10).

Figure 8

within the ocean-bound lane, points from which the Project could be seen, the viewing positions would be not closer than about 350 ft or more. By contrast, from Aubrey E. Austin Park and Via Marina, one is only about 80 - 90 ft from where the receive site may be within the parking lot northwest of the park. Consequently, views from the Entrance Channel would not be considered further, as the focus of the assessment is on the most critical views.

Venice Alignment Alternatives

Pacific Avenue Alignment.

Sensitivity. In general, the Pacific Avenue Alignment Alternative would be within highly sensitive public views that include the collective residential views along the alignment, along Hurricane St. and Pacific Ave., from Ballona Lagoon/Grand Canal, and those from a pedestrian trail lining the east side of the lagoon.

The Pacific Avenue Alignment runs west along Hurricane St. to Pacific Avenue and then south to Via Marina where it would meet with a receive site for the micro-tunneled alignment under the Marina del Rey Entrance Channel and Ballona Creek. The collective residential views along these two streets are treated in this analysis as highly sensitive, as noted. Cut-and-cover activities would be visible from residences lining the east side of the Grand Canal across from the Venice Pumping Plant and those along Hurricane St. As well, residents along Pacific Avenue south of Hurricane St. to Via Marina would view cut-and-cover construction activities while approaching their homes and from their residences as construction progresses along the street.

Concerning recreation, most of the highly varied recreation opportunities within the community of Venice occur to the north of the Project site, including the famous Venice Beach, bike path and Ocean Front Walk. In general, public recreation use of area of the Project is less intensive than that of the North Venice Beach portion. Uses are primarily sunbathing, swimming, picnicking, active recreational uses on the sand, and fishing from the Marina Channel jetty. The walkways and waterways along the Venice Canals and Ballona Lagoon provide opportunities for more passive recreational and educational uses, such as birdwatching, nature study, strolling, and sightseeing. A Class II Bikeway runs along Pacific Ave. (See Section 4.2 of the EIR, Figure 4.2.5-4), and non-motorized boating is permitted in the Venice Canals. Potentially, the Project activities would be seen by boaters along the Lagoon, those walking along the beach access trail in the vicinity, and bicyclists using Pacific Avenue. Also, where Pacific Avenue intersects with Via Marina, there is the North Jetty Promenade, a frequently used walkway featuring observation decks from which the Entrance Channel may be appreciated. Fishing is a popular activity below the Promenade.

Finally, the south terminus of the subject alignment may be seen from the numerous pleasure craft that use the Entrance Channel.

Critical Views. The critical views would be any of those from along the alignment from Ballona Lagoon/Grand Canal, pedestrian beach access, Hurricane St. and Pacific Ave. and their adjoining residences, the bikeway along Pacific Ave., the North Jetty Promenade, and from the Entrance Channel.

Figure 4 shows the route for the Pacific Ave. Alignment along Hurricane St., within view of residences lining this street. Figure 5 shows the proximity of Ballona Lagoon/Grand

Canal to the Venice Pumping Plant and the north end of the Pacific Ave. Alignment Alternative. Figure 8 shows the length of Pacific Ave. from the pedestrian bridge at Lighthouse St. southeast to Via Marina, as well as Ballona Lagoon flanking it on the northeast side. The latter figure also shows that residences line both sides of Pacific Ave. at its southeast end where it meets Via Marina.

Figure 7 discloses the view of the receive site area as seen from the Entrance Channel, while Figure 9 shows the southeast terminus of this alignment alternative and the receive site for micro-tunneling under the Marina del Rey Entrance Channel and Ballona Creek. The Receive site would be close to the observation platform overhanging the revetment (upper image).

Dockweiler Beach to Pacific Avenue Alignment.

This alternative was considered in the EIR but was deemed not to be viable and will not be dealt with further in this assessment.

Dockweiler Beach Alignment.

As is the case for the previous alignment alternative, this alternative was considered but deemed not to be viable and also will not be dealt with further in this assessment.

Westchester/Playa del Rey Alignment Alternatives.

Pacific Avenue/Vista del Mar Alignment

Sensitivity. At the northerly end of this alignment, the alignment extends to a Push Site for micro-tunneling under the Entrance Channel to either the Pacific Avenue or the Via Marina Alternative Alignments on the north side of the Entrance Channel. Here there is a boat launch ramp that may be affected due to construction of the Push Site, a bicycle path, a fishing bridge, and a residential area. The construction/laydown area that would support the micro-tunneling activities would be in the parking lot along the southwest side of the bridge. Views from areas of recreation and residential land uses, including the associated access routes are highly sensitive.

The parking lot for Del Rey Lagoon Park provides access not only to the park, but also to Dockweiler Beach via a path that leads from the parking lot. Views from Pacific Avenue, the residences along it, Del Rey Lagoon Park, the parking lot at the park, and the beach access path, are all highly sensitive.

To the southwest of the Del Rey Lagoon Park parking lot, Pacific Avenue intersects with Vista del Mar. From here this alignment alternative follows Vista del Mar to the junction with the existing C.I.S. near Waterview St. As has been noted, Vista del Mar is a designated scenic highway, and in the vicinity of Waterview St. motorists have an elevated and panoramic view of Dockweiler Beach and the Pacific Ocean. Views from this road are of the highest sensitivity. As well, the collective views from the residences lining Vista del Mar are also highly sensitive, many of which include panoramic ocean views.

Critical Views. All of the views noted would be considered critical, as they are of the highest sensitivity and would include the Proposed Project construction activities within the foreground. Perhaps the most critical of these along Pacific Ave. would be the ones from the bicycle path, the fishing bridge, the residential area along Pacific Ave., Del Rey

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(Top): View of Receive Site and Construction/Laydown Area from the Corner of Pacific Ave. and Via Marina, Looking Northeast (VP 9). **(Bottom):** View along the North Jetty Promenade from Observation Platform at End of Pacific Ave. and Via Marina (VP 11).

Figure 9

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

Views from Pacific Ave. Bridge; **(Top):** Push Site in Parking Lot for Under-Channel Alignment; **(Bottom):** View to Southeast along Pacific Ave., Showing Bicycle Path in Foreground (VP 12).

Figure 10

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

(Top) Pacific Ave. and 66th Ave. Looking Northwest, and **(Bottom)** Looking North (VP 13); Del Rey Lagoon Park is Seen to the Right.

Figure 11

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

Panoramic Views of Del Rey Lagoon Park **(Top):** Looking to the Northwest, and **(Bottom):** Looking to the Southeast (VP 14).

Figure 12

Lagoon Park, and the beach access path. Figure 10 shows views from the bridge over Ballona Creek, looking southeast. The upper image shows the Push Site area to the north of the bridge (left). The lower image is a better view of the residential area along Pacific Avenue. The bridge links the bicycle path, which is along the jetty separating the Entrance Channel and Ballona Creek and the stretch of Dockweiler Beach south of the channel and creek.

Figure 11 shows the scene from the intersection of 66th Ave. and Pacific Ave., looking northwest and north, which includes the residential area along Pacific Ave., with a glimpse of Del Rey Lagoon Park. Figure 12 presents two panoramas of this park, which abuts Pacific Avenue and from which details of Project construction activities would be visible. Along Vista del Mar, there are multi-story residential residences, as seen in Figure 13, which presents photographs from the intersection at Waterview St. and a representative view from the Vista del Mar. These street-based views are considered to generally represent those from the residences.

Channel Crossing

The Push Site, and the two alternative receive sites associated with micro-tunneling under the Marina del Rey Entrance Channel and Ballona Creek would be within public view. These sites are addressed relative to the cut-and-cover alternative alignments.

Large Diameter (Mined) Tunneling Alignment Alternatives

There are four Mined Tunnel Alignment Alternatives, which would present noticeable disturbance above ground at the sites for the Starter and Extraction Shaft sites. These sites are within highly sensitive views from beach recreation sites, residential areas, and, within view of a designated scenic highway (Vista del Mar). Alternatives 1 and 2 call for cut-and-cover construction as well, which would also be within recreation oriented and/or residential views

Alternative 1: Dockweiler Beach Alignment

Alternative 1 has been considered not to be a viable alternative in the EIR and therefore is not addressed in detail in this assessment.

Alternative 2: LAX - Dockweiler Beach

Sensitivity. This alternative calls for a Mined Tunnel connection from the LAX property Starter Shaft to the Extraction Shaft on Dockweiler Beach and cut-and-cover connections between the Venice Pumping Plant and the Extraction Shaft. The views affected by Starter Shaft and associated laydown area would be from Vista del Mar (scenic highway) and residences lining the northeast side of Napoleon St. As noted earlier, residential views and those from designated scenic highways are highly sensitive. The sensitive views potentially affected by the Extraction Shaft and the cut-and-cover part of the alignment were described relative to Alternative 1.

Critical Views. Figure 14, upper image, shows the general area for the Starter Shaft and laydown area for this alternative. Foreground views from the designated scenic highway (Vista del Mar) and residences shown are of the greatest sensitivity and are highly critical. Critical views including the Extraction Shaft site for this alternative and the cut-and-cover part of the alignment are the same as for Alternative 1.

Alternative 3: Direct Mined Tunnel Connection from LAX Property to Venice Pumping Plant Via Dockweiler Beach

Sensitivity and Critical Views. This alternative alignment would be a mined tunnel construction alternative from the Starter Shaft on the LAX property direct to the Extraction Shaft in the vacant lot northwest of Hurricane St. and opposite the Venice Pumping Plant, via Dockweiler Beach. Views of the Starter Shaft have been discussed relative to Alternative 2. As for Alternative 2, there would be as much as 300 ft of cut-and-cover construction from the Starter Shaft to the junction with the existing C.I.S. under Vista del Mar to the southwest.

The Extraction Shaft would be in the vacant lot across Hurricane St. from the Venice Pumping Plant, as shown in Figure 5. The sensitivity and critical nature of the affected views potentially affected by the Extraction Shaft have been discussed relative to the Via Marina/Marquesas Way cut-and-cover alignment alternative.

Alternative 4: Direct Mined Tunnel Connection from LAX Property to Venice Pumping Plant Under Ballona Lagoon

Sensitivity and Critical Views. This alternative alignment would be a continuous Mined Tunnel construction alternative from the Starter Shaft on LAX property to the Extraction Shaft in the vacant lot on the northwest side of Hurricane St., across from the Venice Pumping Plant. The tunnel would be inland from the beach and generally under Vista del Mar, Pacific Ave. and Ballona Lagoon. The Starter Shaft site and associated laydown site areas are shown in Figure 14, and sensitive and critical views relative to it have been described regarding Alternatives 2 and 3. Figure 15 shows the area within which the Extraction Shaft would be constructed. The laydown area is also expected to be within this vacant lot. The sensitivity and criticality of views from residences and the Grand Canal have been discussed relative to the Marquesas Way/Via Marina Alignment and the Pacific Avenue Alternative Alignments.

2.2 Visual Character and Existing Visual Condition

2.2.1 Introduction

To address the most important impacts, in conformance with CEQA, detailed descriptions of the existing visual character and quality of the Project vicinity are limited to those views deemed to be "critical," as defined in Section 2.1. Accordingly, attention is directed primarily to those moderately to highly sensitive views that would be most affected by a Proposed Action. Where the greatest of impact intensity may occur, low sensitivity views will also be considered. The assessment of visual character and existing visual condition serves as the baseline for the quality of Visual/Aesthetic Resources. The estimated visual impacts of the Project will be compared with the baseline conditions to assess the degree of adverse change (intensity) and significance of the potential impacts.

Visual Character: Features and Their Patterns of Distribution.

The landscape is described in terms of the features inherent to the "character type" which lend it its distinctive character. Project features are described in terms of their degree of contrast, if any, with those that are part of the affected views. Typically addressed are landforms, vegetation, water features and the built environment. As relevant, the form, line, color and texture of the features are described. The scale (apparent size) of features,

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

(Top) Vista del Mar and Waterview St. Looking Northwest to North; and **(Bottom)** Looking East to Southeast (VP 15).

Figure 13

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

Views from the Vista del Mar-Napoleon St. Intersection; **(Top):** LAX Site, Looking East to Southeast; and **(Bottom):** Dockweiler Beach and Vista del Mar, Looking Northwest (VP 16).

Figure 14

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

(Top): Extraction Shaft Alternate Sites at Dockweiler Beach near Hurricane St. (VP 17); and **(Bottom)**: at Venice Pumping Plant (VP 6).

Figure 15

City of Los Angeles
Venice Pumping Plant
Dual Force Main Project

Clockwise from Top: Construction Equipment for Typical Cut-and-Cover Construction. Sound Barriers, Seen from Street and from within Shaft Construction Area. Shaft, within Sound Barrier.

Figure 16

the composition of the affected view, and the breadth of the view (panoramic versus focal) often are aspects of some importance. Features of the landscape which make it vulnerable to adverse impacts are important too, such as focal point sensitivity (where features frame a view or direct attention to a particular area), or proximity to highly sensitive viewing positions. The arrangement of landscape features may be important to consider, as a Project can disrupt the pattern of their distribution. For instance, ecotones might define the distribution of vegetation in a natural setting. Architectural styles or density of housing might be defining attributes of a residential area.

Existing Visual Condition.

Key to assessing baseline environmental conditions of visual/aesthetic resources is "existing visual condition," which is used in this assessment to mean "visual quality." The existing visual condition is described as the degree to which past actions have noticeably changed the landscape in ways that appear inconsistent with the inherent visual resources of the affected lands. Existing visual conditions serve as the baseline for evaluating the magnitude and intensity of potentially adverse changes in the landscape. They vary with how noticeable incongruous features may be within current public views and are defined in terms of four Visual Modification Classes (VMC), defined in Table K-1, Attachment A. Landscapes where all features appear compatible with the inherent visual resources of the area are of the highest existing visual condition, while those where incompatible features dominate the scene are of the lowest condition.

2.2.2 Landscape Character and Existing Visual Conditions within Critical Public Views

Marina del Rey Alignment Alternatives

Marquesas Way/Via Marina Alignment

Character. The critical views relative to this alternative alignment are those from Via Marina, Marquesas Way, the residences bordering these roads, the residences lining the east side of the Grand Canal and Hurricane St. near the Venice Pumping Plant, Aubrey E. Austin Park, the North Jetty Promenade, and the Marina del Rey Entrance Channel, as described in Section 2.1. Figures 2 - 6 show representative views from these locations.

The character of the subject views is entirely that of a "built" environment of residences and infrastructure serving those residences, urban landscaping along Via Marina and Marquesas Way, and the water feature alternately referred to as Ballona Lagoon (southeast of the pumping plant) and the Grand Canal (from the pumping plant to the northwest). The latter is the most striking feature within the potentially affected landscape and arguably the most memorable.

Regarding the views from residences along Marquesas Way and Via Marina, the views from these roads are deemed to represent those from the residences, albeit they are from ground level and those from the residences include elevated positions on the second stories of the homes and apartments. The vegetation along these streets is highly varied in species and type (trees, shrubs, groundcover) and presents an interestingly irregular pattern as one drives along these roads. The street trees are mature and stately, and, in places, represent the visual signature of the area. For instance, the tree in the island shown in the lower image of Figure 2 (Marquesas Way/Via Dolce intersection) is the focus of attention. Those shown in the island and along Via Marina in Figure 6 present

memorably sculptural forms. The latter image represents the panoramic view from Aubrey E. Austin Park. From the North Jetty Promenade along the southeast side of the park, this view of Via Marina is framed by the trees within the park, but the angle of view is about the same. Views from the park, being close-up to Via Marina, are more sensitive than those from the promenade.

All the views from the critical viewing positions noted are foreground views that are "focal"; that is, the views are framed by structures and street-side plantings such that attention is channeled in the direction of travel. This would not be true for views from the apartments and homes, the lines of sight being transverse to the alignment of the roads. Focal views are important because potential project impacts, if they occur within such views, unavoidably receive maximum attention.

Figure 5 shows the most critical view from the residences lining the east side of the Grand Canal near the Venice Pumping Plant. These residences are partly shown in the upper image in Figure 4. Only those residences abutting the plant on its southwest side along Hurricane St. would be affected by this alignment alternative, as the receive site and tie-in to the plant would be constructed in the vacant lot shown. The view shown in Figure 5 is dominated by the Venice Pumping Plant and Ballona Lagoon/Grand Canal. While trees line the canal to the northwest, in this vicinity vegetation is sparse and contributes little to the character of the views.

Existing Visual Conditions.

Views from Marquesas Way and Via Marina include no features that would be considered incongruous with the visual character of the area. The overall impression is that of highly manicured boulevards and a moderately high-density residential area. The views in Figures 2, 3, and 6 show no evidence of past actions resulting in features incongruous with the setting. Therefore, the existing conditions are within Visual Modification Class 1 (VMC 1; Table K-2, Attachment A).

Regarding the views from the residences on the east side of the Grand Canal opposite to the Venice Pumping Plant, as well as views from the Grand Canal itself, the Venice Pumping Plant dominates views toward the southwest (Figures 4 and 5). This is the primary orientation for views from the residences. This would also be true for residences along Hurricane St., for views to the east. However, the primary viewing direction from these homes is more to the southeast, somewhat away from the Plant. The Pumping Plant is an industrial facility within the context of a residential neighborhood. The chain-link fence around the vacant lot on the northwest side of Hurricane St. opposite the plant lends an industrial character to that parcel, giving it the appearance of a storage yard serving the plant. In character the Plant and fenced yard are anomalous within their setting, are in the immediate foreground of the affected views, and, particularly because of the Plants large scale, are the "subject:" of these views. Given the visual dominance of the Plant, the existing visual conditions are rated VMC 4. This means that for the views from the residences noted and the Canal, visual quality is at its lowest (Table K-2, Attachment A).

Venice Alignment Alternatives

Pacific Avenue Alignment

Character. The critical views relative to the Pacific Avenue Alignment are those from Ballona Lagoon/Grand Canal, Hurricane St and Pacific Ave., the residences lining those streets, the North Jetty Promenade, and those from the Entrance Channel (see Section

2.1). Figure 4 shows Hurricane St. and its adjoining residences. Figure 8 shows Pacific Ave. and Ballona Lagoon, from the pedestrian bridge at Lighthouse St., as well as Pacific Ave. seen from its intersection with Via Marina. The North Jetty Promenade at the corner of Pacific Ave. and Via Marina, and a view along Via Marina from that intersection, are disclosed in Figure 9. Views from the Entrance Channel that include the Pacific Ave./Via Marina intersection are represented by Figure 7. The intersection of Pacific Ave. and Via Marina is especially important because the receive site for one alternative for the under-channel micro-tunneling construction alternative would be proximate to this intersection. Note that the views from residences along this alignment are deemed to be represented by those from the roads serving as the primary access to them (Pacific Ave. and Hurricane St.), with the same caveat as discussed relative to the Marquesas Way/Via Marina Alignment.

The character of most of the critical views potentially affected by the Pacific Ave. Alignment, as is the case for the Marquesas Way/Via Marina Alignment, is that of a "built" environment. Along Hurricane St. and Pacific Ave., the visual character is predominately residential, the dominant features being the multi-story homes and apartments along these streets. Vegetation is sparse and contributes little to the visual character of the area. But, unlike the nearly all of the Marquesas Way/Via Marina Alignment, landforms and water features draw substantial attention. The lagoon and its channel (the only landform within the area) present the most memorable positive features, given the rarity of waterways within residential areas along the southern California coast. Note that the lagoon has been "engineered" to be the linear feature it is today. The straight-lined banks are uncharacteristic of natural waterways, but are characteristic of built environments.

From Hurricane St., the views are framed by the nearby residences and are extremely focal, being directed along the alignment of the street. Those from Pacific Ave. are relatively distant, framed to a much lesser degree, but are also somewhat focal. Note the converging lines of the lagoon banks and Pacific Ave. in the lower image in Figure 8.

At the south end of this alignment alternative, views include the Entrance Channel from points along the North Jetty Promenade. Note in Figures 7 and -9 the observation decks along the promenade, which focus attention to the southeast. The character of views from Via Marina and the promenade differs significantly from that for views from Hurricane St. and Pacifica Ave. While both sets of views are totally engineered (the Channel and Ballona Creek are both structured features), the views from the promenade and Via Marina are panoramic and distant, while those from the other streets are more limited and are focal. Next, the promenade and Via Marina views are dominated by the channel to the southeast and ocean in the distance to the west. Also, the views are dynamic, being influenced by the coming and going of recreational marine traffic that is itself a focus of attention.

Views from the Entrance Channel toward the alignment alternative, as noted in Section 2.1, are not the most critical of the views considered and are not addressed further in this assessment.

Existing Visual Conditions. Views from the residences along Hurricane St. at its northeast end, those lining the east side of the canal in this area, and those from the Grand Canal itself, are dominated by the Venice Pumping Plant. It and the chain-link fenced lot on the opposite side of the street are industrial in character (see the discussion of these features in the section describing the Marquesas Way/Via Marina Alignment). The

anomalous nature of the Plant is incongruous with the residential area around it and dominates views from these residences and from the Grand Canal. Moreover, views from Hurricane St. to the northeast focus on the Plant because the views are framed by residences, limited to the foreground, and are directed toward the Plant by the converging lines of the street. Because the Plant dominates the subject views, the affected views have a visual condition of Visual Modification Class 4 (Table K-2, Attachment A).

Views from Pacific Ave., its intersection with Via Marina, the North Jetty Promenade, and the Entrance Channel include no anomalous features introduced by past actions that would be considered incongruous with the character of the area. Therefore, the existing conditions are within Visual Modification Class 1 (Table K-2, Attachment A).

Dockweiler Beach to Pacific Avenue Alignment

This alternative was considered in the EIR But was deemed not to be viable and is not addressed further in this assessment

Dockweiler Beach Alignment

This alignment is considered in the EIR not to be a viable alternative and is not addressed further in this assessment.

Westchester/Playa del Rey Alignment Alternatives

Pacific Avenue/Vista del Mar Alignment

Character. The critical views relative to this alternative alignment are those from the bicycle path along the Pacific Ave. "fishing" bridge, the bridge itself, the residential area along Pacific Ave., those from Del Rey Lagoon Park and the nearby beach access route, and the views from Vista del Mar, a designated scenic highway. Figures 10, -11, -13 and -14 show images representing these potentially affected views.

The character of landscape within these views is that of a built environment which is mostly a residential area with adjoining recreation areas, including parking areas serving those sites, a bicycle path, Del Rey Lagoon Park, and Dockweiler Beach. Views from the bridge and bicycle path are panoramic across 360 degrees, taking in Ballona Creek and the Entrance Channel to the northwest, the Pacific Ocean to the southwest, as well as the residential area around the intersection of 62nd St. and Pacific Ave. to the southeast.

Figure 10 shows panoramic views from the northeast to the southwest, seen from the bridge. These views also represent those from the bicycle path on the bridge, and the adjoining public parking areas. The dominate features in the views shown are the multi-story residences at the end of Pacific Ave. in the foreground, and those in the background lining the northeast side of Del Rey Lagoon Park to the northeast. Unlike the views along Via Marina, vegetation plays a minor role in distinguishing the visual character of the area, and the only landform is the southeast bank of Ballona Creek. However, these views are part of a continuum of the visual experience that includes the views to the northwest and southwest noted above, in which the Entrance Channel, Ballona Creek, and are the dominant features.

The views in Figure 11 show the character of the residential area along Pacific Ave. as well as the proximity of Del Rey Lagoon Park. One of the parking areas serving the park is in the view shown in the lower image. The character of this part of the alignment is

almost entirely residential, with the somewhat natural character of the adjoining park and its lagoon being the focus of attention (Figure 12). At the terminus of this alignment alternative, along Vista del Mar near Waterview St., views are panoramic and include the Pacific Ocean and Dockweiler Beach to the southwest, and the residences lining the northeast side of the street. Figures 13 and -14 are views from points at or near where Vista del Mar intersects with Waterview St. and Napoleon St., respectively. Views from the homes noted cannot be represented directly, so those from the street are treated as representative of those from the residences shown.

Existing Visual Conditions. From the critical public viewing positions noted there are no features or land uses in view that would be considered incongruous with of those inherent to character of the area. The overall impression is that of well-maintained urban residential area with adjoining public recreation sites (the park and beach). Therefore, the potentially affected views have a visual condition of Visual Modification Class 1 (Table K-2, Attachment A).

Large Diameter (Mined) Tunneling Alignment Alternatives

Alternative 1: Dockweiler Beach Alignment

This alternative has been deemed in the EIR not to be viable and is not addressed in this assessment.

Alternative 2: LAX – Dockweiler Beach

Character. The critical public views relative to the Starter Shaft site for this alternative are those from Vista del Mar, Napoleon St., the residences along the northeast side of Napoleon St., and a pedestrian access trail which runs along the southwest side of Napoleon St. (Figure 14, upper image). Regarding the Extraction Shaft site, the critical views would be from residences fronting Dockweiler Beach near Hurricane St., as well as those using the beach or playing volleyball at the nearby court (Figure 15, upper image). Critical views relative to cut-and-cover construction would be those from Hurricane St., the residences along that street, the Grand Canal near the Venice Pumping Plant, and from residences lining the east side of the canal (Figure 4 and -14).

Views from Vista del Mar, a designated scenic highway, are panoramic across 360 degrees, taking in the vacant land around the Starter Shaft site (LAX property) and the beach and ocean to the southwest. The LAX property is relatively featureless, being a gently sloping area of grassland and low shrubs. There are several paved roads in the area, but these are barely visible in the view shown in Figure 14. To the southwest, the view takes in Dockweiler Beach, the ocean and distant points along the coast to the northwest (lower image, Figure 14).

Views from the residences in the area could not be directly evaluated, but would be of the same character as those from Vista del Mar. However, the views from Napoleon St. and the nearby residences would be panoramic across 180 degrees; given the orientation of the residences, views face to the southwest toward the Starter Shaft site. From Napoleon St., the views are directed to the northwest and southeast, in the direction of travel. The character of these views is the same as that for views from Vista del Mar, primarily featureless open land and beach, with the Pacific Ocean seen in the distance.

Views including the Extraction Shaft site are panoramic from points on the beach and from the nearby residences. The broad expanse of the beach is nearly featureless, except for the volleyball "court" shown, lifeguard stands in the distance, and the ocean surface.

The character of views from Hurricane St. has been described relative to the Pacific Ave. Alignment Alternative: the views are focal, being framed by the residences along this street, and constrained to the immediate foreground. It is entirely a "built" environment defined by the homes in the area, and landscaping is of minor importance, especially as compared to that which lines Marquesas Way and Via Marina to the northeast.

The cut-and-cover construction activities, where they occur near the pumping plant, would be within view of residences lining the east side of the Grand Canal and from the canal itself. The character of these views was described relative to the Marquesas Way/Via Marina Alignment. The views are dominated by the Venice Pumping Plant and the canal, with vegetation being sparse in this location.

Existing Visual Conditions. Critical views including the Starter Shaft include no features that would be considered incongruous with the visual character of the area. The vicinity is relatively featureless open land serving as a foreground for distant ocean views and views of the nearby beach. There being no incongruous features, the existing conditions are considered to Visual Modification Class 1 (Table K-2, Attachment A). This is also true for the critical views which include the Extraction Shaft area and those including most of the cut-and-cover construction activities along Hurricane St. The exception are those views from this street and the residences on the east bank of the canal which include the Venice Pumping Plant. Here the plant dominates the available views and is a feature that is incongruent with the residential context and the Grand Canal. The existing conditions are considered to be Visual Modification Class 4.

Alternative 3: Direct Mined Tunnel Connection from LAX Property Venice Pumping Plant Via Dockweiler Beach

For this alternative, the Starter Shaft would be located in the same place as that for Alternative 2, on the LAX property described. The character and existing visual condition of the lands within critical public views have been described relative to that alternative. The Extraction Shaft, would be located in the vacant lot opposite to the Venice Pumping Plant. The character and existing visual conditions for views that include this site were described relative to the Marquesas Way/Via Marina Alternative Alignment.

Alternative 4: Direct Mined Tunnel Connection from LAX Property to Venice Pumping Plant

The Starter Shaft and Extraction Shaft sites for this alternative are the same as those for Alternative 3, and the character and existing visual conditions for these sites have been described relative to Alternative 2 and the Marquesas Way/Via Marina Alternative Alignment.

3.0 Regulatory Setting

3.1 City of Los Angeles General Plan

The City of Los Angeles General Plan is an advisory document comprising 11 Citywide Elements: Transportation, Infrastructure Systems, Housing, Noise, Air Quality, Conservation, Open Space, Historic Preservation and Cultural Resources, Safety, and Public Facilities and Services, and the Land Use Element. Of these elements only the Transportation and Land Use Elements are relevant to the Aesthetics/Visual Resources assessment. The Land Use Element is composed of 35 local area plans, known as Community Plans, as well as counterpart plans for the Port of Los Angeles and Los Angeles International Airport. The relevant parts of the Transportation Element and Community Plans are listed discussed below.

3.1.1 Transportation Element

The relevant part of the Transportation Element of the General Plan is the identification of Designated Scenic Highways (Map E) within City limits. One such road is of specific importance to the Proposed Project, the stretch of Vista del Mar between Culver Blvd. and West Imperial Highway. All of the inland Project Alignment Alternatives south of the Marina del Rey Channel and Ballona Creek would be constructed within Vista del Mar up to the terminus near Waterview St. Specific Scenic Highways Guidelines are presented in the Element as interim direction pending the adoption of Scenic Corridor Plans. However, none of the guidelines is pertinent to the Proposed Project, inasmuch as they address roadway design; grading; planting/landscaping; signs/outdoor advertising; and utilities. However, the Vista del Mar's designation as a Scenic Highway is an indication that views from this road are of the highest sensitivity and importance to the consideration of visual impacts (See Section 2.1, Visual Sensitivity). Moreover, potential interruption of access to this Scenic Highway would be important in the consideration of Visual Impacts.

3.1.2 Venice Community Plan

The Alternative Pacific Avenue and North Dockweiler Beach Alignments for the Proposed Project are within the community of Venice. Specific goals and policies addressing Visual Resources directly or indirectly are found in Chapter 3 (Land Use Policies and Programs).

Historic and Cultural Resources

Coastal Resources Goal 18: Preservation of the Scenic and Visual Qualities of Coastal Areas

The policy supporting this goal is to enhance public access to the coast, but the program for implementation also includes preventing development from interfering with ocean and scenic coastal areas, minimizing the alteration of natural land forms, and assuring that Projects are visually compatible with the character of surrounding areas.

Land Use

Design Principles for New Development

Any development within the Venice Coastal zone is regulated by the Venice Land Use Plan as well as the Venice Coastal Zone Specific Plan. The relevant policy is: (e) Views of distinctive visual resources (e.g., bluffs, wetlands) will not be significantly disturbed.

Coastal Visual Resources

Four policies are articulated relative to Visual Resources:

- Protect existing views of the wetlands from the surrounding public streets and open space areas.
- No billboards or off-premise commercial signs will be permitted.
- Sources of funding shall be sought to allow undergrounding of existing transmission lines inland adjacent to the wetlands.
- Landscaping and plant materials should be used to screen and soften visually obtrusive elements.

3.1.3 Westchester—Playa del Rey Community Plan

The inland Alternative Alignments either follow Pacific Avenue to Vista del Mar and end at Waterview Street or the LAX Starter Shaft site, depending on the construction alternative, or run under South Dockweiler Beach via deep-tunnel construction to end at the LAX site. Specific goals and policies addressing Visual Resources directly or indirectly are found in Chapter 3—Land Use Policies and Program.

Coastal Resources

The communities of Westchester and Playa del Rey have not yet prepared a Local Coastal Program (LCP) to effect the policies of the California Coastal Act (the Act). The Coastal Resources section of the Community Plan has as one objective the provision of a Land Use guide for implementing the policies of the Act (Objective 18-1). This will consist of a Local Coastal Program and Land Use Plan to define local policies and ordinances regarding coastal resources. Specific to Visual Resources in this section is the following goal:

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."

The following objective and policy are relevant to the Project:

Objective 18-5, Policy 18-5.1. Specific to Visual Resource protection is this objective: "Preserve coastal visual resources by protecting and enhancing scenic views of the ocean and wetlands from designated Scenic Highways, and public view sites." Vista del Mar is a designated Scenic Highway from Culver Blvd. to W. Imperial Highway. Aspects of the Project alternatives would fall within views from this roadway, as well as from

Dockweiler Beach below this road. This beach, by definition, would be a "public view site." Policy 18-5.1 stipulates that:

- "The scenic and visual qualities of Westchester-Playa del Rey Coastal Zone should be protected and enhanced where feasible by siting and designing development in order to:
    - Protect public views to and along the ocean and scenic coastal areas;
    - Minimize the alteration of natural landforms;
    - Be visually compatible with the character of the surrounding area; and
    - Retain existing views from designated public view areas and Scenic Highways.
- All new development in the Coastal Zone, including public works and recreational facilities, should be subordinate to their setting, and minimized in height and bulk to the extent feasible to accomplish view protection (emphasis added)."
- Under this Policy it is required that any development limit or shield outside lighting.

3.2 Coastal Plan Policies

The vicinity of the Project Alternatives is entirely within the coastal zone. As noted above, Westchester and Playa del Rey do not have a Local Coastal Program and Land Use Plan. Those communities, in their Community Plan, have as a policy the preparation of such a program and plan. Coastal Zone issues are addressed, for now, solely in the Community Plan.

3.2.1 Venice Local Coastal Program Land Use Plan

The community of Venice, however, does have a Local Coastal Program. The relevant parts are found in the Land Use Plan for that Program. This Local Coastal Program represents the Venice Community's response to the California Coastal Act of 1976 requirement that local governments prepare land use plans and implementing actions to effect the policies of the Act. The Coastal Act policies address specific issues which include the protection and preservation of visual and scenic resources. The Act additionally establishes a framework for prioritizing land uses, with the highest priority being accorded to the preservation and protection of natural resources, including prime agricultural lands.

Section 30251. This section of the Venice Local Coastal Program Land Use Plan Policies repeats Section 30251 of the Coastal Act, which requires the consideration of scenic and visual qualities of coastal areas and their protection as a resource of public importance. Specifically:

- Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas,
- To minimize the alteration of natural land forms,

- To be visually compatible with the character of surrounding areas, and
- Where feasible, to restore and enhance visual quality in visually degraded areas.
- New development in highly scenic areas...shall be subordinate to the character of its setting.

The Coastal Commission added the following statement regarding this section:

> "The primary concern...is the protection of ocean and coastal views from public areas such as highways, roads, beaches, parks, coastal trails and accessways, vista points, coastal streams and waters used for recreational purposes, and other public preserves rather than coastal views from private residences where no public vistas are involved."

3.2.2 Los Angeles County Local Coastal Program: Marina del Rey Land Use Plan

Coastal Act Policies

The aspect of the Los Angeles County Local Coastal Program pertinent to the Proposed Project is the Marina del Rey Land Use Plan, certified by the California Coastal Commission in 1996. Common to all such LCPs are the Policies of the Coastal Act listed in Section 30251 of the Act and the LCPs (see Section 30251 of the Venice LCP). The Marina del Rey Land Use Plan specifically addresses the protection and maintenance of harbor views in conjunction with new development, as well as the visual compatibility of such development with existing natural and manmade environments.

The Scenic Highway Element (Los Angeles County General Plan) identifies Via Marina, from Pacific Avenue to Admiralty Way as a Scenic Highway. Included in the Element's recommendations is the proposal to direct the County departments to give special consideration to aesthetics in the planning, design, and construction of public facilities along scenic highways.

Policy "e-1"

Pertinent to the Proposed Project is the policy to enhance the ability of the public to experience and view the Marina waters and to allow for greater public access to such views. Since the part of Via Marina flanking the Marina del Rey Entrance Channel up to Pacific Avenue is to become part of an officially designated Scenic Drive (Policy e-3), it is assumed that access to—and protection and enhancement of—views of the entrance channel are part of this policy, rather than strictly the protection and enhancement of views of the marina. Moreover, vantage points from lands adjacent to the Main Channel are identified as being among the particularly significant vantage points within the Marina area. The pertinence of the Scenic Drive designation is clear for the Marquesas Way/Via Marina Alignment given that it would be constructed within this street and would have both receive and Push Sites for micro-tunneling along the right-of-way. The Pacific Avenue Alignment Alternative extends to a receive site at Via Marina, as well.

Policy "e-3"

This is the policy with establishes the status of Via Marina as a Scenic Drive: "Through appropriate signing, a Scenic Drive shall be designated from Via Marina at Pacific Avenue north to Admiralty Way...."

4.0 Environmental Impacts

4.1 Technical Approach

The assessment was conducted in conformance with the California Environmental Quality Act (CEQA) documentation requirements. CEQA defines significant impacts as those having a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including ... objects of ... aesthetic significance" (Article 20, Section 15382).

Appendix G of CEQA (Environmental Checklist) more specifically identifies four areas of concern regarding a project's potential impact on aesthetics:

- Substantial, adverse effects on a scenic vista.
- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within [view from] a state scenic highway.
- Substantial degradation of existing visual character or quality of a site and its surroundings.
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The methodology for assessing visual impacts is detailed in Attachment A. The focus for this report is to determine whether or not the Project has the potential to cause significant visual impacts. A significant impact is, in accordance with the CEQA definition, a substantial, or potentially substantial, adverse change in the visual resources of the affected environment. An adverse "change," relative to visual impact assessment occurs when features are changed, introduced, made less visible, or are removed, such that the resultant effect on public views is perceptibly incongruous with their inherent character. Changes that seem uncharacteristic are those that appear out of place, discordant, or distracting. The intensity of a visual impact depends upon how noticeable the adverse change may be. Noticeability is a function of project features and their context and viewing conditions (angle of view, distance, primary viewing directions, lighting, etc.). Four levels of visual impact intensity (noticeability) may occur. These are termed "Visual Modification Classes" (VM Classes) and are defined in Table K-2, Attachment A.

Significant (substantial) changes (significant visual impacts) are further defined as those that would:

- Result in an inconsistency with laws, ordinances, regulations, and standards (LORS) applicable to the protection of visual resources; or
- Cause a perceptible reduction of visual quality. The perception that visual quality has been reduced is partly a function of public sensitivity to adverse visual

impacts. Table K-3 of Attachment A summarizes the relationship of impact intensity, sensitivity, and the perceived reduction in visual quality.

Most usually a third criterion is applied which stipulates that an impact must endure for greater than one year before it may be considered to be significant. However, in this assessment, no particular duration is stipulated because much of the sensitivity for the potentially affected views is due to recreation activities and sites in the vicinity of the Project. The value to the public of a single peak-use season is assumed to be extremely important, and any substantial, adverse visual impacts on the aesthetics of the area during this period are considered to be significant, even if temporary or short-term. Since no information is available regarding when Project construction would commence, it is assumed that construction may occur during the late spring and summer months.

4.2 Thresholds of Significance

4.2.1 CEQA

The threshold for significance, according to CEQA, is that point where an adverse visual impact is deemed to be substantial, i.e., a perceptible reduction in visual quality. CEQA offers no specific criteria for what is deemed "substantial." Therefore, criteria from other sources have been used to provide a systematic approach to this issue, which is summarized in Table K-3 of Attachment A. The matrix in the table illustrates the relationship of public sensitivity, impact intensity, and what is considered to be a substantial visual impact. The criteria are based upon the principles common to the three primary federal systems for visual resource management and analysis (USDA-FS, 1995; USDI-BLM, 1978; USDOT-FHWA, 1981). This approach has been applied to numerous CEQA-compliant documents over a 15-year period (Headley, 1990-2003).

4.2.2 City of Los Angeles CEQA Thresholds

The City of Los Angeles Draft CEQA Thresholds Guide offers a list of 12 areas of concern to consider in assessing the significance of an impact in accordance with the CEQA Checklist. However, no specific significance criteria accompany this Guideline to use in making that determination. Moreover, the Marquesas Way/Via Marina Alignment Alternative is not within the City of Los Angeles, so the City Guidelines do not apply to this alignment alternative.

In the absence of specific significance criteria in the City of Los Angeles Draft CEQA Thresholds Guide, or for projects within the County of Los Angeles, the methodology in Attachment A, specifically the matrix in Table K-3, has been applied to the determination of significance. Note that all of the City of Los Angeles "Thresholds Guide" issues of concern are considered, as appropriate, in this assessment but are grouped relative to the four CEQA Checklist issues. An exception occurs for the City's concern over Project-caused shading. The current CEQA Checklist does not require consideration of shading. That notwithstanding, this City issue of concern is listed along with the CEQA-related issues.

AES-1: Would the Proposed Project or its alternatives cause a substantial degradation of existing visual character or quality of a site and its surroundings?

The City of Los Angeles Draft Thresholds Guide directs that; "The determination 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 valued aesthetic image of an area.
- 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 aesthetic value of an area.

AES-2: Would the Proposed Project or its alternatives cause substantial, adverse effects on a scenic vista?

This CEQA issue of concern is interpreted in this assessment as addressing the degree to which Project-related features interfere with a scenic vista, either by obstructing it or interfering with access to it. The City of Los Angeles Draft CEQA Thresholds Guide is relevant to this CEQA issue as follows:

- The extent of obstruction (e.g., total blockage, partial interruption, or minor diminishment) of recognized or valued views (such as natural topography, settings, manmade or natural features of visual interest, and resources such as mountains or the ocean).
- 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.

AES-3: Would the Proposed Project or its alternatives cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within view from a state scenic highway ?

One issue expressed by the City of Los Angeles Draft CEQA Thresholds Guide is relevant to this CEQA issue:

- Whether the project affects views from a designated scenic highway, corridor, or parkway.

AES-4: Would the Proposed Project or alternatives result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Relative to the City of Los Angeles Draft CEQA Thresholds Guide, the factors that are to be considered in determining whether the Project would have a significant impact through nighttime illumination are:

- The change in ambient illumination levels as a result of project sources.
- The extent to which project lighting would spill off the project site and affect adjacent light sensitive areas.

AES-5: Would the Proposed Project or alternatives result in substantial negative shadow effects on nearby shadow-sensitive uses?

The City of Los Angeles Draft CEQA Thresholds Guide requires the consideration of the potential impact of shading by project-related structures. The current CEQA Checklist does not require consideration of shading, however it did so at the time the Draft Thresholds Guide was prepared and is, therefore, listed here as an issue to be addressed. However, the analysis does not address this issue because the Project has no potential to create any shading impacts as defined by the City guidelines.

AES-6: Would the Proposed Project or alternatives result in visual impacts that would not be consistent with applicable rules and regulations?

This impact is not expressed in the CEQA Checklist, but is listed in the City of Los Angeles Draft CEQA Thresholds Guide. As stated above, it is interpreted as asking whether the Project and its alternatives would result in any inconsistencies with applicable plans, policies, objectives, standards, ordinances, regulations or statutes.

- Applicable guidelines and regulations.

4.3 Project Description

This section describes those aspects of the Proposed Project and its Alternatives which are pertinent to the assessment of impacts on the visual/aesthetics resources. The potential visual impacts of the Project would be due entirely to its construction; there would be no aspect of its operation which would be visible. Therefore, the critical aspects of the Project have to do with the spatial extent of construction, the equipment and activity associated with it, and the duration of the activities from the start of construction until Project completion. A general description of Project construction activities is presented in Section 3.1.5 of the DEIR (Construction Alternatives). This section of the visual/aesthetic impact assessment summarizes the relevant aspects of construction presented in Section 3.1.5 of the DEIR, while also introducing more detailed information that is not found in the DEIR.

Micro-Tunneling (Boring) and Cut-and-Cover Construction

All the Cut-and-Cover Construction Alignment Alternatives require tunneling under the Marina del Rey Entrance Channel to connect the Playa del Rey alignment with the Venice or the Marina del Rey Alignment Alternatives. Additionally, the Marina del Rey Via Marina Alignment Alternative, would require tunneling under the Grand Canal in order to connect with the Venice Pumping Plant. The tunneling referred to is alternatively termed "Micro-Tunneling" or "Boring."

The visible aspect of Boring would be the excavation at the starting and ending points of the under-channel and under-canal sections of the alignments. The starting point is variously referred to as the "Launch," "Jacking," or "Push" site, while the endpoint is referred to as the "Receive Site." There is only one viable Push Site for under-channel Boring, and this would be located at the northerly end of the Playa del Rey Alignment Alternative, on the south side of the Entrance Channel, along the northeast side of the Pacific Ave. fishing bridge. There are two options for push sites for under-canal tunneling, as described relative to the Marina del Rey Alignment.

Also, there would be two alternative Receive Sites on the north side of the Entrance Channel. One would be in the parking lot northwest side of the corner where Via Marina turns 90 degrees to the southwest, and the other would be at the southeast end of Pacific Ave.

No graphic examples of the above-ground features of "Boring" construction and the construction of the Push and Receive Sites specific to the Proposed Project were available at the time of the assessment (photo-simulations or photographs of similar construction activities). However, the lower images in Figure 16 shows shaft construction on a scale larger than that proposed for the construction of Push and Receive Sites.

Push Site Equipment

The major visible elements of the Push Sites would be:

- Jacking pit (from which the hydraulic jacks push pipes through the ground behind a remotely operated Tunnel Boring Machine (TBM).
- Remote control cabin for operating the TBM.
- Crane.
- Support facilities (generator, power pack, bentonite lubrication unit).
- Slurry separation equipment and tanks.
- Construction/Laydown area, 10 – 12,000 sq ft in area, for pipe and other equipment storage and staging
- Truck traffic to and from the pit for transporting tunnel muck, pipe sections and tunneling equipment. There would be eight truck round trips per day for muck removal and material supply.
- Construction crew. There would be 17 construction crew on site and 17 passenger-car round trips daily.

- Nighttime construction and lighting. It may be required to proceed continuously at the end of long drives through sticky soils to prevent the pipe from getting stuck short of the receiving site. In such cases nighttime construction would be required. It is assumed that there would be a need for lighting at the Push site throughout the night, on occasion.
- Acoustic curtain (sound barrier). To minimize the transmission of noise, it is proposed that a 20- to 30-ft tall acoustic curtain be installed around the site. This curtain would shield from view all equipment around the Push Site except for the crane. Typical curtains are shown in three of the images in Figure 16.

Push Site Construction Duration

The two Push Sites would require about two months each to complete and must be constructed prior to the start of Boring under the Entrance Channel and the Grand Canal. The under-channel tunnel is 1,800 ft long and boring rates range from 30 – 50 ft per eight-hour shift. A conservative estimate allows for no nighttime work, so it is assumed that there would be one shift per day. Under this assumption, Boring could require from 36 to 60 days (about one to two months). Cumulatively, Push Site construction and Boring would take up to about four months and would be considered to be "temporary" (see Appendix A). Even if tunnel Boring were to be sequential to cut-and-cover construction activities (see below), the cumulative total construction time would be less than one year and would also be considered to be temporary. However, it is assumed that Boring and trench construction would be concurrent.

For under-Canal boring, the rate of advance would be the same as for under-channel boring. The tunnel length would range from about 100 ft to 500 ft, depending on which of two alternative Push Sites is used. Tunneling could therefore require from 10 to 16 days for the longer route, or 3 to 4 days for the shorter route. It is assumed that there would be no nighttime construction.

Receive Site Equipment

Construction activity at the Receive Sites would occur during two periods: the initial construction of the Shaft, and then, later, when the TBM is extracted from the tunnel and the pipeline is either connected at the Receive Sites to the alignment along Via Marina or that along Pacific Ave., or, at the north end of the Via Marina alignment, the pipeline is tied in to the Venice Pumping Plant. The major equipment that would be utilized at the Receive Sites would be:

- Crane
- Jacking equipment
- Construction/Laydown site, about 5,000 sq ft in area, for pipe and other equipment storage and staging
- Truck traffic to and from the pit for transporting tunnel muck, pipe sections and tunneling equipment. There would be approximately 15 truck round trips per day for muck removal and material supply.
- Construction crew. There would be 25 construction crew on site and 25 passenger-car round trips daily.

- Acoustic curtain. To minimize the transmission of noise, it is proposed that a 20- to 30-ft tall acoustic curtain be installed around the site. This curtain would shield from view all equipment around the Receive Site except for the crane, which will extend beyond the top of the curtain.

Receive Site Duration

As noted, there would be two alternative Receive Sites along the north side of the Entrance Channel. Construction of these Receive Sites would require about six weeks each to complete. Then all activity at the sites would cease until under-channel Tunnel Boring reaches them. At that point the TBM would be extracted from one or the other of the Receive Site shafts and the pipeline would be tied in with either the Via Marina or Pacific Ave. cut-and-cover alignment. It is estimated that the extraction and tie-in activities would require about one week.

Similarly, the Receive Site in the vacant lot opposite to the Venice Pumping Plant would require six weeks to complete, then would lie dormant until under-Canal Tunnel Boring reached the site. One week would be required for TBM extraction and tying the pipeline in with the Venice Pumping Plant.

Cut-and-Cover Construction Site Equipment

Cut-and-cover construction is a common method of linear pipeline construction that involves an open trench and sequential activities. The trench would be excavated and then shored up with sheet piles that would be installed 200 to 300 ft ahead of the pipeline crew. Construction involves excavation, the pouring of a concrete foundation, backfilling with a bed of gravel, pipeline installation, backfill and compaction, restoration of curbs and utilities, and re-paving the affected road. Figure 16 shows one example of a typical array of equipment used in cut-and-cover construction along a public street.

The major visible elements of the Cut-and-Cover Sites would be:

- Concrete saw
- Pavement Breaker
- Pile driver
- Excavator
- Rubber tire loader
- Cranes (2)
- Backhoe loader/compactor
- Generator/compressor
- Soil compactor
- Asphalt paver
- Sweeper
- Water truck
- Supply truck

- Haul/dump truck
- Minimum of 17 to 28 workers on site daily
- A moving Construction/Laydown area along 1,000-ft stretches of the alignment.
- A Construction/Laydown area next to that serving the Push and Receive Site construction activities.

Cut-and-Cover Construction Duration

The proposed cut-and-cover construction method of construction would take 12 weeks to install approximately 1,800 ft of pipeline, completed to the point that the affected road is returned to its pre-construction state (paved). Given that rate of construction, the duration of construction for the alignment alternatives north of the Marina del Rey Entrance Channel would be about seven (7) months, while that for the alignment south of the Entrance Channel (Pacific Ave./Vista del Mar) would also be about seven (7) months. It is assumed that cut-and-cover construction north and south of the Entrance Channel would occur concurrently. Moreover, it is assumed that the construction and operation of the Push and Receive Sites would be concurrent with the cut-and-cover construction. However, these assumptions are not critical to the assessment of visual impacts, as entirely different public views are affected by north- and the south-Channel alternatives. Also, even if the Boring construction activities were sequential to cut-and-cover construction, the cumulative total construction time would be less than one year. Therefore, the visual impacts would be considered to be "temporary" in duration, regardless (see Attachment A).

Large-Diameter (Mined) Tunneling Construction

There are four alternative alignments for Mined Tunneling Construction; however, Alternative 1 was considered but found not to be viable. While Alternative 2 primarily would require mined tunneling, it would also use about 1,000 ft of cut-and-cover construction, and Alternatives 2 and 3 would require about 300 ft of cut-and-cover construction. Mined tunneling involves a Starter Shaft and an Extraction Shaft. The Starter Shaft would be located on LAX property about 300 ft northeast of Vista del Mar and as close as 220 ft south of Napoleon St. There are two alternative Extraction Sites, one on Dockweiler Beach at the southwest end of Hurricane St., and the other at the northeast end of Hurricane St. in a vacant lot directly across from the Venice Pumping Plant. The lower images in Figure 16 show a shaft site under construction and enclosed by an acoustic curtain. The scale of the area shown is similar to that which would be required for construction of the Starter Shaft. The Extraction Shaft would require approximately half this area.

Mined tunneling uses manned TBMs along a continuous alignment that may be of any length, so this construction alternative would require just the Starter Shaft and one Extraction Shaft. Additionally, two 3-ft diameter escape shafts would be needed, one north and one south of the Marina del Rey Entrance Channel, but these would be so minimally visible, and their construction would require so little time (a few days), that they are not considered further in this assessment.

Starter Shaft Equipment

The major visible elements of the Starter Sites would be:

- 30-ft diameter Starter Shaft.
- One 160-ton crane to lift/set the TBM and hoist muck cars.
- One 35-ton RT crane to handle segments and load segment cars.
- Office facilities, change houses.
- Cut-and-cover equipment (see above) for open trench construction.
- Support facilities (generator for pumps, electrical substation).
- Construction/Laydown area, 12,000 sq ft in area, for storage of tunnel liner and carrier pipe segments throughout the duration of the tunneling.
- Truck traffic to and from the pit for transporting tunnel muck, pipe sections and tunneling equipment. There would be 15 truck round trips per mining shift.
- Construction crew. There would be 20 – 25-man construction crew on site and 20- to 25 passenger-car round trips daily.
- Lighting may be required for security of the construction site and nighttime construction.
- Acoustic curtain. To minimize the transmission of noise, it is proposed that a 20- to 30-ft tall acoustic curtain be installed around the site. This curtain would shield from view all equipment around the Extraction Site except for the crane.

Starter Shaft Construction Duration

The Starter Shaft would require approximately seven months to construct (see Table 4.2-7 in the DEIR), and the tunnel portion of construction would last from 27 to 28 months for Alternative 2 and Alternatives 3 and 4, respectively. For Alternative 2, there would be 1000 ft of cut-and-cover construction. About 700 ft of this would occur along Hurricane St., while 300 ft would be needed to tie in the pipeline at the Starter Shaft with the existing C.I.S. in Vista del Mar. For Alternatives 3 and 4, only the tie-in open trench construction from the Starter Shaft to Vista del Mar would be needed. It is assumed that cut-and-cover construction would occur during tunnel construction and would not add to the duration of construction activities.

Extraction Site Equipment

The major visible elements of the Extraction Sites would differ depending on the phase involved. The first phase is the construction of the shaft, and the second phase is the removal of the TBM and construction of the tie-in with the pipeline that would be installed along Hurricane St. For construction of the shaft, the following equipment would be needed:

- 20-ft diameter Extraction Shaft.
- Muck cars
- Cranes (2)
- Cut-and-cover equipment (see above) for open trench construction.
- Support facilities (generator for pumps, electrical substation).
- Construction/Laydown area, 5,000 sq ft in area.

- Truck traffic to and from the pit for transporting tunnel muck, pipe sections and tunneling equipment. There would be an estimated 15 truck trips per day for muck removal, and about three truck loads per day for supplies.
- Construction crew. There would be approximately 25 construction crew on site and 25 passenger-car round trips daily.
- Lighting may be required for security of the construction site.
- Acoustic curtain. To minimize the transmission of noise, it is proposed that a 20- to 30-ft tall acoustic curtain be installed around the site. This curtain would shield from view all equipment around the Extraction Site except for the crane.

Extraction Shaft and Cut-and-Cover Construction Duration

The Extraction Shaft would require 10 weeks to construct and about one week for TBM removal after tunnel excavation has been completed. The cut-and-cover construction that is part of the Mined Tunnel construction alternative is expected to occur concurrently with tunnel construction.

4.4 Visual/Aesthetics Resources Impacts

The visible changes that would be brought about by the Proposed Project and its alternatives, and their potential to create aesthetic impacts, are evaluated in detail in this section relative to each alignment alternative, as well as relative to the several construction alternatives to the Proposed Project (Mined Tunneling Alignment Alternatives). The significance of these visual impacts has been determined by applying criteria summarized is Section 4.3 (and detailed in Attachment A), and the guidelines developed by the City of Los Angeles. Following, in Section 5.0, mitigation measures are recommended for changes that have the potential to create significant impacts; and evaluations are made of whether these measures are likely to reduce the impacts to a level that is less than significant.

4.4.1 Marina del Rey Alternative: Marquesas Way/Via Marina

Overview

Critical sensitive public views and existing visual conditions are described in Sections 2.1 and 2.2 of this Technical Appendix. The methodology for the following impact assessment is presented in detail in Attachment A.

The critical sensitive viewing positions along this alignment alternative include those from:

- Via Marina, a scenic highway and scenic drive;
- Aubrey E. Austin Park;
- North Jetty Promenade, east end;
- Marina del Rey Entrance Channel;
- Marquesas Way, Via Dolce, and adjoining residences;

- Residences along the Grand Canal near the Venice Pumping Plant;
- Grand Canal;
- Residences at the northeast end of Hurricane St.

Via Marina, Aubrey E. Austin Park, North Jetty Promenade, and Entrance Channel.

Relative to Via Marina and the nearby residences, the Project's visual impact would be significant and temporary, except for the loss of mature street trees, which would cause a long-term impact. The Project features potentially causing the impact would be the Push Site Option 1 and its related construction/laydown area, the cut-and-cover construction along the roadway, and the Receive Site and its construction/laydown area near the Entrance Channel.

For views from Aubrey E. Austin Park, North Jetty Promenade, and Entrance Channel, the Project's visual impact would also be significant but temporary. The impact would be due solely to the construction of the Receive Site and the related construction/laydown area nearby. The associated activities would be in the foreground of views from the park and Promenade, the residences noted, and Via Marina. To a lesser extent, they would be visible from the northwest lane of the Entrance Channel.

Existing features within view from these sensitive public roads and areas have not been noticeably and unfavorably modified by past activities (Section 2.2). These views are shown in Figures 2 – 7. The industrial character of Project activities and equipment associated with cut-and-cover pipeline installation and the construction and operation of the Push and Receive Sites along this alignment alternative would be incongruous with the established settings for the several potentially affected views.

To a limited extent, in-street and in-parking-lot construction activity might also be visible from Aubrey E. Austin Park and the east end of the North Jetty Promenade. The activities would not, however, be prominent and distracting due to the viewing distance and intervening parkway plantings, so the impact would not be significant. Such construction activities would not be visible from the Entrance Channel due to intervening structures and vegetation.

Marquesas Way, Via Dolce, and Adjoining Residences.

For views from these two streets and the nearby residences, the Project would potentially cause significant but temporary visual impacts. These impacts would be due to activities and equipment needed under Push Site Option 2, its associated construction/laydown area, and cut-and-cover construction activities. The potentially affected views have not be adversely affected by past actions such that the effects are noticeably incongruous with their setting. By contrast, the industrial character of Project features would noticeably and adversely affect public views. The construction/laydown site for this option would be in the foreground of views from Marquesas Way, Via Dolce, and their adjoining residences. Also, a public beach-access path starts near the construction/laydown site and runs along the east side of Ballona Lagoon to the south. From the beginning of this path, the construction/laydown site would be within the foreground.

The Push Site Shaft would be in the vacant lot shown in the upper image of Figure 4. The construction activities here would be in the foreground of residences along the northeast

side of Via Dolce at its intersection with Marquesas Way. The shaft site would be screened by an acoustic curtain from 20 – 30 ft tall on four sides. Cranes would be substantially in view above these curtains, and truck traffic to and from the sites would occur intermittently throughout the construction shifts. As such, these Project features would be incongruous with the established settings for these potentially affected views.

Grand Canal Residences, Grand Canal, and Hurricane St. Residences.

The visual impact of the Project on views from these residences and the Grand Canal would be adverse but not significant. Push Site Option 2 and the Receive Site, both shown in Figure 4, would be in the foreground of the residences lining the east side of the canal, the canal itself, and residences at the northeast end of Hurricane St. The Receive Site, like the Push Site, would be screened by an acoustic curtain 20 to 30 ft tall. Cranes would be well in view above these curtains, and truck traffic to and from the sites would occur at different points of the day. The curtained construction area and visible equipment would appear industrial and be incongruous with the generally residential setting.

However, relative to views from residences along the east side of the Grand Canal and the Grand Canal itself, the industrial character of the Venice Pumping Plant dominates attention. This would also be true for views from residences along the northeast end of Hurricane, at least for views to the east. Given the visual dominance of the Plant, the existing visual conditions are such that further visual impacts would not noticeably lessen the quality of the affected views.

Impact Intensity, Significance and Duration

The visual impacts for this alignment are summarized and discussed below relative to the thresholds for significance noted in Section 4.3.

AES-1: The Proposed Project or its alternatives would cause a substantial degradation of existing visual character or quality of a site and its surroundings. The impact would be significant but temporary as well as long term.

Concerning the six Los Angeles City Thresholds for Significance that are grouped under AES-1, the visual impacts are summarized as follows:

- One or more mature street trees which contribute substantially to the value of the scenic highway/drive status of Via Marina would be removed.
- No natural open space would be graded or developed;
- No structures are proposed for any natural open space;
- There would be a high degree of contrast between proposed features and existing features representing the valued aesthetic image of the area.
- No zone change is proposed
- There would be no positive contribution to the aesthetic value of the area.

Certain critical public views would affected by the Project to the point that the impact would be significant. However, the duration would be temporary. Elsewhere, the Venice Pumping Plant has adversely affected the quality of critical public views to the point that the additional impact of the Project would not significantly affect these views. The

impact would worsen the existing visual quality, but the current visual condition due to the Plant is already at the lowest rating. A more detailed analysis follows.

Via Marina and Adjoining Residences. Existing visual conditions for views from this designated scenic highway/drive are VMC 1. From this road the following Project features would be within foreground views, proceeding from its intersection with Marquesas Way to where it turns to the southwest:

- The 10- 12,000 sq ft construction/laydown area for Push Site Option 1;
- The Push Site Option 1 shaft construction area within the Via Marina/Marquesas Way intersection;
- Cut-and-cover construction along 0.5 mile of roadway and approximately 1,000 ft of parking lot;
- The Receive Site near the Entrance Channel.

These activities and their associated equipment and work force would dominate views from this road and its flanking residences and would be industrial in character and incongruous with the setting. Note that the Push Site would occupy much of the Via Marina/Marquesas Way intersection and would be surrounded by an acoustic curtain 20 – 30 ft high. The equipment and activity within the curtains would be screened from view, but a crane would be substantially taller than the curtains. The site would have an apparent mass of a two- to three-story building due to the curtains.

The construction/laydown area, if square in configuration, would occupy an area 110 ft on a side. This storage of industrial equipment in a parking lot currently serving recreation and commercial uses within Marina del Rey would appear discordant and dominate views.

From Via Marina's intersection with Marquesas Way, for about 0.5 mile to the southeast, cut-and-cover construction would occur in one of the two lanes serving travel to the southeast. At end of the in-street construction, the alignment would angle to the south into a parking lot serving nearby residences and proceed for approximately 1,000 ft to the tie-in with the under-channel pipeline at the Receive Site. For the length of the in-street construction, motorists would be restricted to one lane of travel and pass in close proximity to the cut-and-cover construction activities in the second lane. Where the alignment crosses over into the parking lot, one or more mature trees would be removed due to trenching activities and the movement of equipment. In the parking lot mentioned, cut-and-cover construction would be within the immediate foreground of residences along the southwest side of the lot, as well as in the foreground of views from the scenic highway/drive.

Cut-and-cover construction along a 0.5-mile length of Via Marina would be immediately proximate to residences and motorists using this scenic highway. The associated activity and equipment would displace the current positive aesthetic features along the drive and dominate the views. A separate concern is the transition of the in-street construction to the parking lot, which would require the removal of one or more trees on the southwest side of Via Marina. This would be a noticeable loss of a valued visual resource.

From northwest end of Via Marina to the southeast where it passes by Aubrey E. Austin Park, the visual conditions would change from VMC 1 to VMC 4 (dominant),

representing an Impact Intensity Level 3 (Table K-3, Attachment A). Within a highly sensitive view, such an impact would be significant.

The loss of the street tree(s) would be long term, requiring many years to be mitigated by the maturation of new plantings. The duration of the other impacts is uncertain, as it is not known to what degree certain activities would occur concurrently. The cut-and-cover construction would last for about three months, and it is likely that most of the Push and Receive Site construction would be completed concurrently. If not, the cumulative construction could last for about five months. In either case, the time frame would be considered to be temporary. *Conclusion: the impact would be significant and primarily temporary, except for the loss of mature street trees, which would be a long-term impact..*

Aubrey E. Austin Park, North Jetty Promenade, east end, and Marina del Rey Entrance Channel. The existing visual condition for views from this these critical public viewing areas is VMC 1. The most critical of these views is that from the park, followed by those from the Promenade and the Channel. The only Project feature that would affect views from the Park and Promenade would be the 5,000 sq ft construction/laydown area for Receive Site for the under-channel tunnel boring and the shaft site itself. The cut-and-cover construction would be largely obscured by the intervening street trees and hedges (see Figure 6).

The Receive Site would be surrounded by a 20- to 30-ft-tall acoustic curtain and would be peripheral to the primary views from the park. Given the park's proximity to the Entrance Channel, it is assumed that views most usually would be directed away from the Receive Site and toward the boating activity in the Channel and the ocean to the southwest. This would also be true for views from the North Jetty Promenade, which is proximate to the Channel. Also, views from the Promenade toward the Receive Site are screened by mature trees within the Park. Regarding views from the Entrance Channel, they would tend to be focused along the Channel either to the northeast or southwest, in the directions of travel.

The most critical of these views are those from the park. Although most viewing might be away from the Receive Site, the park is oriented for viewing to the northwest as well (toward the Receive Site). A conservative approach would be to assume that substantial attention is directed toward Via Marina and the Receive Site. Accordingly, the Site would attract considerable attention to the point of competing with other features in view, if not dominating attention. The two- to three-story curtained area would appear out of place and discordant, not appearing to be an inherent feature of the largely residential area. The resulting visual condition would be VMC 3 (co-dominant). The change in visual conditions would be Intensity Level 2. *Within a highly sensitive view, such an impact intensity would be considered to be significant, although the cumulative duration of construction activities at the Receive Site would be seven weeks and, therefore, temporary.*

Due to the primary direction of views from the Promenade and the Entrance Channel, coupled with screening by vegetation and attenuation by distance (for the Channel views), the affect of constructing the Receive Site at Via Marina is not expected to be substantial (not significant).

Marquesas Way, Via Dolce, and Adjoining residences. The existing visual conditions for potentially affected views from these roads and residences is currently VMC 1. From

these roads and residences, the following Project features would be within foreground views:

- The 10- to 12,000 sq ft construction /laydown area for Push Site Option 2;
- The Push Site Option 2 shaft construction area;
- Cut-and-cover construction along Marquesas Way/Via Dolce that would connect with the Push Site Option 2 Shaft site.

Activities associated with Push Site Option 1 primarily would not be visible from these roads and residences, as there would be no construction along Marquesas Way or within the "island" at the intersection with Via Dolce. Here, micro-tunneling would occur from this Push site, located northeast of the Via Marina/Marquesas Way intersection, to the Receive site in the vacant lot across from the Venice Pumping Plant. A small part of the cut-and-cover construction at Via Marina would be briefly in view but would be at a distance and not within primary views from most of the residences or along much of the street. An exception would occur for motorists driving on Marquesas Way when approaching the stop light at Via Marina. Here in-road construction would be seen for a relatively short part of the alignment where it would tie in

On the other hand, the activities, equipment and work force associated with Push Site Option 2, the nearby construction \laydown area, and cut-and-cover construction would dominate views from the roads and residences noted. They would be industrial in character and incongruous with the setting. The construction/laydown area, if it were square in configuration, would occupy an area up to 110 ft long on each side, or an equilateral triangle up to 155 ft on a side (the available space is triangular). It would appear that there is insufficient area in the designated "island" location at the intersection of these two streets, as there is less than 6,000 sq ft of space there. Use of this space for a construction/laydown area is further complicated by the alignment of the cut-and-cover construction needed to bring the pipeline to Push Site Option 2. The alignment seemingly would need to traverse the laydown area in order to directly reach the Push Site, thereby diminishing the area available for laydown. Additional laydown space may be available in the vacant lot next to the Push Site construction area, but that space is limited as well. Consequently, some additional part of Via Dolce or Marquesas Way may have to serve as a construction/laydown area.

Using the island for a construction/laydown area would likely cause the damage and removal of the large, mature tree, as well as all of the landscape materials in the island. This island (see Figure 2) is an entry statement for residential area and the visual focus of traffic along both streets. The loss of the tree and other plantings would cause an irretrievable loss of visual quality.

Regarding the Option 2 Push Site, the construction/laydown site for this option would be in the foreground of views from Marquesas Way, Via Dolce, and their adjoining residences. Also, a public beach access path starts near the construction/laydown site and runs along the east side of Ballona Lagoon to the south. From the beginning of this path, the construction/laydown site would be within the foreground.

The Push Site Shaft would be in the vacant lot shown in the upper image of Figure 4. The construction activities here would be in the foreground of residences along the northeast side of Via Dolce at its intersection with Marquesas Way. The 20- to 30-ft-tall acoustic

curtain around the Push Site would largely fill the vacant lot. This two- to three-story curtain wall would be on all four sides of the site, and would look like a featureless block structure incongruous with the setting. The crane inside the site would protrude well above the curtain walls, and the necessary truck traffic would be visible intermittently throughout the day.

The effect of cut-and-cover construction would be the same as described for the Via Marina views. Views from the roads would be dominated by the proximate construction. Additionally, since open trench construction would need to proceed more or less straight to the Push Site in the vacant lot, the planted island area described above would be traversed by the alignment. The trench construction would unavoidably destroy plantings and cut the roots of the mature tree in the island. Using the area as a laydown site most likely would damage the tree, and trench construction would cause further damage. Together, the activities could cause the tree to be removed.

The visual impacts associated with the construction of the Option 2 Push Site, its operation, the use of the intersection island for a laydown site, and cut-and-cover construction would severally and together dominate views with features incongruous with the setting. The existing visual conditions would change from VMC 1 to VMC 4, representing and impact intensity of Level 3. Given the sensitivity of the views affected, the impact would be significant.

The duration of the construction activities note is as follows. The Option 2 Push Site shaft would be constructed within about two months, and the approximately 500 ft of cut-and-cover construction along Marquesas Way that would be required for this Push Site would take about three to four weeks. It is assumed that shaft construction and cut-and-cover activities would be concurrent, but at worst, if they were not, the duration would extend to three months instead of two. *The impacts, while significant, would, therefore, be temporary in duration.*

Grand Canal Residences, Grand Canal, and Hurricane St. Residences. The existing visual conditions for potentially affected views from these roads and residences is currently VMC 4 due to the presence of the Venice Pumping Plant. From the residences and the canal, the following Project features would be within foreground views:

- The Option 2 Push Site; and
- The Receive Site in the vacant lot opposite the Venice Pumping Plant;

These activities and equipment, activity, and work force associated with the Push Site and Receive Site would be co-dominant with the Venice Pumping Plant. The appearance of the acoustic curtain-enclosed sites, the protruding crane, and truck traffic have has been described relative to AES-1. These features would be industrial in character and incongruous with the generally residential setting. *However, because the existing visual conditions are VMC 4, the conditions could not substantially worsen and the impact, while adverse, would not be significant.* This adverse impact would endure for six weeks of construction for the receive site, but this would be concurrent with the construction of the Push Site, which would last for about two months. The adverse impact would, therefore, be temporary.

AES-2: The Proposed Project or its alternatives would cause substantial, adverse effects on scenic vistas. The impact would be significant, primarily temporary but to a limited extent long-term.

The impacts of the Project, relative to the two Los Angeles City Thresholds for Significance that are grouped under AES-2, are summarized as follow:

- There would be a significant impact due to partial obstruction of recognized and valued views due to roadside cut-and-cover construction, construction/laydown areas, and optional Push Sites.
- The impact would significantly affect the recognized views currently available from lengths of public roadways (Via Marina, Marquesas Way, and Via Dolce).

Via Marina is a designated scenic highway/drive, and the views from this road represent a continuous series of scenic vistas culminating in view of the Entrance Channel. Also, there are scenic vistas from Aubrey E. Austin Park and the North Jetty Promenade which extend out across the Entrance Channel, but in the case of the park also extend along Via Marina. Furthermore, the views from the residences lining the east bank of the Grand Canal near the Venice Pumping Plant are highly scenic vistas which include the canal and the Ballona Lagoon to the southeast. The adverse impact on the views noted has been assessed in detail relative to AES-1. That on views from Via Marina and Aubrey E. Austin Park would be significant and primarily temporary, excepting the loss of street trees, which would be a long-term impact. *The impact on views from the Grand Canal residences, the Grand Canal, and Hurricane St. residences would be adverse but not significant due to the existing effect of the Venice Pumping Plant.*

AES-3: The Proposed Project or its alternatives would cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within view from a state scenic highway. The impact would be significant and long-term.

Regarding the one Los Angeles City Threshold factor for Significance that under AES-3:

- The Project would significantly impact views from a designated scenic highway. This has been discussed.

The Project would result in the loss of mature street trees along Via Marina, a designated scenic highway (designated by the County of Los Angeles) and one mature tree at the intersection of Via Dolce and Marquesas Way. *The impact of the loss of these trees has been described relative to AES-1, and would be significant and long-term.*

AES-4: The Proposed Project or alternatives would not result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No nighttime construction would be required for construction activities along the subject alignment alternative. However, if there were, the acoustic curtains would shield such lighting from view. The Los Angeles City Threshold factors for AES-4 do not, therefore, apply.

AES-5: The Proposed Project or alternatives would not result in substantial negative shadow effects on nearby shadow-sensitive uses.

There are no shadow-sensitive land uses in the vicinity of the Proposed Project or its alternatives.

AES-6: The Proposed Project or alternatives would result in visual impacts that would not be consistent with applicable rules and regulations. The impact would, therefore, be significant, but it would be temporary.

The applicable regulatory setting is the Los Angeles County Local Coastal Program for Marina del Rey, embodied in the Marina del Rey Land Use Plan and discussed in Section 3.2. Policy "e-3" of the Plan established Via Marina as a scenic drive, and the Scenic Highway Element of the County General Plan identifies Via Marina as a scenic highway. It is assumed that unfettered access to Via Marina and its continuous enjoyment by the public is implicitly a policy of the Plan, as would be the protection from adverse impacts the views from this road. The adverse impacts from Via Marina have been described and are deemed in this assessment not to be consistent with the Plan. *Therefore, these visual impacts would be significant; however, they would be temporary.*

4.4.2 Venice Alignment Alternatives: Pacific Avenue Alignment

The critical sensitive viewing positions along this alignment alternative include those from:

- Hurricane St. and adjoining residences;
- Pacific Ave. and adjoining residences;
- Bikeway along Pacific Ave.;
- Ballona Lagoon/Grand Canal;
- Public beach access path along easterly side of Ballona Lagoon;
- The North Jetty Promenade

Overview

Hurricane St., Grand Canal at Hurricane St., and Adjoining Residences

The Project does not have the potential to significantly and adversely impact views from this street, the canal or the nearby residences. Cut-and-cover construction would occur in one of the two lanes of Hurricane St. and would be in the immediate foreground of motorists and residents along the street. Construction activities would also be noticeable from the residences lining the east side of the Grand Canal just northeast of the end of the street, as demonstrated in Figures 4 and 5. However, the existing visual condition for views from these sensitive viewing positions has been adversely affected by the Venice Pumping Plant to the degree that a noticeable lessening of visual quality is not possible. The views are dominated by the industrial character of the Plant.

Pacific Ave. and Residences, Southwest End of Via Marina, Bikeway, Ballona Lagoon, Beach Access Path and North Jetty Promenade

The Project has the potential to cause significant, but temporary, visual impacts relative to views from the sensitive viewing positions listed. In these views, no features anomalous with the character of the area are currently noticeable. The Project, however,

would introduce an industrial character to the affected area. Cut-and-Cover construction would be within the foreground of views from Pacific Ave., the bikeway and Ballona Lagoon. For the residences along Pacific Ave., those driving along the street, and those using the bikeway, construction activity would unavoidably dominate the views. The industrial nature of the activity would sharply contrast with the residential character of the neighborhood and the semi-natural character of the lagoon.

In addition, this alternative would require that a Receive Site be constructed along the North Jetty Promenade at the intersection of Via Marina and Pacific Ave. To construct the Receive Site and the open trench pipeline, one lane of Via Marina along the Entrance Channel and the adjoining public parking would be used for a construction/laydown area. In essence, Via Marina in this area would be closed to public use, amounting to eliminating public access to a scenic route and the associated views. Also, the three-story-tall Receive Site would interfere with views toward the Entrance Channel from sensitive public viewing positions in the vicinity.

Impact Intensity, Significance and Duration

The visual impacts for this alignment are discussed and summarized below relative to the thresholds for significance noted in Section 4.3.

AES-1: The Proposed Project or its alternatives would cause a substantial degradation of existing visual character or quality of a site and its surroundings. The impact would be significant but temporary.

Relative to the six Los Angeles City Thresholds for Significance that are grouped under AES-1, the impacts are summarized as follows:

- No features contributing to valued visual character or neighborhood image would be removed, altered, or demolished.
- No natural open space would be graded or developed;
- No structures are proposed for any natural open space;
- There would be a high degree of contrast between proposed features and existing features representing the valued aesthetic image of the area.
- No zone change is proposed
- There would be no positive contribution to the aesthetic value of the area.

Most of the critical public views would affected by the Project such that the impact would be significant. However, the duration would be temporary. For views from Hurricane St. and residences at its northeast end, as well as the Grand Canal and residences close to this end of the street, the Venice Pumping Plant has adversely affected the quality of critical public views to the point that the additional impact of the Project would not significantly affect these views. The impact would worsen the existing visual quality, but the current visual condition due to the Plant is already at the lowest rating. A more detailed analysis follows.

Hurricane St., Residences, Grand Canal and its Residences. As noted, the existing visual condition for views from the points listed is VMC 4. The cut-and-cover construction would be in the immediate foreground of residences along the street, while from the

"Grand Canal" residences and the canal itself, the construction activity and equipment would be seen at a distance of about 150 ft.

These construction activities and their associated equipment and work force would attract substantial attention first because they would occur in the immediate foreground of some views, and second because they would represent a sudden change. Although the Venice Pumping Plant is industrial and currently dominates these views, the construction of the pipeline would command more attention from the closest viewing positions (Hurricane St. and its residences). Nonetheless, visual quality here is currently at the lowest rating, and the construction activities could not substantially impact the views further. While the impact would be adverse, it would not be significant in this case.

The length of Hurricane St. affected by construction (from the Pumping Plant to Pacific Ave.) is about 400 ft, Given the rate of advance expected, the cut-and-cover construction would last for about three weeks. The time frame would be considered to be temporary. *Conclusion: the impact would not be significant and would be temporary*

Pacific Ave. and Residences, Southwest End of Via Marina, Bikeway, Ballona Lagoon, Beach Access Path and North Jetty Promenade. As noted, the existing visual condition for views from these critical public viewing areas is VMC 1. Relative to views from most of Pacific Ave., the bikeway, Ballona Lagoon, and the Beach Access Path, the cut-and-cover construction along about 3,800 ft of Pacific Ave. would be within view. Given that the beach access path would be about 270 ft from the construction activity, it is expected that the quality of views from the path would not be appreciably affected. Were a person to be boating on the lagoon, they could be close to the moving construction site. For the residences along Pacific Ave., those driving along the street, and those using the bikeway, construction activity would unavoidably dominate the views. The industrial nature of the activity would sharply contrast with the residential character of the neighborhood and the semi-natural character of the lagoon. The visual conditions would change to VMC 4, representing an impact intensity of Level 3. Within a highly sensitive view, this change would signal a substantial reduction in visual quality.

From the southeast end of Pacific Ave. where it intersects with Via Marina, the major concern over visual impacts would be the effect of constructing the Receive Site. First, Via Marina is a scenic highway/drive, and the North Jetty Promenade is a popular recreation facility. To construct the Receive Site, a 10- to 12,000 sq ft construction/laydown area would be required. To accommodate this laydown area, one lane of Via Marina and most of the public parking along this road would have to be closed. This would bring the industrial nature of what amounts to an equipment yard into the immediate foreground of views from the Promenade and the road, as well as the residences along Via Marina across from the public parking.

The impact of closing the road to public use and eliminating public parking is addressed relative to AES-2, -3, and -6. The Receive Site would be enclosed by an acoustic curtain 20 to 30 ft high, as noted earlier in the analysis. This box-like structure, apart from the tall crane protruding above it, would be featureless and impose upon views toward the Entrance Channel from the residences in the vicinity, the southeast end of Pacific Ave., what remains of Via Marina during construction, and the North Jetty Promenade. It would be as much as three stories tall, or approximately as high as the neighboring residences. Moreover, intermittent truck traffic would occur during the work shifts.

Figure 9 shows a close-up view of the site from the intersection of Pacific Ave. and Via Marina, while Figure 7 is a view from the Entrance Channel. The latter view discloses the array of residences that would be close to the Receive Site. The curtained site, alone, would dominate views that are highly sensitive. But the construction/laydown area would also dominate views. Together the laydown area and the Receive site would substantially lessen the visual quality of the area, resulting in visual conditions of VMC 4. The reduction from VMC 1 would be an impact of intensity Level 3. For highly sensitive views, this impact would be especially significant.

Concerning the duration of construction, the cut-and-cover operation along the 4,000-ft length of the Pacific Ave. would last nearly seven months. During this period, the construction/laydown area along Via Marina would be remain. The Receive Site construction would require six weeks to construct, then the acoustic curtains would be removed and the shaft would be covered by a metal plate. When the under-channel tunnel boring is complete, the TBM would be extracted and the pipeline tied to that installed along Pacific Ave. This latter activity would last one week. It is assumed that the Receive Site Construction and operation would be concurrent with the cut-and-cover construction and that construction would be complete and all evidence removed at the end of seven months. The duration of the impact would, therefore, be temporary. *Conclusion: the impact would be significant but temporary in duration.*

AES-2: The Proposed Project or its alternatives would cause substantial, adverse effects on scenic vistas. The impact would be significant but temporary.

Relative to the two Los Angeles City Thresholds for Significance that are grouped under AES-2, the impacts may be summarized as follows:

- There would be a significant impact due to partial obstruction of, and elimination of pubic access to, recognized and valued views because of roadside cut-and-cover construction, construction/laydown areas, and a Receive Site.
- The impact would significantly affect the recognized views currently available from lengths of public roadways (Via Marina and Pacific Avenue) and the bike path along Pacific Ave.

Concerning the first of these two City of L.A. Thresholds, Via Marina is a designated scenic highway/drive, and the views from this road are, therefore, "recognized." Also, there are "recognized" scenic vistas from the North Jetty Promenade which extend out across the Entrance Channel. The closing of Via Marina to public use and eliminating public parking would make inaccessible to the public scenic vistas from that road and the Promenade that are currently enjoyed by the public. The impact would, functionally, be the same as totally obstructing the views; therefore, impact would be significant.

Conclusion: The adverse effect on the recognized views from Via Marina, the Promenade, Pacific Ave. its Class II bikeway, and Ballona Lagoon, while significant, would be temporary, as discussed in detail relative to AES-1.

AES-3: The Proposed Project or its alternatives would not cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within view from a state scenic highway.

One Los Angeles City Threshold factor for Significance is relevant to this CEQA issue and is summarized as follows:

- The Project would significantly impact views from a designated scenic highway (see AES-1), but would not impact any specific scenic resources.

The Project would not directly damage features contributing to the visual aesthetics of the potentially affected views. Rather, the Project would introduce features into these views which are incongruous with the established setting and would block specific views (for instance, the Receive Site would interfere with views of the Entrance Channel from various viewing positions). These impacts have been addressed under AES-1 and AES-2.

Views from a designated scenic highway (Via Marina) would be adversely affected, but aesthetic features in view would not, as noted, be adversely impacted. A separate impact not specifically addressed by the City of Los Angeles Thresholds is that access to a designated scenic highway would be eliminated, temporarily (traffic would be restricted to local residents and controlled along one lane), as would access to the Promenade and the Entrance Channel views through the temporary elimination of public parking in the area. In essence, eliminating access to views represents an irretrievable loss of the resource (the scenic highway and public parking at least partly serving as access to scenic views) for the period of construction. This impact is addressed under AES-6 and would be temporary.

AES-4: The Proposed Project or alternatives would not result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No nighttime construction would be required for construction activities along the subject alignment alternative. However, if there were, the acoustic curtains would shield such lighting from view. The Los Angeles City Threshold factors for AES-4 do not, therefore, apply.

AES-5: The Proposed Project or alternatives would not result in substantial negative shadow effects on nearby shadow-sensitive uses.

There are no shadow-sensitive land uses in the vicinity of the Proposed Project or its alternatives.

AES-6: The Proposed Project or alternatives would result in visual impacts that would not be consistent with applicable rules and regulations. The impact would, therefore, be significant, but it would be temporary.

The applicable regulatory documents are the Venice Community Plan and the Venice Local Coastal Program land Use Plan, as this alignment alternative lies entirely within the boundaries of Venice. Section 3.0 details the applicable plans and policies. Coastal Resources Goal 18 of the Venice Community Plan calls for the preservation of the scenic and visual qualities of coastal areas. The policy is to assure that projects are visually compatible with the character of surrounding areas. Moreover, design principles set forth in the Venice Land Use Plan requires that views of distinctive visual resources not be significantly disturbed. As discussed relative to AES-1, the Project would introduce features into view which are visually incompatible with the character of the affected area. Also, views of the Entrance Channel would be directly impacted, and the Channel arguably presents a distinctive visual resource. *Conclusion: Because the Project would not be consistent with the regulatory setting, the visual impacts described would be considered to be significant. They would, however, be short term, lasting for about seven months.*

4.4.3 Westchester/Playa del Rey Alignment Alternatives: Pacific Avenue/Vista del Mar Alignment.

The critical sensitive viewing positions along this alignment alternative include those from:

- Pacific Ave. Fishing Bridge;
- Bikeway along Pacific Ave. Bridge;
- Pacific Ave. and 62nd St., including adjacent residences;
- Del Rey Lagoon and adjacent parking area;
- Dockweiler Beach Access from Pacific Ave.
- Vista del Mar (scenic highway) and adjacent residences.

Overview

Pacific Ave. Fishing Bridge, Bikeway, Boat Launch, Pacific Ave. and 62nd St., Residences along 62nd St.

The Project has the potential to significantly, but temporarily, impact views from the public viewing positions listed. Today, within views from positions along the bridge and bikeway, in the vicinity of the boat launch, at the northwest end of Pacific Ave., and along 62nd St., there are no noticeably incongruous features in sight. The existing views are shown in Figure 10. In this vicinity, the activities and equipment associated with cut-and-cover construction, as well as the construction and operation of the Push Site, would be within the immediate foreground. Such equipment and activities would have a decidedly industrial appearance that would be incongruous with the recreation and residential land uses and character there. The appearance of these project features would command attention.

Pacific Ave. and Adjoining Residential Area, Del Rey Lagoon Park, Beach Access Path

In the vicinity of Del Rey Lagoon Park, views from the park, Pacific Ave., the nearby residential area and the beach access path would be significantly, but temporarily impacted by the Project. From these sensitive viewing positions, the potentially affected views include no anomalous features incongruous with the character of the area. Figures 11 and 12 show the residential area along Pacific Ave., the adjacent Del Rey Lagoon Park, and one of its parking lots. Cut-and-cover construction would occur in one of the two lanes of Pacific Ave. and would be in the immediate foreground for park users, local residents, and those using the beach access path leading from the parking area along Pacific Ave. that also serves the park. Such construction would contrast unfavorably with the character of the setting and dominate attention.

Vista del Mar and Adjacent Residences

As is the case for the other views from this alignment alternative, the Project would significantly, but temporarily affect sensitive public views that currently have not been adversely affected by past actions. Figures 13 and 14 show the terminus of the alignment where the new pipeline would tie in with the existing C.I.S., as well as the character of the residential area and the quality of the ocean views available from this road. Cut-and-

Cover construction would be within one lane of Vista del Mar and, therefore, be in the immediate foreground of views from the street and residences noted. The appearance of this activity would be incongruous with the residential setting and inconsistent with scenic highway status of Vista del Mar.

Impact Intensity, Significance and Duration

The visual impacts for this alignment are discussed and summarized below relative to the thresholds for significance noted in Section 4.3.

AES-1: The Proposed Project or its alternatives would cause a substantial degradation of existing visual character or quality of a site and its surroundings. The impact would be significant but temporary.

Relative to the six Los Angeles City Thresholds for Significance that are grouped under AES-1, the impacts are summarized as follows:

- No features contributing to valued visual character or neighborhood image would be removed, altered, or demolished.
- No natural open space would be graded or developed;
- No structures are proposed for any natural open space;
- There would be a high degree of contrast between proposed features and existing features representing the valued aesthetic image of the area.
- No zone change is proposed
- There would be no positive contribution to the aesthetic value of the area.

The critical public views noted would be affected by the Project such that the impact would be significant. The affected views are highly sensitive and Project construction activities would be within the immediate foreground of these views. Of particular importance is that Vista del Mar is a scenic highway, and therefore views from this road are especially important. However, the duration of the impacts noted would be temporary.

A detailed impact assessment follows:

Pacific Ave. Fishing Bridge, Bikeway, Boat Launch, Pacific Ave. and 62nd St., Residences along 62nd St. From these critical viewing positions, the following Project features would be within the foreground:

- The 10- to 12,000 sq ft construction/laydown area for the Push Site;
- The Push Site;
- Cut-and-cover construction at the northwest end of Pacific Ave. south of the Entrance Channel;

The activities, equipment, and work force associated with these Project features would dominate these views and be incongruous with the setting, as noted. The Push Site would be located in the parking lot abutting the bridge on its northeast side. It would also have to accommodate some space for construction/laydown, as the primary location for this,

the parking lot abutting the southwest side of the bridge, would be too small. Therefore, it is assumed that the Push Site would occupy the entire area between the boat launch and the bridge, including the northeast end of 62nd St. As well, the associated construction/laydown site would occupy the entire parking lot flanking the southwest side of the bridge.

As has been noted before, the Push Site (like the Receive Sites) would be surrounded by an acoustic screen that would be 20 to 30 ft high. A crane would be substantially higher than the curtain, so not all of the equipment would be shielded from view. Also, truck traffic required for the delivery of materials and supplies and muck hauling would be periodically within the subject views.

A limited stretch of cut-and-cover construction would affect the views noted, as this aspect of the Project terminates at the Push Site. Here the trenched pipeline would be tied in with the under-channel pipeline. Cut-and-cover construction would require a moveable construction/laydown area alongside of the open-trench construction, as well as a portion of the parking lots noted.

The existing visual conditions would change from VMC 1 to VMC 4 (dominant, incongruous features), representing an impact intensity of Level 3 (Table K-3, Attachment A). *Conclusion: Within a highly sensitive view, such an impact would be significant.*

Regarding the duration of the impact on the subject views, the Push Site must be completed prior to Tunnel Boring and would require two months to construct. Tunnel Boring would require from one to two months (Section 4.4, Project Description). Cumulatively, Push Site construction and Boring would therefore be completed over a four-month period. It is assumed that the short stretch of cut-and-cover construction within the subject views would occur within this time frame. *Consequently, the visual impact of construction would be temporary.*

Pacific Ave. and Adjoining Residential Area, Del Rey Lagoon Park, Beach Access Path. Relative to these critical viewing positions, primarily it would be cut-and-cover construction that would adversely impact the visual quality of the area. However, truck traffic required for the construction and operation of the Push Site, and that needed for delivery of materials for open-trench construction, would also be within view and pose an adverse impact.

The activities, equipment, and work force associated with pipeline installation, and the truck traffic noted, would occur within a few feet of the edge of Del Rey Lagoon Park, the nearby residences, parking for the residences and Lagoon, and the beach access path. The scale, proximity, contrast, and movement of the equipment and work force would unavoidably draw focused attention and dominate the scene. The existing visual conditions would change from VMC 1 to VMC 4 (dominant, incongruous features), representing an impact intensity of Level 3. Within the highly sensitive views noted, such an impact would be significant.

There would be about 2,000 ft of cut-and-cover construction along Pacific Ave. up to where it intersects with Vista del Mar. At the rates of advance described in the summary Project Description in Section 4.4, construction along this road would be complete within about 3.5 months. *Consequently, the visual impact of construction, while significant, would be temporary.*

Vista del Mar and Adjacent Residences. As would be the case for the Pacific Ave. stretch of the alignment, along Vista del Mar, the primary aspect of the Project that would be within view would be cut-and-cover construction within one lane of the roadway. The impact of this construction would be as described earlier relative to other foreground views. There would be an impact of Level 3 intensity, and it would therefore be significant. The length of Vista del Mar that would be affected would be about 1,600 ft long. At the rate of advance projected, it would take about 3 months to complete this part of the alignment. *Therefore, the impact, while significant, would be temporary.*

AES-2: The Proposed Project or its alternatives would cause substantial, adverse effects on scenic vistas. The impact would be significant but temporary.

Relative to the two Los Angeles City Thresholds for Significance that are grouped under AES 2, the impacts may be summarized as follows:

- There would be a significant impact due to partial obstruction of recognized and valued views due to the construction and operation of a Push Site.
- The impact would substantially affect recognized views currently available from a length of a public roadway and a portion of a bikeway.

Vista del Mar is a designated scenic highway, and the views from this road represent a continuous series of scenic vistas of the Pacific Ocean and Dockweiler Beach. Also, there are scenic vistas from the bikeway along the South Jetty, the Pacific Ave. Fishing Bridge, and 62nd St. which extend out across the Entrance Channel. *The potential adverse impact on the views noted has been assessed in detail relative to AES-1 and has been considered to be significant but temporary.*

AES-3: The Proposed Project or its alternatives would not cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within view from a state scenic highway.

One Los Angeles City Threshold factor for Significance is relevant to this CEQA issue and the impact is summarized as follows:

- The Project would significantly impact views from a designated scenic highway (see AES-1 and -2), but would not impact any specific scenic resources within view of a scenic highway.

The Project would not directly damage features contributing to the visual aesthetics of the potentially affected views, particularly views from a scenic highway. Rather, the Project would introduce features into these views which are incongruous with the established setting. These impacts have been addressed under AES-1 and AES-2.

AES-4: The Proposed Project or alternatives would not result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No nighttime construction would be required for construction activities along the subject alignment alternative. However, if there were, the acoustic curtains would shield such lighting from view. The Los Angeles City Threshold factors for AES-4 do not, therefore, apply.

AES-5: The Proposed Project or alternatives would not result in substantial negative shadow effects on nearby shadow-sensitive uses.

There are no shadow-sensitive land uses in the vicinity of the Proposed Project or its alternatives.

AES-6: The Proposed Project or alternatives would result in visual impacts that would not be consistent with applicable rules and regulations. The impact would, therefore, be significant, but it would be temporary.

Section 3.0 details the applicable plans and policies. The applicable regulatory document is the Coastal Resources chapter of the Westchester-Playa del Rey Community Plan. Objective 18-5 is relevant: "Preserve coastal visual resources by protecting and enhancing scenic views of the ocean and wetlands from designated Scenic Highways, and public view sites." Vista del Mar is a designated scenic highway.

Policy 18-5.1 for this objective calls for the following relevant stipulations for siting and designing development in order to:

- Protect public views to and along the ocean and scenic coastal areas;
- Be visually compatible with the character of the surrounding area; and
- Retain existing views from designated public view areas and Scenic Highways.

Under this policy, "all new development in the Coastal Zone, including public works and recreational facilities, should be subordinate to its setting, and minimized in height and bulk to the extent feasible to accomplish view protection (emphasis added)."

Siting the pipeline construction within a designated scenic highway is inconsistent with this policy. Doing so does not protect views to and long the ocean; the activities, equipment and workforce needed will be visually incompatible with the character of the surrounding area; and closing off one lane of this highway will substantially limit public enjoyment of this scenic highway.

Consequently, the impact of the Project is significant due to its inconsistency with Policy 18-5.1. The duration of the impact would be about two months, so, while significant, the impact would be temporary.

4.4.4 Mined Tunnel Construction Alternatives

The Mined Tunnel Construction Alternatives comprise three viable alternative alignments. All require a Starter Shaft on LAX land southeast of the Napoleon St./Vista del Mar intersection. Alternative 2 requires an Extraction Shaft on Dockweiler Beach at the end of Hurricane St. and cut-and-cover construction to tie the pipeline to the Venice Pumping Plant. Alternatives 3 and 4 entail direct, continuous tunneling from the LAX Starter Shaft to an Extraction Shaft in a vacant lot at the northeast end of Hurricane St. across from the Pumping Plant. Alternatives 3 and 4, relative to above-ground features, would be identical. Rather than by alternative, the impacts have been assessed relative to:

- The Starter Shaft;
- The Extraction Shaft at Dockweiler Beach;
- The Extraction Shaft at the Venice Pumping Plant.

To summarize, Alternatives 3 and 4 would have the potential for significant, but short-term visual impacts due to the Starter Shaft, but would affect primarily private, residential views. Alternative 2 would have the same "Starter Shaft" impacts--significant, but short term—but would also have the potential for significant—albeit temporary--"Extraction Shaft" impacts that would affect not only private residential views, but also public views from Dockweiler Beach. Additionally, Alternative 2 would have the potential for significant, temporary visual impacts due to cut-and-cover construction of the Hurricane St. part of the alignment.

There will be no detailed discussion of the Hurricane St. cut-and-cover construction, as the impact on residential views along this street has been discussed relative to the Pacific Ave. Alternative Alignment within Venice. For Alternative 2, cut-and-cover construction would extend from the southwest end of Hurricane St. about 785 ft to the Venice Pumping Plant, whereas for the Pacific Ave. alignment, it would extend about 450 ft from Pacific Ave. to the Plant. The nature and intensity of the impact would be the same. The existing visual conditions are VMC 1 until reaching the Plant, where they are VMC 4. The construction activities, equipment and workforce would dominate views (VMC 4), representing a substantial reduction in visual quality for views from most of Hurricane St. (impact intensity Level 3). *The impact would, therefore, be significant. The 785-ft alignment would be completed in less than 6 weeks, so it will be temporary in duration.*

Impact Intensity, Significance and Duration

AES-1: The Proposed Project or its alternatives would cause a substantial degradation of existing visual character or quality of a site and its surroundings. The impact would be significant but short term.

Relative to the six Los Angeles City Thresholds for Significance that are grouped under AES-1, the impacts are summarized as follows:

- No features contributing to valued visual character or neighborhood image would be removed, altered, or demolished.
- Natural open space would be graded or developed;
- A Structures is proposed for a natural open space;

- There would be a high degree of contrast between proposed features and existing features representing the valued aesthetic image of the area.
- No zone change is proposed
- There would be no positive contribution to the aesthetic value of the area.

The critical public views noted would be affected by the Project such that the impact would be significant. The affected views are highly sensitive and Project construction activities would be within the foreground of these views. Of particular importance are views from nearby residences and Vista del Mar, a scenic highway. However, the duration of the impacts noted would be short term, lasting for about two years.

A detailed impact assessment follows:

Starter Shaft

The critical sensitive viewing positions potentially affected by the construction and operation of the Starter Shaft are those from:

- The residences lining the northeast side of Napoleon St. and facing the Site;
- The beach access path along Napoleon St.; and
- Vista del Mar, a scenic highway.

The existing visual conditions are VMC 1 for these potentially affected views. The Starter Shaft Site would require about 12,000 sq ft of space, including space for a construction/laydown site, and would be enclosed by a 20- to 30-ft-tall acoustic curtain just as would the Push and Receive Sites relative to the Bored Tunneling construction alternatives. There will be two cranes on site that will be taller than the curtains, so these would be visible. The remainder of the facilities within this site would be screened from view. However, the 15 daily truck round trips would be noticeable, and there would be as much as 300 ft of cut-and-cover construction to tie the pipeline to the existing C.I.S. within Vista del Mar.

Residences and beach access path. The beach access path runs along the fence skirting the northerly side of the LAX property along Napoleon St. Views from there are closely similar to those from the residence on the other side of Napoleon, except that the residences are multi-story and views from the upper stories would be more elevated. Figure 14 shows the vacant LAX land in which the Starter Shaft would be sited, seen from VP 16 (see Figure 1). This land appears substantially natural; there are no structures, but there are several unobtrusive roads within this area. The location of the site is approximate in this photograph. If it were to be sited as shown in Figure 1, it would be over 700 ft away from the viewing position from which the photograph was taken. By way of contrast, the nearest residence on Napoleon St. would be about 224 ft from the center point of this site, as shown in Figure 1. If the configuration of the Starter Shaft Site were to be square, the site would be about 110 ft on a side (12,000 sq ft). This means that the edge closest to the residences would be at least 55 ft closer than the center of the site, or just 164 ft. Seen at that distance, which is about half the length of a football field, a 20- to 30-ft-tall "box" 110 ft on a side would attract considerable attention, particularly since the open land around the site is featureless and some of the residences are oriented directly toward the site. Stated differently, the Shaft Site would be as tall as the

residences from which it would be viewed, but it would occupy substantially more square footage.

Given that the land around the Starter Shaft Site is vacant and featureless, the Starter Shaft Site would command attention to the point of at least competing with the ocean views to the southwest. The acoustic curtained "box" would not be a feature that would be mistaken for a building. The presence of the cranes extending above the curtains and the truck traffic would, together with the screening, lend an industrial character to the site. Moreover, it is not clear that all equipment would be within the enclosure. For instance, with a construction crew of 20 to 25 persons,20 to 25 vehicles may need to be parked on site in order to allow the pubic to park along Vista del Mar. Were the site to compete for attention, the visual conditions would be rated VMC 3, a reduction by two ratings from the current VMC 1. The impact intensity would be Level 2. Given the sensitivity of residential views, the impact would be significant.

The length of time needed to construct the Starter Shaft would be seven months. However, it would be in operation for up to about 28 months during the Mined Tunneling. Therefore, from the start of construction to completion, the Shaft would be within view for nearly 3 years. *Conclusion: The visual impact would be significant but short term.*

Vista del Mar. Views from Vista del Mar (scenic highway) would tend to be directed toward the scenic Pacific Ocean and the Beach below the road. The site would be oblique to the directions of travel and peripheral to the main views to the southwest. For most of the public, the Starter Shaft might have to be pointed out to be noticed, given the primary direction of viewing, either along the road (to safely operate the vehicle) or toward the ocean, away from the site. *Conclusion: In views from this road, visual quality would likely not be substantially lessened.*

Extraction Shaft—Dockweiler Beach

The critical sensitive viewing positions potentially affected by the construction and operation of the Starter Shaft are those from:

- The residences lining the Dockweiler Beach;
- Dockweiler Beach

The existing visual conditions are VMC 1 for these potentially affected views. The Extraction Shaft Site would require about 5,000 sq ft of space, including the construction/laydown area, and would be enclosed by a 20- to 30-ft-tall acoustic curtain, just as would the Starter Shaft, and the Push and Receive Sites (Bored Tunneling). There would be a crane on site that would be taller than the curtains, so it would be visible. The remainder of the facilities within this site would be screened from view. However, the daily truck round trips would be noticeable.

Apart from the multi-story residences, there is "Ocean Front Walk," a pedestrian beach access running along the beach side of the residences. A few feet away from the Extraction Shaft Site is a beach volleyball court, and passive beach uses may occur anywhere in the vicinity of the site. The Extraction Shaft Site would be much smaller than the Starter Shaft Site, being only 5,000 sq ft in size. This would be a square 70 ft on a side. However, the site may be within 50 ft or less of the residences and pedestrian

beach access path. It would inevitably dominate views from the residences with its industrial appearance, as it could be as tall as the residences (VMC 4). Moreover, the associated truck traffic would also be a distraction. The impact would be intensity Level 3, as the existing conditions are VMC 1. *Conclusion*: Relative to the highly sensitive views affected, the impact would be significant.

The period of its initial construction would be 10 weeks. After it is constructed, all equipment would be removed from the site and a steel plate would be placed over the shaft. It can be expected not to be especially noticeable at that point, as wind-driven sand would naturally tend to cover the plate over time. The Shaft would become operational at the point that the TBM needs to be extracted from the Mined Tunnel, which would be about 28 months later. The TBM would be extracted, and the pipeline tied into the pipeline installed with cut-and-cover construction, over a one-week period. *The cumulative seven-week period in which the Shaft would be constructed and operated would be temporary.*

Extraction Shaft—Venice Pumping Plant

The critical sensitive viewing positions potentially affected by the construction and operation of the Starter Shaft are those from:

- The residences lining the east side of the Grand Canal near the Venice Pumping Plant;
- The Grand Canal;
- Residences along Hurricane St. at its northeast end.

The existing visual conditions are VMC 4 for these potentially affected views. The Extraction Shaft Site has been described relative to the Dockweiler Beach Extraction Shaft Site. It would appear industrial and be as large as the nearby multi-story residences. The visible part of the crane and truck traffic, coupled with the acoustic screened site, would attract considerable attention and compete for it with the existing Venice Pumping Plant. However, the existing conditions are VMC 4, and while there would be and adverse visual impact, no substantial reduction in visual quality would occur. Moreover, the duration of the impact would be temporary, lasting cumulatively just seven weeks.

AES-2: The Proposed Project or its alternatives would not cause substantial, adverse effects on scenic vistas

Relative to the two Los Angeles City Thresholds for Significance that are grouped under AES 2, the impacts may be summarized as follows:

- There would be no significant impact due to partial obstruction of recognized and valued views.
- The impact would not substantially affect recognized views currently available from a length of a public roadway and a portion of a bikeway.

Alternatives 2, 3 and 4 would not have the potential to obstruct any recognized or valued views, nor would they substantially affect recognized views from a public roadway or bikeway.

AES-3: The Proposed Project or its alternatives would not cause substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within view from a state scenic highway

One Los Angeles City Threshold factor for Significance is relevant to this CEQA issue and the impact is summarized as follows:

- The Project would neither significantly impact views from a designated scenic highway (see AES-1 and -2) nor significantly impact any specific scenic resources within view of a scenic highway.

Alternatives 2, 3 and 4 would not significantly impact views from Vista del Mar, the only scenic highway in the vicinity of these alternatives. Moreover, the construction of the Starter and Extraction Shafts would not adversely affect any landscape features contributing to scenic quality.

AES-4: The Proposed Project or alternatives would not result in a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No nighttime construction would be required for construction activities along the subject alignment alternative. However, if there were such construction required for the Starter and Extraction Shafts, the acoustic curtains would shield such lighting from view. The Los Angeles City Threshold factors for AES-4 do not, therefore, apply.

AES-5: The Proposed Project or alternatives would not result in substantial negative shadow effects on nearby shadow-sensitive uses.

There are no shadow-sensitive land uses in the vicinity of the Proposed Project or its alternatives.

AES-6: The Proposed Project or alternatives would result in visual impacts that would not be consistent with applicable rules and regulations. The impacts would, therefore, be significant, but they would be temporary and short term.

Section 3.0 details the applicable plans and policies. The applicable regulatory document is the Coastal Resources chapter of the Westchester-Playa del Rey Community Plan, relative to the Starter Shaft Site. Concerning the two alternate Extraction Shaft Sites, both are in Venice; the relevant regulatory documents are the Venice Community Plan and the Venice Local Coastal Program Land Use Plan.

Regarding the Westchester-Playa del Rey Community Plan, Objective 18-5 is relevant: "Preserve coastal visual resources by protecting and enhancing scenic views of the ocean and wetlands from designated Scenic Highways, and public view sites." Vista del Mar is a designated scenic highway. However, views from this scenic highway would not be significantly impacted.

Policy 18-5.1 for this objective calls for the following relevant stipulations for siting and designing development in order to:

- Protect public views to and along the ocean and scenic coastal areas;
- Be visually compatible with the character of the surrounding area; and

- Retain existing views from designated public view areas and Scenic Highways.

Under this policy, "all new development in the Coastal Zone, including public works and recreational facilities, should be subordinate to its setting, and minimized in height and bulk to the extent feasible to accomplish view protection (emphasis added)."

The Starter Shaft would not interfere with public views to and along the ocean. There are no public view areas in the vicinity, and the Shaft Site would not interfere with scenic highway-based views. However, the Shaft Site would not be visually compatible with the natural open space character of the LAX property. Consequently, the impact of the Project would not be entirely consistent with Policy 18-5.1 of the subject Plan. The impact, though, would be short term.

Concerning the Venice Community Plan and the Venice Local Coastal Program land Use Plan, Coastal Resources Goal 18 of the Venice Community Plan calls for the preservation of the scenic and visual qualities of coastal areas. The policy is to assure that projects are visually compatible with the character of surrounding areas. Moreover, design principles set forth in the Venice Land Use Plan require that views of distinctive visual resources not be significantly disturbed. As discussed relative to AES-1, the Starter and Extraction Shafts would be visually incompatible with the character of the affected area. Because the Project would not be consistent with certain policies and goals of the Venice regulatory setting, the visual impacts described would be considered to be significant. They would, however, be temporary and short term in duration, lasting for seven weeks in the case of the Extraction Shaft Sites, and less than three years in the case of the Extraction Shaft.

5.0 Mitigation Measures

5.1 Direct Mitigation Measures

As noted in Section 4.4.2, cut-and-cover, micro-tunneling, and mined tunneling alternative construction activities, and their associated equipment and work force, would all have the potential to cause significant visual impacts, to varying degrees, that would primarily be temporary in duration. With one exception, the Project or its alternatives would cause no damage to scenic resources (features contributing to the positive visual quality of potentially affected views), no new source of light and glare, and no negative shadow effects. Instead, depending on the alternative, the impacts would variably be due to:

- The introduction to views of features not congruent with the existing visual character of the area;
- Partial obstruction of views, or the limiting of access to the views;
- Adverse effects on views from scenic highways or the temporary elimination of access to these highways;
- And inconsistency with one or more regulatory goals, objectives or policies.

Mitigation measures either entail redesigning a project so as to site it in an area not within sensitive public views, screening the Project features from view with landscaping, or re-designing the Project features to mimic those that are characteristic of the area. In the case of the Project, the visual impacts are due to construction activities, equipment and

the presence and movement of the workforce, and not because of its appearance once it is complete. Because the visual impacts of construction are all temporary or short term, they end with the completion of the Project. No feasible measures can mitigate the impacts of construction to a level that is less than significant, for it is assumed that, by definition, such measures must occur within the context of undertaking the Project. That is, construction activities must occur. Regarding re-siting the alignment of the Project, the alignments are constrained by the starting and ending points. The area in between is characterized by dense, residential development, the presence of scenic highways, and the attraction of recreation opportunities. It would not be possible to avoid sensitive views.

Where specific positive landscape features are damaged, obscured, or removed, direct mitigation may take the form of adjusting the siting of an aspect of the project to avoid the impact, or replacing the feature if it is damaged or removed. In the case of the Marquesas Way/Via Marina Alignment Alternative, several mature street trees will be removed by cut-and-cover construction and/or the use of an area as a construction/laydown site. Based on available information, otherwise logical options are not viable. These include a choice to re-align the pipeline to avoid crossing from Via Marina into the parking lot serving the Receive Site, and re-locating the Option 2 Push Site construction/laydown area at the Via Dolce/Marquesas Way intersection. The only feasible mitigation measure is:

- **Mitigation Measure AES-1:** Replace street trees destroyed by construction activities with very large-diameter, mature trees. Depending on the species, this may or may not be possible.

5.2 Offsetting Mitigations

Where impacts may not be directly mitigated, they may be offset by actions taken elsewhere to compensate for the loss of visual quality. It would be speculative to definitively list specific offsetting actions at this time. However, such actions generally would include:

- Landscaping public areas within affected neighborhoods where open space is currently degraded and unsightly;
- Screening from public view existing features which are incongruous with the character of their surroundings (such as the Venice Pumping Plant);
- Creating public access to currently unavailable scenic vistas (new beach access routes, paths, bikeways, public parking.

During public scoping meetings, some suggested that the existing Venice Pumping Plant could be made to be more aesthetically pleasing. Currently, this industrial facility has reduced visual conditions in its vicinity to VMC 4. One measure would be to paint the facility a color matching nearby residences and removing the art deco-like treatment of the wall facing the Grand Canal. Plantings which soften the Plant's profile or cover its walls with vines might be investigated, if there is the physical space available to landscape the perimeter. A walkway abutting the blue wall fronting the Grand Canal (Figure 5, upper image) might be converted into a planter, or several large, decorative planters with tall shrubs or small trees might be installed along that part of the walk (since the walk ends here, the loss of this stretch of sidewalk would not be important to pedestrians). A small strip of fill at the northeast end of Hurricane could provide room for

large trees that would block some views of the Plant. In the upper image of Figure 4, large trees are growing along the edge of the sidewalk. In the lower image in Figure 5, it is apparent that such plantings could be installed between the chain-link fence along the vacant lot and the sidewalk next to it. These trees, in time, would screen the lot and provide a more aesthetic edge to the Grand Canal. The residual impact of offsetting mitigations would be inversely proportional to the degree of public acceptance of the measures.

Regarding the improvement of the visual quality in public spaces, Figure 10 discloses, in the upper image, the opportunity to improve the appearance of the parking lot along the bridge in the vicinity of where the Push Site for under-channel tunneling would occur. The bank in the foreground might be planted to shield from view the parking lot and conceal or replace the jumbled chunks of concrete rip-rap. Similar plantings on the other side of the bridge along the parking area there (the site for the construction/laydown area) would aesthetically frame the bikeway's entrance into Playa del Rey.

6.0 Unavoidable Adverse Impacts

All of the significant, temporary and short term impacts described in Section 4.4.2 are unavoidable. These impacts will end, however, with the completion of construction. These impacts may be offset by actions taken elsewhere within the affected communities to improve the aesthetics of existing views. The acceptability of any measures contemplated is best addressed through public involvement.

The long-term impact of the destruction of mature street plantings along Via Marina and Marquesas Way might be improved to the point that the duration would be short term (less than five years in duration) if trees of a large size are planted. Several years of growth would be required for the replacement trees to approach in height that of those trees that would be removed.

7.0 Cumulative and Secondary Impacts

Of the projects listed as related to the Proposed Project in the Introduction to the DEIR, Section G, Table G-1, only two would be relevant. In neither case would there be significant cumulative impacts.

- *Marina del Rey Tide Gates Project*. This project entails the removal, rehabilitation and improvement of portions of the existing outlet structure for the Grand Canal. The outlet is at the southeast end of the Grand Canal where it passes under Via Marina, so the "Gates" project would occur where aspects of the Proposed Project would also occur. The one aspect of construction that would be relevant to cumulative impacts is that the "Gates" project may require the closure of one lane of Via Marina St. during construction, with traffic controlled by a flagman. The Proposed Project also calls for such closure and traffic control. At the time of this assessment, no specific time frames for construction of either project had been identified. It can only be said that if the projects do not occur simultaneously, sequential construction would result in a prolonged period during which views from a designated scenic highway/drive (Via Marina) are unavailable to the public; e.g., it would seem likely that traffic along Via Marina would be restricted to local residential access because there would be no public

parking along the road and, therefore, no place to stop and enjoy the view. The impact of closing one lane due to the Proposed Project would, by itself, represent a significant, albeit, temporary visual impact. Lane closure due to the "Gates" project would also be a temporary but significant visual impact. If the two projects were to occur sequentially, the combined effect would solely be to lengthen the duration of the impact to the point of being short-term (one to five years' duration).

To mitigate the impact, if it is feasible both projects should be completed within the same time frame, thereby limiting the time during which the one lane of Via Marina would have to be closed.

- *Venice Pumping Plant Sluice Gate Replacement Project*. This project involves the temporary diversion of sewer flows in order to bypass the Venice Pumping Plant while the sluice gate within the Plant is rehabilitated. The bypass would be via a pipeline placed above ground along the Grand Canal from Driftwood St. to Hurricane St. along the Esplanade. The pumping mechanisms and pipeline would be in place for about one month. This project is relevant to the Proposed Project in consideration of cumulative impacts because activities associated with the Project would occur in the same area as the southeast end of the "Sluice Gate" project (near the Pumping Plant).

  The initial study for the Sluice Gate project found that there would be no significant visual impacts, based partly on their short duration. CEQA does not recognize specific time limits as thresholds of significance, nor does the City of L.A. Thresholds Guide. However, as noted in Section 2.2, the existing visual condition for views potentially affected by the Sluice Gate project is VMC 4 due to the presence of the Pumping Plant. This industrial facility dominates the views from points in its vicinity. For that reason, not due to the duration of the impact, the Sluice Gate project would not be a significant impact, as the condition of the affected views cannot worsen. Likewise, together with the Proposed Project, the Sluice Gate project would not cumulatively cause a significant impact, due to the existing condition of the area.

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Attachment A

Technical Approach

Environmental Setting

Definition of the Resource.

The visual resources of an area comprise the features of its landforms, vegetation, water surfaces and cultural modifications (physical changes caused by human activities) that give the landscape its visually aesthetic qualities. Landscape features, natural appearing or otherwise, form the overall impression of an area. This impression is referred to as "visual character." Visual character is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them. Existing landforms, water surfaces, vegetation, and cultural modifications are treated as an established part of the setting if they reflect how the landscape was formed (i.e., ecological processes versus human activities), how it functions (i.e., as part of an urban versus agricultural context), and how it is structured ("patterns" of development, such as irrigated croplands versus natural mosaic of grasslands and woodlands).

Visual resources have a social setting, which includes public values, goals, awareness and concern regarding visual quality. This social setting is addressed as "visual sensitivity," the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource (U.S. Department of Interior, Bureau of Land Management [BLM], 1978; U.S. Department of Agriculture, Forest Service [U.S. Forest Service], 1977). As applied to visual impact analyses, sensitivity refers to public attitudes about specific views, or interrelated views, and is key in assessing how important a visual impact may be and whether or not it represents a significant impact.

Visual Sensitivity.

The assessment of visual sensitivity establishes the most important (critical) viewing positions early in the analytical process. The other attribute, visual character, is assessed only in relation to the important, potentially affected views. Visual impacts subsequently are evaluated in the context of the character of these views.

To assess visual sensitivity, indicators of public concern were identified and sensitivity rated accordingly. The indicators are listed in Table K-1 and reflect the concepts and methods of several federal agencies which treat sensitivity as a function of viewer activity, awareness, values, and goals (U.S. Forest Service, 1979a; U.S. Department of Agriculture - Soil Conservation Service [SCS], 1978; BLM, 1986; U.S. Department of Transportation, Federal Highway Administration [FHWA], 1980). Certain activities tend to heighten viewer awareness of scenic resources, while others tend to be distracting. People who are camping, picnicking, or driving for pleasure are more apt to notice the surrounding scenery than those commuting in heavy traffic or working at a construction site. Viewer awareness may also be heightened where areas are formally classified or otherwise designated as being of special interest, such as national historic monuments, national and state parks and forests, scenic routes and overlooks, visitor information centers, and wildlife refuges.

High visual sensitivity is assumed to exist where landscapes, particular views, or the visual characteristics of certain features are protected through policies, goals, objectives, and design controls in public planning documents. Visual significance is not always a function of aesthetic appeal. The public may confer visual significance on landscape components and areas that would otherwise appear unexceptional (FHWA, 1980). For example, unexceptional landscapes along tertiary roads may be particularly important to local residents (Kaplan, 1979) as undesignated open spaces. Other areas may have regional or national cultural significance, but not be especially scenic. Nonetheless, their visual character may be considered important to their cultural value (FHWA, 1980). The three levels of sensitivity are high, moderate, and low:

- ***High Sensitivity***. High sensitivity suggests that at least some part of the public is likely to react strongly to a threat to visual quality. Concern is expected to be great because the affected views are rare, unique, or in other ways are special to the region or locale. A highly concerned public is assumed to be more aware of any given level of adverse change and less tolerant than a public that has little concern. A small modification of the existing landscape may be visually distracting to a highly sensitive public and represent a substantial reduction in visual quality.
- ***Moderate Sensitivity***. Moderate sensitivity suggests that the public would probably voice some concern over visual impacts of moderate to high intensity. Often the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.
- ***Low Sensitivity***. Low sensitivity is considered to prevail where the public is expected to have little concern about changes in the landscape. Only a visual impact of the greatest intensity would be perceived as substantial (significant).
- ***No Sensitivity***. There is no sensitivity where the potentially affected views are not "public" (not accessible to the general public) or because there are no indications that the affected views are valued by the public.

Identification of Critical Viewing Positions.

Critical views are partly defined as those that are moderately to highly sensitive. The public is considered to have a substantial concern over adverse changes in the quality of such views. Criteria used to identify moderate to high sensitivity have been presented in Table K-1.

Critical views also are defined as being those public views that would be most affected by the subject action (e.g., the greatest intensity of impact due to viewer proximity to the project and project visibility, duration of the affected view, etc.). The approach to identifying critical viewing positions starts with an inventory of moderately to highly sensitive viewing positions in the project vicinity, using the referenced criteria. A review of literature and maps, and an inspection of the project site and the potentially affected environs, serves to identify those features and public use areas of cultural, historic, recreational, and aesthetic significance.

The range of sensitive views is then considered and several representative views in which the proposed facilities would be most noticeable are selected for detailed analysis. This decision is based primarily on proximity and degree of project exposure. Consideration is

also given to having the views be representative of the public experience; i.e., that they be from viewing positions frequently used by the public and readily located, based on the description and photographs presented in this report.

Visual Character.

As has been noted, visual character is assessed only relative to those moderately to highly sensitive views that may be affected by a proposed action. The visual character of the potentially affected landscape typically is described in terms of its landforms, vegetation, water features, and the "built" features of the environment. There are three objectives in assessing visual character:

- **Visual Resources**. The first is to identify the types of features considered both to be "visual resources," (i.e., features contributing to the positive visual quality of the potentially affected lands) and to be inherent to the area. It is usually obvious which features are visual resources and which are not. Rarely, features may be considered to be visual resources by the public yet have no demonstrable aesthetic appeal, as has been noted (Kaplan, 1979). For instance, local laws and regulations protecting certain views may indicate high sensitivity, even though the aggregate of features may possess no obvious positive visual qualities. Features are treated as inherent if they are expressive of the prevailing land uses, for instance, in an urban or rural area, or if they are among the physical features associated with the physiographic provinces in which a natural appearing landscape is located. The more defined the landscape is (i.e., totally natural appearing, purely residential, consistently rural), the more opportunity there is for introduced features not part of the prevailing character to noticeably contrast with those defining the landscape.

- **Patterns**. The second objective in assessing visual character is to identify patterns or the distribution of features that are characteristic of the affected setting. For instance, ecotones might define the distribution of vegetation in a natural setting. Architectural styles or density of housing might be defining attributes of a residential area.

- **Existing Visual Condition**. If the analysis of character identifies visual resources (an aggregate of features with visually aesthetic qualities), after identifying the characteristic patterns or distribution of the visual resource features, the analysis turns to the third objective for assessing visual character. This objective is to assess the one parameter of visual quality that may be adversely affected by a proposed action, its existing visual condition. The existing visual condition of the landscape is a measure of the degree to which past actions have noticeably changed the landscape in ways that appear inconsistent with the visual resources of the affected lands. Existing visual conditions serve as the baseline for evaluating the magnitude and intensity of potentially adverse changes in the landscape. They vary inversely with how noticeable incongruous features may be within current public views and are defined in terms of four Visual Modification Classes (VMC), defined in Table K-2. Landscapes where all features appear compatible with the inherent visual resources of the area are of the highest quality, while those where incompatible features dominate the scene are of the lowest quality. In some cases, the character of the potentially affected lands comprise features with no obvious aesthetic qualities (i.e., there are no "visual resources"). Here, although all features within view may appear compatible with one another, visual quality is low. A purely

industrial landscape is an example; there are no visual resources, visual quality is low, yet all features are compatible with the setting. For such lands, there is no potential for adverse visual impacts and an assessment of existing visual conditions is not informative.

Visual Impact Assessment

CEQA considers an effect to be a change in any of the physical conditions within the area affected by the project (State of California, 1970) but does not delineate specific criteria or thresholds for the significance of impacts. CEQA limits the guidance concerning the determination of significance to whether or not the effect is both adverse and substantial: a significant effect would be "...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of...aesthetic significance." (Section 15382, Article 20). Four specific issues of concern over substantial/significant visual impacts are listed in Appendix G of CEQA (Environmental Checklist) as follows:

- Substantial, adverse effects on a scenic vista.
- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway (sic).
- Substantial degradation of existing visual character or quality of a site and its surroundings.
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No further guidance is provided. Apparently it is at the discretion of the investigator, or the agency responsible for the EIR, to determine criteria for what constitutes a "substantial" effect, damage, degradation, or new source of light or glare.

Definition of Visual Impacts.

This section presents definitions useful in understanding the methodology for identifying adverse visual impacts, their intensity, and their significance:

- **Visual Impact.** An "adverse change" in aesthetics/visual resources occurs when, relative to a public view:
    - An action will perceptibly change features of the physical environment so that they no longer appear to be characteristic of those inherent to the region and/or locale;
    - An action will introduce features to the physical environment that are perceptibly uncharacteristic of the region and/or locale; and/or
    - Visual access to the landscape, or the visibility of one or more valued features of the landscape, will be adversely affected (e.g., partially or totally blocked from view);

  (Features that are, or have become, uncharacteristic are those that appear out of place, discordant, or distracting.)

Visual impacts are further defined as follows:

- **Visual Impact Intensity**. The terms "intensity" and "magnitude" are used interchangeably. The magnitude—or intensity—of a visual impact is the degree to which existing visual conditions (the baseline for the analyses) would change as a result of project construction and operation. Visual Conditions are described in terms of Visual Modification Classes (Table K-2)

  Three levels of visual impact intensity may occur. Level 1 is a reduction in Visual Conditions by one Visual Modification Class (VMC) rating; Level 2 is a reduction by two VMC ratings; and Level 3 is a reduction by three VMC ratings.

- **Temporary Visual Impacts:** Those lasting for one year or less.

- **Short-Term Impacts:** Those lasting for more than one year but fewer than five years.

- **Long-Term Impacts:** Those lasting for five years or more.

- **Significant Visual Impact**

  The following definition augments the CEQA Guidelines for determining visual impacts to be significant. As noted, CEQA considers a significant effect to be "...a substantial, or potentially substantial, adverse change...." Accordingly, significant (substantial) changes (significant visual impacts) are defined as those occurring for more than one year and which result in:

  - An inconsistency with public laws, ordinances, regulations, plans, policies or objectives, or other directives concerning visual resources; and/or

  - A perceptible reduction of visual condition (quality). The perception that visual quality has been reduced is partly a function of the observable intensity of the impact. However, the context of social conditions, including public values, goals, awareness and concern regarding visual quality, influences the degree to which the public perceives a change in visual conditions as significant and reacts adversely to it. That context is referred to as Visual Sensitivity, as noted above. The influence of Visual Sensitivity on the perception that a change in visual conditions (Intensity) is substantial (significant) is described as follows:

    - No Sensitivity. Where there is demonstrably no public sensitivity, particularly where there are no public views of a project under consideration, it is assumed that there would be no adverse public response to visual impacts of even the greatest intensity.

    - Low Sensitivity. Where there is low sensitivity, it is assumed that at least a minority of the viewing public may have some concern over visual quality. This public would notice only the greatest change in visual conditions as a substantial (significant) reduction in visual quality (Intensity Level 3: a reduction by three Visual Modification Classes).

    - Moderate Sensitivity. Where there is moderate public sensitivity, a change of two or more Visual Modification Classes (to VMC 3, or 4) would be considered to be an adverse visual impact of substantial (significant) importance, and the public would be likely to react negatively to the change.

- High Sensitivity. Within a highly sensitive view, any change in visual conditions (a change of one or more Visual Modification Classes to VMC 2, 3, or 4) would be considered to be an adverse visual impact of substantial (significant) importance.

Table K-3 summarizes the relationship of impact intensity, sensitivity, and the perception that a reduction in visual conditions is substantial (significant).

Magnitude (Intensity) of Visual Impacts.

Instrumental in determining the magnitude of visual impact is the use of Visual Simulations. These are realistic computer-generated three-dimensional images of a proposed project that simulate project features in their context as they would be seen in critical views and under specific viewing conditions matching baseline photographs of the same views. These conditions include angle of view, distance, time of day, and ambient lighting and atmospheric perspective (the attenuation of details due to particulates or moisture). The computer imaging is generally restricted to features of the project, with the context being represented by a photograph. The image and photograph are then blended to realistically portray the project in its context.

Details about the camera used for the base photograph are recorded and later emulated by the computer program used for the simulation. Key information about the camera includes its location, tilt, bearing, lens focal length, time of the photograph, and exposure information. A Global Positioning System is used to identify the location and elevation of the camera lens in order to correlate the computer image with the photograph.

The camera data collected in the field is input into a computer program (3d Studio Max, an Autodesk product widely used for architectural visualization) that digitally replicates the three dimensional world at full scale. The computer simulation can vary in detail from a highly detailed architectural model of the project to a simple massing study lacking detail but representing the volume and dimensions of the project. Projects seen at a moderate distance, for instance, can be successfully simulated using a massing study because details cannot be discerned beyond a certain distance. A closer view would justify a more detailed simulation.

Confirmation of scale and position of the computer rendering is often accomplished by installing marker poles on site at points correlating with the project plan to provide registration points. The preliminary computer image will simulate the project and poles, and the image will be positioned and scaled until the simulated poles overlay exactly those appearing in the underlying base photograph. Aerial photographs and USGS maps are typically used to confirm locations and angles of view

The impression of the project can be represented under specific lighting and atmospheric conditions. For instance, the computer can simulate the effect of haze and backlighting (where the sun is behind the project) on color. The amount of haze is estimated by sampling shadow tones in the foreground and background, comparing the two, and arriving at a color and density for the atmospheric haze. Shadows and sun angle are derived from the latitude and time of day so they match what appears in the photograph. Using visual simulations, the magnitude of the impact may be estimated. The magnitude (noticeability) of the potential visual impacts is described in terms of the estimated future Visual Modification Class of the affected view. Several factors affecting the context of views are considered: viewer activity; primary viewing direction(s); viewing distance;

project exposure; duration of viewing; relationship of the subject view to the sequence available; the presence of existing features of competing visual interest; and established features tending to draw attention toward the project facilities (focal point sensitivity).

Significance of Visual Impacts

See the definition of significance at the start of this Section. The magnitude of the impact (Visual Modification Class) is compared to the sensitivity of the affected view to determine whether a perceptible reduction in visual quality is likely to occur. Table K-3 presents the relationship of magnitude and sensitivity to a perceptible reduction in visual quality. As noted, the perception of lowered visual quality is one of three criteria for significance; the other two are duration of the impact and its consistency with laws, ordinances, regulations, and standards applicable to the protection of visual resources. Note that a perceptible reduction in visual quality is not treated in this methodology as significant unless it is estimated to persist for more than one year. Also, an adverse visual impact may be significant if it is inconsistent with laws, ordinances, regulations, and standards (LORS), whether or not it meets the criteria in Table K-3; the impact, however, must be estimated to last more than one year.

TABLE K-1

INDICATORS OF VISUAL SENSITIVITY

HIGH SENSITIVITY

- Views of and from areas the aesthetic values of which are protected in laws, public regulations and policies, and public planning documents.
- Views of and from designated areas of aesthetic, recreational, cultural, or scientific interest, including national, state, county, and community parks, reserves, memorials, scenic roads and trails, interpretive sites of scientific value, scenic overlooks, recreation areas, designated open space, and historic structures, sites, and districts.
- Views of and from areas or sites of cultural/religious importance to Native Americans.
- Views from national or state-designated scenic highways or roads, or designated scenic highways or roads of regional importance.
- Views from resort areas.
- Views from urban residential subdivisions and segments of roads near them that serve as their primary access route.
- Views from segments of travel routes, such as roads, rail lines, pedestrian and equestrian trails, and bicycle paths, that are near designated areas of aesthetic, recreational, cultural, or scientific interest and which lead directly to them. Views seen while approaching an area of interest may be closely related to the appreciation of the aesthetic, cultural, scientific, or recreational significance of that destination.

MODERATE SENSITIVITY

- Views from segments of travel routes near highly sensitive use areas of interest serving as a secondary access route to those areas.
- Views from highways or roads locally designated as scenic routes and of importance only to the local population, or informally designated as such in literature, road maps and road atlases.
- Views from rural residential areas (groups of four or more homes) and segments of roads near them that serve as their primary access route.
- Views of, and from, undesignated but protected or popularly used or appreciated areas of aesthetic, recreational, cultural, or scientific significance at the local, county, or state level.
- Views from segments of travel routes, such as roads, trails, bicycle paths, and equestrian trails, that are near protected or popularly used undesignated areas important for their aesthetic, recreational, cultural, or scientific interest, and which lead directly to them.
- Views of and from religious facilities and cemeteries.

LOW SENSITIVITY

- Views from farmsteads, or groupings of fewer than four residences.
- Views from industrial (i.e., research, development, and manufacturing), commercial, and agricultural land areas.
- Views from travel routes serving as secondary access to moderately sensitive areas, or serving primarily commercial, industrial, or agricultural traffic.

TABLE K-2

VISUAL MODIFICATION CLASS DEFINITIONS

- **VM Class 1** - Not noticeable: changes in the landscape are within the field of view but generally would be overlooked by all but the most concerned and interested viewers; they generally would not be noticed unless pointed out (inconspicuous because of such factors as distance, screening, low contrast with context, or other features in view, including the adverse impacts of past activities).

- **VM Class 2** - Noticeable, visually subordinate: changes in the landscape would not be overlooked (noticeable to most without being pointed out), they may attract some attention but do not compete for it with other features in the field of view, including the adverse impacts of past activities. Such changes often are perceived as being in the background.

- **VM Class 3** - Distracting, visually co-dominant: changes in the landscape compete for attention with other features in view, including the adverse impacts of past activities (attention is drawn to the change about as frequently as to other features in the landscape).

- **VM Class 4** - Visually dominant, demands attention: changes in the landscape, are the focus of attention and tend to become the subject of the view; such chances often cause a lasting impression of the affected landscape.

TABLE K-3

RELATIONSHIP OF IMPACT INTENSITY AND VISUAL SENSITIVITY TO PUBLIC PERCEPTION OF AN EFFECT'S BEING A SUBSTANTIAL (SIGNIFICANT) ADVERSE IMPACT ON VISUAL QUALITY

		Visual Sensitivity[1]			
		High	**Moderate**	**Low**	**None**
Intensity of Impact[2]	**Level 1**	**S[3]**	**N**	**N**	**N**
	Level 2	**S**	**S**	**N**	**N**
	Level 3	**S**	**S**	**S**	**N**

1) **High Sensitivity (H):** The potential for public concern over adverse change in scenic/visual quality is great. Affected views are rare, unique, or in other ways are special and highly valued in the region or locale. Any perceptible change in visual conditions would be considered to be a significant lessening of visual quality.

Moderate Sensitivity (M): The potential for public concern over adverse change in scenic/visual quality is substantial. Affected views are secondary in importance or similar to views commonly found in the region or locale. A moderately to highly intense visual impact would be perceived as a significant lessening of visual quality.

Low Sensitivity (L): There is little evidence of public concern over, or interest in, scenic/ visual resource impacts on the affected area. Only the highest intensity of adverse change in the condition of aesthetics/visual resources would be noticed as a substantial (significant) impact on visual quality.

No Sensitivity (None): The views are not public, or there are no indications of public concern over, or interest in, scenic/visual resource impacts on the affected area.

2) **Intensity of Impact:**
- **(Level 1)** A reduction in Visual Condition by one Visual Modification Class rating (Table K-2)
- **(Level 2)** A reduction in Visual Condition by two Visual Modification Class ratings
- **(Level 3)** A reduction in Visual Condition by three Visual Modification Class ratings

3) **S:** Substantial (Significant) Reduction in Visual Quality
N: Less than Substantial (No Significant) Reduction in Visual Quality.