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August 17, 2022

VIA ELECTRONIC MAIL

Los Angeles City Council
Honorable President Nury Martinez
Los Angeles City Hall
Los Angeles, CA 90012
Via Email and Online Portal
Via Email: clerk.plumcommittee@lacity.org

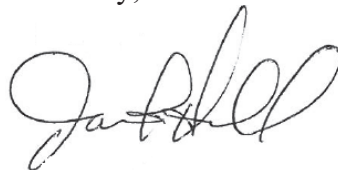
**Re: Appeal of Conditional Use, Density Bonus and Site Plan Review at 2111-2139
S. Pacific Ave; CPC-2019-4884-CU-DB-SPR-RDP and ENV-2019-4885-CE;
Appeal Case No. CPC-2019-4884-CU-DB-SPR-1A; 00610-Citizens Protecting San
Pedro**

Honorable Councilmembers:

This firm represents Appellant Citizens Protecting San Pedro ("CPSP" or "Appellant")) in its appeal of the City Planning Commission's approval of the Conditional Use Permit, Density Bonus incentives and waiver, and Site Plan Review for the Project at 2111 South Pacific Avenue in the San Pedro Community. CPSP submitted a letter and attachments on August 16th in support of the appeal. Due to a technical error, a portion of Exhibit 7 was not included in Appellant's correspondence. A correct version of Exhibit 7 is attached hereto. Appellant respectfully requests that the Council grant the appeal and deny the Project.

I may be contacted at 310-982-1760 or at jamie.hall@channellawgroup.com if you have any questions, comments or concerns.

Sincerely,



Jamie T. Hall

Corrected Exhibit 7



Technical Consultation, Data Analysis and
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August 16, 2022

Jamie T. Hall
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Subject: Comments on the 2111-2139 South Pacific Avenue Project

Dear Mr. Hall,

We have reviewed the July 2022 Applicant's Response to Appeal ("Response"), October 2021 City Planning Commission Letter of Determination ("Letter of Determination"), and September 2021 Department of City Planning Recommendation Report ("Recommendation Report") for the 2111-2139 South Pacific Avenue Project ("Project") located in the City of Los Angeles ("City"). The Project proposes to demolish the existing 1,490-square-foot ("SF") bar and construct a 77,945-SF residential building with 100 dwelling units, 1,800-SF of retail space, and 84 parking spaces on the 0.56-acre site.

Our review concludes that the Letter of Determination fails to adequately evaluate the Project's air quality, health risk, and greenhouse gas impacts. As a result of our findings, the proposed Project is not consistent with the April 2017 San Pedro New Community Plan Final Environmental Impact Report ("Program EIR") pursuant to CEQA Guidelines § 15168 and 15162. Furthermore, the Project does not qualify for a Class 32 Categorical Exemption under the California Environmental Quality Act ("CEQA") and 14 Cal. Code of Regs. 1500 et seq. ("CEQA Guidelines") and, therefore, a subsequent EIR must be prepared to adequately assess and mitigate the potential air quality, health risk, and greenhouse gas impacts that the Project will have on the environment.

Air Quality

Incorrect Reliance on CEQA Guidelines § 15162

The Letter of Determination claims that no further environmental review is required for the Project pursuant to CEQA Guidelines § 15168 and 15162. The City claims:

“Found, based on the independent judgment of the decision-maker, after consideration of the whole of the administrative record, that the Project is within the scope of the San Pedro New Community Plan ENV-2009-1558-EIR (Program EIR), pursuant to CEQA Guidelines Sections 15168 and 15162” (p. 1).

According to CEQA Guidelines § 15162:

“(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following: [...]

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.”

As demonstrated above, a subsequent EIR should be prepared if there are mitigation measures that are considerably different from those analyzed in the previous EIR that would substantially reduce one or more significant effects on the environment. Here, regarding applicable mitigation measures, the Letter of Determination states:

“[T]he environmental effects of the Project were covered in the Program EIR and no new environmental effects not identified in the Program EIR will occur and no new mitigation is required; and the City has incorporated all feasible mitigation measures from the Program EIR on the Project” (p. 1).

As demonstrated above, the Letter of Determination claims that the City incorporated all feasible mitigation measures from the Program EIR. However, review of the Program EIR’s Mitigation Monitoring Program (“MMP”) demonstrates that there are certainly new available mitigation measures

“considerably different from those analyzed in the previous EIR [that] would substantially reduce one or more significant effects on the environment.” As such, additional feasible mitigation measures are suggested in the section of this letter titled “Feasible Mitigation Measures Available to Reduce Emissions.” As a result, the Project must not be approved until a subsequent EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels, pursuant to CEQA Guidelines § 15162.

Incorrect Reliance on Class 32 Categorical Exemption

In addition to claiming that the Project is within the scope of the Program EIR, the City claims that the Project is categorically exempt pursuant to CEQA Guidelines § 15332. The Letter of Determination states:

“Determined, that based on the whole of the administrative record, the Project is exempt from CEQA pursuant to State CEQA Guidelines, Article 19, Section 15332, Class 32, and that there is no substantial evidence demonstrating that an exception to a categorical exemption pursuant to CEQA Guidelines, Section 15300.2 applies” (p. 1).

According to § 15332 of the CEQA Guidelines, a project can only be characterized as an in-fill development and qualify for a Class 32 Categorical Exemption if “approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.” The Letter of Determination claims that the Project would result in less-than-significant air quality impacts (p. F-24). However, this claim is unsubstantiated, as the Project’s air quality analysis is insufficient for the following four reasons:

- (1) The Project relies upon an incorrect and unsubstantiated air model;
- (2) SWAPE’s updated analysis indicates a significant air quality impact;
- (3) The Project fails to adequately evaluate diesel particulate matter emissions; and
- (4) SWAPE’s screening-level HRA indicates a potentially significant health risk impact.

1) Incorrect and Unsubstantiated Air Model

The Project’s air quality analysis relies on emissions calculated with the California Emissions Estimator Model (“CalEEMod”) Version 2016.3.2 (Letter of Determination, p. F-24).¹ CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act (“CEQA”) requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project’s construction and operational emissions are calculated, and “output files” are generated. These output files disclose to the reader what parameters are utilized in calculating the Project’s air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

¹ “CalEEMod Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/download-model>.

When reviewing the Project's CalEEMod output files, provided in the November 2019 Air Quality Technical Report ("AQ Report") as Exhibit D5 to the Recommendation Report, we found that several model inputs were not consistent with information disclosed in the Project documents. As a result, model inputs were unreasonable to apply to the Project and the Project's construction and operational emissions are underestimated. A full CEQA analysis must be prepared in a subsequent EIR to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Underestimated Land Use Sizes

According to Letter of Determination:

"Development of a new four-story, 45-foot and five-inch-tall mixed-use residential building comprised of 100 dwelling units (including 11 units restricted to Very Low-Income Households) with 1,800 square feet of ground floor retail space. The Project will provide 84 vehicular parking spaces in two subterranean parking levels, and 75 long-term and eight short-term bicycle parking spaces. The Project will be 77,945 square feet in floor area" (p. 1).

As such, the model should have included 76,145-SF of residential space² and 84 parking spaces. However, review of the CalEEMod output files demonstrates that the "2111 South Pacific Avenue Future" model includes only 66,629-SF of "Apartments Mid Rise" and 63 spaces of "Parking Lot" (see excerpt below) (Exhibit D5, pp. 313, 332, 355).

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area
Enclosed Parking with Elevator	63.00	Space	0.00	25,200.00
Apartments Mid Rise	101.00	Dwelling Unit	0.55	66,629.00
Strip Mall	1.80	1000sqft	0.01	1,800.00

As such, the proposed residential and parking land uses are unreasonable to apply to the Project and are underestimated by 9,516-SF and 21 spaces, respectively.^{3, 4} These underestimations present a serious deficiency, as the land use size feature is used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations. Furthermore, land use square footage is used for certain calculations such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts).⁵ Thus, by underestimating the size of the proposed residential and parking land uses, the model underestimates the Project's construction and operational emissions and must not be relied upon to determine Project significance.

² Calculated: (77,945-SF total floor area) – (1,800-SF of retail space) = 76,145-SF of residential space.

³ Calculated: (76,145-SF proposed residential space) – (66,629-SF modeled residential space) = 9,516-SF underestimated residential space.

⁴ Calculated: (84 proposed parking spaces) – (63 modeled parking spaces) = 21 underestimated parking spaces.

⁵ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 28.

Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that the “2111 South Pacific Avenue Future” model includes several changes to the default individual construction phase lengths (see excerpt below) (Exhibit D5, pp. 314, 333, 356).

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	87.00
tblConstructionPhase	NumDays	100.00	361.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00

As a result of these changes, the model includes the following construction schedule (see excerpt below) (Exhibit D5, pp. 317, 336-337, 359):

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
1	Demolition	Demolition	5/1/2020	6/1/2020	5	22
2	Grading	Grading	6/15/2020	7/14/2020	5	22
3	Building Construction	Building Construction	7/15/2020	12/1/2021	5	361
4	Architectural Coating	Architectural Coating	4/1/2021	8/1/2021	5	87

As you can see in the excerpt above, the demolition phase is increased by 120%, from the default value of 10 to 22 days; the grading phase is increased by 1,000%, from the default value of 2 to 22 days; the building construction phase is increased by 261%, from the default value of 100 to 361 days; and the architectural coating is increased by 1,640%, from the default value of 5 to 87 days. As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.⁶ According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

“Developer information” (Exhibit D5, pp. 313, 332, 355).

Furthermore, the AQ Report states:

“Project specific information was provided describing the schedule of construction activities and the equipment inventory required from the Applicant. Details pertaining to the schedule and equipment can be found in the attached Appendix” (p. 17).

Finally, the AQ Report provides the following potential construction schedule (see excerpt below) (p. 31, Table 5):

⁶ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

Table 5
Potential Construction Schedule

Phase	Duration	Notes
Demolition	Month 1	1,581 tons of debris hauled up to 41 miles away
Grading	Months 2-3.5	20,000 cubic yards of soil export hauled up to 41 miles away
Building Construction	Months 3.5-19	
Architectural Coatings	Months 11-15	
Source: DKA Planning, 2019		

However, these changes remain unsupported for two reasons.

First, the Project documents fail to include the above-mentioned developer information or the purported Applicant-provided information describing the schedule of construction activities. This is incorrect, as according to the CalEEMod User's Guide:

"CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA."⁷

Here, as the Project documents fail to provide substantial evidence to support the revised individual construction phase lengths, we cannot verify the changes. Lacking a valid justification to vary from default inputs, the model's inputs are unreasonable to apply to the Project.

Second, the source provided for the Project's potential construction schedule, DKA Planning, is the CalEEMod output files themselves. This is incorrect, as the Project documents must substantiate the changes included in the CalEEMod model, not vice versa. Thus, the source is inadequate and the revised individual construction phase lengths remain unsubstantiated and unreasonable to apply to the Project.

These unsubstantiated changes present another serious issue, as the construction emissions are improperly spread out over a longer period of time for some phases, but not for others. According to the CalEEMod User's Guide, each construction phase is associated with different emissions activities (see excerpt below).⁸

⁷ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 13-14.

⁸ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 32.

Demolition involves removing buildings or structures.

Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.

Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.

Building Construction involves the construction of the foundation, structures and buildings.

Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.

Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.

Thus, by disproportionately altering and extending some of the individual construction phase lengths without proper justification, the model assumes there are a greater number of days to complete the construction activities required by the prolonged phases. As such, there will be less construction activities required per day and, consequently, less pollutants emitted per day. As a result, the model underestimates the peak daily emissions associated with some phases of construction and must not be relied upon to determine Project significance.

Unsubstantiated Reduction to Number of Gas Fireplaces

Review of the CalEEMod output files demonstrates that the “2111 South Pacific Avenue Future” model includes several reductions to the default gas fireplace values (see excerpt below) (Exhibit D5, pp. 314, 333, 356).

Table Name	Column Name	Default Value	New Value
tblFireplaces	NumberGas	85.85	0.00
tblFireplaces	NumberNoFireplace	10.10	101.00

As demonstrated in the excerpt above, the models assume that the Project would not include any gas fireplaces. As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.⁹ According to the “User Entered Comments & Non-Default Data” table, the justification provided for this assumption is:

“Developer information” (Exhibit D5, pp. 314, 333, 356).

However, this justification is insufficient, as the Project documents fail to mention or substantiate the number of gas fireplaces included in the Project design whatsoever. As previously discussed, this is incorrect. According to the CalEEMod User’s Guide:

⁹ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/cal-eemod/user-s-guide>, p. 1, 14.

“CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA.”¹⁰

Here, as the Project documents fail to provide substantial evidence to support the assumption that no gas fireplaces would be included in the Project design, we cannot verify the changes.

This potential underestimation presents an issue, as CalEEMod uses the number of gas fireplaces to calculate the Project’s area-source operational emissions.¹¹ Thus, by including unsubstantiated reductions to the gas fireplace values, the model underestimates the Project’s area-source operational emissions and must not be relied upon to determine Project significance.

Unsubstantiated Changes to Construction Off-Road Equipment Unit Amounts and Usage Hours

Review of the CalEEMod output files demonstrates that the “2111 South Pacific Avenue Future” model includes changes to the default off-road construction equipment unit amount and usage hour values (see excerpt below) (Exhibit D5, pp. 314, 333, 356).

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00

As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.¹² According to the “User Entered Comments and Non-Default Data” table, the justification provided for these changes is:

“Developer information” (Exhibit D5, pp. 313, 332, 355).

Furthermore, the AQ Report states:

“Project specific information was provided describing the schedule of construction activities and the equipment inventory required from the Applicant. Details pertaining to the schedule and equipment can be found in the attached Appendix” (p. 17).

However, these changes remain unsupported for two reasons.

First, the Project documents fail to provide the above-mentioned developer information or the purported Applicant-provided information describing the equipment inventory. As previously discussed, this is incorrect. According to the CalEEMod User’s Guide:

¹⁰ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 13-14.

¹¹ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 40-41.

¹² “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

“CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA.”¹³

Here, as the Project documents fail to provide substantial evidence to support the revised off-road construction equipment unit amount and usage hours, we cannot verify the changes and the model inputs are unreasonable to apply to the Project.

Second, the claim that “[d]etails pertaining to the schedule and equipment can be found in the attached Appendix” is insufficient. Upon further review, the attached Appendix is the CalEEMod output files themselves. This is incorrect, as the Project documents must substantiate the changes included in the CalEEMod model, not vice versa. Thus, the source is inadequate, and the revised construction equipment input parameters remain unsubstantiated.

These unsubstantiated changes present an additional issue, as CalEEMod uses the off-road construction equipment input parameters to calculate the emissions associated with off-road construction equipment.¹⁴ By including unsubstantiated changes to the default off-road construction equipment unit amount and usage hours, the model drastically underestimates the Project’s construction-related emissions and must not be relied upon to determine Project significance.

Unsubstantiated Reductions to Worker Trip Numbers

Review of the CalEEMod output files demonstrates that the “2111 South Pacific Avenue Future” model includes two reductions to the worker trip numbers (see excerpt below) (Exhibit D5, pp. 314, 333, 356).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	10.00

As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.¹⁵ According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

“Developer information. Assumes 14 CY haul truck capacity” (Exhibit D5, pp. 314, 333, 356).

However, this justification is insufficient, as the Project documents fail to discuss the number of worker trips expected during Project construction or justify these reductions whatsoever. As such, we cannot verify the revised worker trip numbers are accurate and the model inputs are unreasonable to apply to the Project.

¹³ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 13-14.

¹⁴ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 33-34.

¹⁵ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

These underestimations present a further issue, as CalEEMod uses the worker trip numbers to estimate the construction-related emissions associated with on-road vehicles.¹⁶ Thus, by including unsubstantiated reductions to the default worker trip numbers, the model woefully underestimates the Project's mobile-source construction-related emissions and cannot reasonably be relied upon to determine Project significance.

Underestimated Number of Sunday Operational Vehicle Trips

According to the Traffic Impact Analysis ("TIA"), provided as Exhibit D3 to the Recommendation Report, the proposed Project is expected to generate 602 daily operational vehicle trips (see excerpt below) (pp. 117, Table 3).

Table 3
PROJECT TRIP GENERATION [1]

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
<u><i>Proposed Use</i></u>								
Apartments [3]	89 DU	485	8	24	32	24	15	39
Affordable Housing [4]	12 DU	49	2	4	6	2	2	4
Retail [5]	1,800 GLSF	68	1	1	2	3	4	7
<i>Subtotal Proposed Use</i>		602	11	29	40	29	21	50
<u><i>Existing Use</i></u>								
Bar [6]	(1,490) GSF	(170)	Nom.	Nom.	Nom.	(11)	(6)	(17)
<i>Subtotal Existing Uses</i>		(170)	0	0	0	(11)	(6)	(17)
NET INCREASE		432	11	29	40	18	15	33

As such, the Project's model needed to include trip rates that accurately reflect the estimated number of average daily vehicle trips. However, review of the CalEEMod output files demonstrates that the "2111 South Pacific Avenue Future" model includes approximately 571 Sunday operational vehicle trips (see excerpt below) (Exhibit D5, pp. 327, 347, 369).

Land Use	Average Daily Trip Rate		
	Weekday	Saturday	Sunday
Apartments Mid Rise	534.29	534.29	534.29
Enclosed Parking with Elevator	0.00	0.00	0.00
Strip Mall	67.95	67.95	36.77
Total	602.24	602.24	571.06

¹⁶ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 35.

As demonstrated above, the Sunday vehicle trips are underestimated by approximately 31 trips.¹⁷ As such, the trip rates inputted into the model are underestimated and inconsistent with the information provided by the TIA, and therefore are unreasonable to apply to the Project.

These inconsistencies present a further issue, as CalEEMod uses the operational vehicle trip rates to calculate the emissions associated with the operational on-road vehicles.¹⁸ Thus, by including underestimated operational daily vehicle trips, the model underestimates the Project’s mobile-source operational emissions and must not be relied upon to determine Project significance.

2) Updated Analysis Indicates a Significant Air Quality Impact

In an effort to more accurately estimate the Project’s construction-related and operational emissions, we prepared an updated CalEEMod model, using the Project-specific information provided by the Project documents. In our updated model, we included the correct land use sizes and number of Sunday operational vehicle trips, as well as omitted the unsubstantiated changes to the individual construction phase lengths, number of gas fireplaces, off-road construction input parameters, and worker trip numbers.

Our updated analysis estimates that the VOC and NO_x emissions associated with Project construction drastically exceed the applicable South Coast Air Quality Management District (“SCAQMD”) thresholds of 75- and 100-pounds per day (“lbs/day”), respectively (see table below).¹⁹

SWAPE Criteria Air Pollutant Emissions		
Construction	VOC (lbs/day)	NO _x (lbs/day)
AQ Report	7.2	83.5
SWAPE	100.8	366.5
% Increase	1,300%	339%
SCAQMD Threshold	75	100
Exceeds?	Yes	Yes

As demonstrated above, construction-related VOC and NO_x emissions, as estimated by SWAPE, have a massive increase of approximately 1,300% and 339%, respectively, and far exceed the applicable SCAQMD significance thresholds. Thus, our updated modeling demonstrates that the Project would result in an extremely significant air quality impact that was not previously identified or addressed by the Letter of Determination and associated documents. As a result, the Project is clearly ineligible for a Class 32 Categorical Exemption and a full CEQA analysis in a subsequent EIR must be prepared to

¹⁷ Calculated: 602 proposed daily trips – 571.06 modeled Sunday trips = 30.94 underestimated Sunday trips.

¹⁸ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 36.

¹⁹ “South Coast AQMD Air Quality Significance Thresholds.” SCAQMD, April 2019, available at: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>.

adequately assess and mitigate the air quality impacts that the Project ~~may~~ will have on the environment.

3) Diesel Particulate Matter Emissions Inadequately Evaluated

The January 2022 Construction Health Risk Analysis (“HRA Report”), provided as Exhibit D to the Response, conducts a health risk assessment (“HRA”) evaluating impacts as a result of exposure to diesel particulate matter (“DPM”) emissions from off-road construction equipment. Specifically, the HRA Report estimates that the maximum cancer risk posed to nearby, existing residential sensitive receptors as a result of Project construction would be 0.9 in one million, which would not exceed the SCAQMD significance threshold of 10 in one million (see excerpt below) (p. 7, Table 2).

Table 2
Carcinogenic Risk / Maximum Exposed Residential Receptor

Age Group	Risk
Third Trimester	5.4E-08
0 to 2 years	8.4E-07
Total	9.0E-07

Note: 9.0E-07 denotes an excess case of cancer of 0.09 in one hundred thousand (100,000) individuals exposed.

However, the HRA Report fails to discuss the toxic air contaminant (“TAC”) emissions associated with Project operation or conduct a quantitative operational HRA whatsoever. As such, the evaluation of the Project’s potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is incorrect for six reasons.

First, the HRA Report states:

“Air Quality Dynamics has prepared a health risk assessment (HRA) to quantify the impact of diesel particulate matter (DPM), which is identified as a toxic air contaminant pursuant to California Code of Regulations Section 93001, associated with the generation of off-road equipment emissions during construction of the proposed project” (p. 1).

As demonstrated above, the construction HRA only accounts for emissions generated by off-road equipment during Project construction. This is woefully insufficient, as the Project expects to generate heavy-duty hauling truck trips throughout construction. The AQ Report indicates that “[s]ources of air pollutant emissions associated with construction activities include heavy-duty offroad diesel equipment and vehicular traffic to and from the Project construction site” (p. 18). Specifically, the AQ Report accounts for 156- and 2,857-hauling truck trips during Project demolition and grading, respectively, which would travel 41 miles and generate diesel exhaust, a known toxic air contaminant (“TAC”). Thus, by failing to account for the Project’s anticipated truck traffic, the construction HRA and associated cancer risk are underestimated and cannot reasonably form the basis for impact analysis.

Second, the Project’s construction HRA is incorrect, as it relies upon emissions estimates from a flawed air model, as discussed above. The HRA Report states:

“For this assessment, the off-road PM10 exhaust estimates reported by CalEEMod were used as a surrogate for DPM emissions which assumed diesel-powered construction equipment will meet EPA-certified Tier 4 emission standards” (p. 2).

As discussed above, when we reviewed the Project's CalEEMod output files, provided AQ Report as Exhibit D5 to the Recommendation Report, we found that several of the values inputted into the model are not consistent with information disclosed in the Project documents. Specifically, the construction schedule and off-road construction equipment list are unsubstantiated. Moreover, the air model utilized for the construction HRA assumes that the Project would use Tier 4 equipment. This is incorrect, as not only do the Project documents fail to mention Tier 4 emissions standards whatsoever, but the use of Tier 4 construction equipment was not included as a formal mitigation measure. According to the Association of Environmental Professionals (“AEP”) *CEQA Portal Topic Paper* on Mitigation Measures:

“While not ‘mitigation’, a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact.”²⁰

As demonstrated above, design features that are not formally included in a mitigation monitoring and reporting program (“MMRP”) may be eliminated from the Project’s design altogether. Thus, as the use of Tier 4 construction equipment is not formally included as a mitigation measure, nor mentioned in the Project documents whatsoever, we cannot guarantee that these standards would be implemented, monitored, and enforced on the Project site. Thus, the model artificially reduces the Project’s expected particulate matter emissions by incorrectly incorporating Tier 4 mitigation, and the HRA utilizes a greatly underestimated DPM concentration to calculate the health risk associated with Project construction. As such, the construction HRA and resulting cancer risk cannot reasonably be relied upon to determine Project significance.

Third, the construction HRA utilizes incorrect Fraction of Time At Home (“FAH”) values. Specifically, the HRA Report utilizes a FAH value of 0.85 for the third trimester (age -0.25 to 0) and infant (age 0 to 2) receptors (Attachment A, Table A1, Table A2). However, the FAH values used for the third trimester and infant receptors are incorrect, as SCAQMD guidance states:

“For Tiers 1, 2, and 3 screening purposes, the FAH is assumed to be 1 for ages third trimester to 16. As a default, children are assumed to attend a daycare or school in close proximity to their home and no discount should be taken for time spent outside of the area affected by the

²⁰ “CEQA Portal Topic Paper Mitigation Measures.” AEP, February 2020, *available at*: <https://cegaportal.org/tp/CEQA%20Mitigation%202020.pdf>, p. 6.

facility's emissions. People older than age 16 are assumed to spend only 73 percent of their time at home."²¹

As such, per SCAQMD guidance, the HRA Report should have used an FAH of 1 for the third trimester and infant receptors. Thus, by utilizing incorrect FAH values, the HRA Report dramatically underestimates the cancer risk posed to nearby, existing sensitive receptors as a result of Project construction.

Fourth, by failing to prepare a quantified operational HRA, the Project is inconsistent with CEQA's requirement to make "a reasonable effort to substantively connect a project's air quality impacts to likely health consequences."²² As previously discussed, the TIA indicates that operation of the Project is anticipated to generate 602 average daily vehicle trips, which would generate additional exhaust emissions and expose nearby sensitive receptors to DPM emissions (pp. 117, Table 3). However, the HRA Report fails to evaluate the TAC emissions associated with Project operation or indicate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the Project's operational TAC emissions to the potential health risks posed to nearby receptors, the Project is inconsistent with CEQA's requirement to correlate the Project-generated emissions with potential adverse impacts on human health.

Fifth, the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* in February 2015. This guidance document describes the types of projects that warrant the preparation of an HRA. Specifically, OEHHA recommends that all short-term projects lasting at least 2 months assess cancer risks.²³ Furthermore, according to OEHHA:

"Exposure from projects lasting more than 6 months should be evaluated for the duration of the project. In all cases, for assessing risk to residential receptors, the exposure should be assumed to start in the third trimester to allow for the use of the ASFs (OEHHA, 2009)."²⁴

OEHHA also recommends that an exposure duration of 30 years should be used to estimate the individual cancer risk at the maximally exposed individual resident ("MEIR").²⁵ While the Project documents fail to provide the expected lifetime of the proposed Project, we can reasonably assume that the Project would operate for at least 30 years, if not more. Thus, operation of the Project exceeds the 2-month and 6-month requirements set forth by OEHHA and must be evaluated for the entire 30-year

²¹ "Risk Assessment Procedures." SCAQMD, August 2017, available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1401/riskassessmentprocedures_2017_080717.pdf, p. 7.

²² "Sierra Club v. County of Fresno." Supreme Court of California, December 2018, available at: <https://cegaportal.org/decisions/1907/Sierra%20Club%20v.%20County%20of%20Fresno.pdf>.

²³ "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 8-18.

²⁴ "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 8-18.

²⁵ "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 2-4.

residential exposure duration, as indicated by OEHHA guidance. These recommendations reflect the most recent state health risk policies, and as such, a full CEQA analysis must be prepared in a subsequent EIR to include an analysis of health risk impacts posed to nearby sensitive receptors from Project-generated DPM emissions.

Sixth, while the HRA Report evaluates the Project's health risk impacts to nearby, existing receptors as a result of Project construction, the HRA fails to evaluate the combined lifetime cancer risk as a result of Project construction and operation together. According to OEHHA guidance, "the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk at the receptor location."²⁶ However, the HRA Report fails to sum each age bin to evaluate the combined cancer risk over the course of the Project's total construction and operation. This is incorrect and thus, an updated analysis is necessary to quantify and sum the entirety of the Project's construction and operational health risks together to compare to the SCAQMD threshold of 10 in one million.

4) Screening-Level Analysis Demonstrates Potentially Significant Health Risk Impact

In order to conduct our screening-level risk assessment we relied upon AERSCREEN, which is a screening level air quality dispersion model.²⁷ The model replaced SCREEN3, and AERSCREEN is included in the OEHHA and the California Air Pollution Control Officers Associated ("CAPCOA") guidance as the appropriate air dispersion model for Level 2 health risk screening assessments ("HRSAs").^{28, 29} A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors are exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

We prepared a preliminary HRA of the Project's operational health risk impact to nearby sensitive receptors using the Project's annual PM₁₀ exhaust estimates from the AQ Report's CalEEMod output files. Consistent with recommendations set forth by OEHHA, we assumed residential exposure begins during the third trimester stage of life. Subtracting the 579-day construction period from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 28.41 years, approximately. The AQ Report's annual CalEEMod output file indicates that operational activities will generate approximately 34 pounds of DPM per year throughout operation.³⁰ The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and

²⁶ "Guidance Manual for preparation of Health Risk Assessments." OEHHA, February 2015, *available at*: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf> p. 8-4

²⁷ "AERSCREEN Released as the EPA Recommended Screening Model," U.S. EPA, April 2011, *available at*: http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf

²⁸ "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at*: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>.

²⁹ "Health Risk Assessments for Proposed Land Use Projects." CAPCOA, July 2009, *available at*: http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf.

³⁰ See Attachment B for calculations.

volume emission sources. To account for the variability in equipment usage and truck trips over Project operation, we calculated an average DPM emission rate by the following equation:

$$\text{Emission Rate} \left(\frac{\text{grams}}{\text{second}} \right) = \frac{34.2 \text{ lbs}}{365 \text{ days}} \times \frac{453.6 \text{ grams}}{\text{lbs}} \times \frac{1 \text{ day}}{24 \text{ hours}} \times \frac{1 \text{ hour}}{3,600 \text{ seconds}} = \mathbf{0.000492 \text{ g/s}}$$

Using this equation, we estimated an operational emission rate of 0.000492 g/s. Construction and operational activity was simulated as a 0.56-acre rectangular area source in AERSCREEN with approximate dimensions of 67- by 34-meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution. The population of Los Angeles was obtained from U.S. 2020 Census data.³¹

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project Site. United States Environmental Protection Agency (“EPA”) guidance suggests that in screening procedures, the annualized average concentration of an air pollutant to be estimated by multiplying the single-hour concentration by 10%.³² According to the HRA, the nearest sensitive receptors are multi-family residential buildings and single family dwellings surrounding the Project site (p. 3.2-13). However, review of the AERSCREEN output files demonstrates that the MEIR is located approximately 25 meters from the Project site. Thus, the single-hour concentration estimated by AERSCREEN for Project operation is approximately 3.184 µg/m³ DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.3184 µg/m³ for Project operation at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHHA, as recommended by SCAQMD.³³ Guidance from OEHHHA and the California Air Resources Board (“CARB”) recommends the use of a standard point estimate approach, including high-point estimate (i.e. 95th percentile) breathing rates and age sensitivity factors (“ASF”), in order to account for the increased sensitivity to carcinogens during early-in-life exposure and accurately assess risk for susceptible subpopulations such as children. The residential exposure parameters, such as the daily breathing rates (“BR/BW”), exposure duration (“ED”), age sensitivity factors (“ASF”), fraction of time at home (“FAH”), and exposure frequency (“EF”) utilized for the various age groups in our screening-level HRA are as follows:

³¹ “Los Angeles.” U.S. Census Bureau, 2020, available at: <https://datacommons.org/place/geoid/0644000>.

³² “Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised.” U.S. EPA, October 1992, available at: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf.

³³ “AB 2588 and Rule 1402 Supplemental Guidelines.” SCAQMD, October 2020, available at: <http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=19>, p. 2.

Exposure Assumptions for Residential Individual Cancer Risk

Age Group	Breathing Rate (L/kg-day)³⁴	Age Sensitivity Factor³⁵	Exposure Duration (years)	Fraction of Time at Home³⁶	Exposure Frequency (days/year)³⁷	Exposure Time (hours/day)
3rd Trimester	361	10	0.25	1	350	24
Infant (0 - 2)	1090	10	2	1	350	24
Child (2 - 16)	572	3	14	1	350	24
Adult (16 - 30)	261	1	14	0.73	350	24

For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor (“CPF”) in units of inverse dose expressed in milligrams per kilogram per day (mg/kg/day⁻¹) to derive the cancer risk estimate. Therefore, to assess exposures, we utilized the following dose algorithm:

$$Dose_{AIR, per\ age\ group} = C_{air} \times EF \times \left[\frac{BR}{BW} \right] \times A \times CF$$

where:

Dose_{AIR} = dose by inhalation (mg/kg/day), per age group
C_{air} = concentration of contaminant in air (µg/m³)
EF = exposure frequency (number of days/365 days)
BR/BW = daily breathing rate normalized to body weight (L/kg/day)
A = inhalation absorption factor (default = 1)
CF = conversion factor (1x10⁻⁶, µg to mg, L to m³)

To calculate the overall cancer risk, we used the following equation for each appropriate age group:

³⁴ “Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics ‘Hot Spots’ Information and Assessment Act.” SCAQMD, October 2020, available at: <http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=19>, p. 19; see also “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>.

³⁵ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 8-5 Table 8.3.

³⁶ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 5-24.

³⁷ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 5-24.

$$Cancer\ Risk_{AIR} = Dose_{AIR} \times CPF \times ASF \times FAH \times \frac{ED}{AT}$$

where:

Dose_{AIR} = dose by inhalation (mg/kg/day), per age group

CPF = cancer potency factor, chemical-specific (mg/kg/day)⁻¹

ASF = age sensitivity factor, per age group

FAH = fraction of time at home, per age group (for residential receptors only)

ED = exposure duration (years)

AT = averaging time period over which exposure duration is averaged (always 70 years)

Consistent with the 579-day construction schedule, the annualized averaged concentration for operation was used for the latter 0.66 years on the infant stage of life (0 – 2 years) as well as the entire child (2 – 16 years) and adult (16 – 30 years) stages of life. The results of our calculations are shown in the table below.

The Maximally Exposed Individual at an Existing Residential Receptor				
Age Group	Emissions Source	Duration (years)	Concentration (ug/m3)	Cancer Risk
3rd Trimester	Construction	0.25	*	*
	<i>Construction</i>	<i>1.34</i>	<i>*</i>	<i>*</i>
	<i>Operation</i>	<i>0.66</i>	<i>0.3184</i>	<i>3.45E-05</i>
Infant (0 - 2)	Total	2		3.45E-05
Child (2 - 16)	Operation	14	0.3184	1.15E-04
Adult (16 - 30)	Operation	14	0.3184	1.28E-05
Lifetime		30		1.626E-04

As demonstrated in the table above, the excess cancer risks to infants, children, and adults at the MEIR located approximately 25 meters away, over the course of Project operation, are approximately 34.5, 115, and 12.8 in one million, respectively. The excess cancer risk associated with the Project operation over the course of a residential lifetime is approximately 162.6 in one million. When summing the Project's operational cancer risk, as estimated by SWAPE, with the HRA Report's underestimated construction-related cancer risk of 0.9 in one million, we estimate an excess cancer risk of approximately 163.5 in one million over the course of a residential lifetime (30 years) (p. 7, Table 2).³⁸ As such, the

³⁸ Calculated: 162.6 in one million + 0.9 in one million = 163.5 in one million.

lifetime cancer risks dramatically exceed the SCAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the Project documents.

Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. According to the U.S. EPA:

“EPA’s Exposure Assessment Guidelines recommend completing exposure assessments iteratively using a tiered approach to ‘strike a balance between the costs of adding detail and refinement to an assessment and the benefits associated with that additional refinement’ (U.S. EPA, 1992).

In other words, an assessment using basic tools (e.g., simple exposure calculations, default values, rules of thumb, conservative assumptions) can be conducted as the first phase (or tier) of the overall assessment (i.e., a screening-level assessment).

The exposure assessor or risk manager can then determine whether the results of the screening-level assessment warrant further evaluation through refinements of the input data and exposure assumptions or by using more advanced models.”

As demonstrated above, screening-level analyses warrant further evaluation in a refined modeling approach. Thus, as our screening-level HRA demonstrates that construction and operation of the Project would result in a potentially significant health risk impact, a full CEQA analysis must be prepared in a subsequent EIR, including a refined health risk analysis which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

As discussed above, the Letter of Determination fails to demonstrate that the Project would result in less-than-significant air quality and health risk impacts. Thus, the Letter of Determination’s claim that the Project is exempt pursuant to CEQA Guidelines § 15332 must not be relied upon. As a result, a full CEQA analysis must be prepared in a subsequent EIR evaluating the Project’s potential greenhouse gas (“GHG”) emissions.

In an effort to determine the significance of the Project’s GHG impacts, we recommend comparing the Project’s GHG emissions estimates to the SCAQMD 2035 efficiency target of 3.0 metric tons of carbon dioxide equivalents per service population per year (“MT CO₂e/SP/year”), which was calculated by applying a 40% reduction to the 2020 targets.³⁹ When applying this threshold, the Project’s air model indicates a potentially significant GHG impact.

The Project’s CalEEMod output files, provided AQ Report as Exhibit D5 to the Recommendation Report, disclose the Project’s mitigated emissions, which include approximately 825 MT CO₂e/year of total

³⁹ “Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15.” SCAQMD, September 2010, available at: [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf), p. 2.

construction emissions (sum of 2020 and 2021) and approximately 1,330 MT CO₂e/year of net annual operational emissions (sum of area-, energy-, mobile-, waste, and water-related emissions). When amortizing the Project's construction-related GHG emissions over a period of 30 years and summing them with the Project's operational GHG emissions, we estimate annual GHG emissions of approximately 1,358 MT CO₂e/year. Furthermore, according to CAPCOA's *CEQA & Climate Change* report, service population ("SP") is defined as "the sum of the number of residents and the number of jobs supported by the project."⁴⁰ The AQ Report estimates that the Project would include 246 residents and 4 employees (p. 27). As such, we calculated a SP of 250 people.⁴¹ When dividing the Project's GHG emissions (amortized construction + operational) by a SP value of 250 people, we find that the Project would emit approximately 5.4 MT CO₂e/SP/year (see table below).⁴²

Annual Greenhouse Gas Emissions	
Project Phase	Proposed Project
<i>Total Construction</i>	<i>825.09</i>
Construction (amortized over 30 years)	27.50
<i>Area</i>	<i>1.74</i>
<i>Energy</i>	<i>369.33</i>
<i>Mobile</i>	<i>850.47</i>
<i>Waste</i>	<i>24.32</i>
<i>Water</i>	<i>84.16</i>
Annual Operational	1,330.02
Total Annual GHG Emissions (MT CO₂e/year)	1,357.52
Service Population	250
Service Population Efficiency (MT CO₂e/SP/year)	5.4
SCAQMD 2035 Target	3.0
<i>Exceeds?</i>	Yes

As demonstrated above, the Project's service population efficiency value, as estimated by the Exemption's net annual GHG emissions and SP, exceeds the SCAQMD 2035 efficiency target of 3.0 MT CO₂e/SP/year, thus resulting in a potentially significant impact. As such, a full CEQA analysis must be prepared in a subsequent EIR to adequately assess and mitigate the potential GHG impacts that the Project ~~may~~ will have on the environment.

⁴⁰ CAPCOA (Jan. 2008) *CEQA & Climate Change*, p. 71-72, <http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA-White-Paper.pdf>.

⁴¹ Calculated: 246 residents + 4 employees = 250 service population.

⁴² Calculated: (1,357.52 MT CO₂e/year) / (250 service population) = (5.4 MT CO₂e/SP/year).

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

The Program EIR incorporates the following three air quality and GHG mitigation measures:

“MM4.2-1 The CPIO District shall include regulations for construction that require the following or comparable best management practices be included in contract specifications and/or printed on plans:

- Use properly tuned and maintained equipment.
- Construction contractors shall enforce the idling limit of five minutes as set forth in the California Code of Regulations.
- Use diesel-fueled construction equipment to be retrofitted with after treatment products (e.g. engine catalysts) to the extent they are readily available and feasible.
- Use heavy duty diesel-fueled equipment that uses low NOX diesel fuel to the extent it is readily available and feasible.
- Use construction equipment that uses low polluting fuels (i.e. compressed natural gas, liquid petroleum gas, and unleaded gasoline) to the extent available and feasible.
- Maintain construction equipment in good operating condition to minimize air pollutants.
- Construction contractors shall utilize materials that do not require painting, as feasible.
- Construction contractors shall use pre-painted construction materials, as feasible.
- Construction contractors shall provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Construction contractors shall provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site, as feasible.
- Construction contractors shall reroute construction trucks away from congested streets or sensitive receptor areas, as feasible.
- Construction contractors shall appoint a construction relations officer to act as a community liaison concerning on-site construction activity including resolution of issues related to PM10 generation.

MM4.2-2 The CPIO District shall include regulations that require construction projects greater than 5 acres to submit an air quality study that discuss the project’s potential emissions for the following: CO, NOX, PM10, and PM2.5.

MM4.2-3 [MM 4.6-1] The CPIO District shall include regulations that require the following greenhouse gas reduction measures be incorporated into the project design:

- For non-residential projects: all outdoor lighting systems shall be directed away from the window of any residential uses and shall comply with the non-residential Light Pollution Reduction standards in the Green Building Code of the Municipal Code.

- For non-residential projects: whenever new fixtures are installed, all water closets, urinals, shower heads, faucets and dishwashers shall be High Efficiency fixtures installed in accordance with the regulations of the City's Water Conservation Ordinance.
- For Multi-family and Commercial Projects: parking facilities shall have five (5) percent of the total parking spaces, but not less than one (1) space, capable of supporting future Electric Vehicle Supply Equipment (EVSE) charging locations” (p. 11-3 – 11-4).

Regardless, the Program EIR concludes a significant-and-unavoidable air quality and GHG impact (p. 8-7). Our analysis demonstrates that there are new available mitigation measures considerably different from those analyzed in the Program EIR that would substantially reduce the Project’s significant air quality and GHG impacts. As such, the Project cannot be approved until a full CEQA analysis in a subsequent EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels, pursuant to CEQA Guidelines § 15162.

We identified several mitigation measures that are applicable to the proposed Project. First, to reduce the Project’s emissions, we recommend consideration of SCAG’s 2020 RTP/SCS PEIR’s Air Quality Project Level Mitigation Measures (“PMM-AQ-1”) and Greenhouse Gas Project Level Mitigation Measures (“PMM-GHG-1”), as described below:⁴³

SCAG RTP/SCS 2020-2045	
Air Quality Project Level Mitigation Measures – PMM-AQ-1: In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the <i>State CEQA Guidelines</i>, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:	
a) Minimize land disturbance.	
b) Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.	
c) Cover trucks when hauling dirt.	
d) Stabilize the surface of dirt piles if not removed immediately.	
e) Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.	
f) Minimize unnecessary vehicular and machinery activities.	
g) Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.	
h) Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.	

⁴³ “4.0 Mitigation Measures.” Connect SoCal Program Environmental Impact Report Addendum #1, September 2020, available at: https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocial_addendum_4_mitigationmeasures.pdf?1606004420, p. 4.0-2 – 4.0-10; 4.0-19 – 4.0-23; See also: “Certified Final Connect SoCal Program Environmental Impact Report.” Southern California Association of Governments (SCAG), May 2020, available at: <https://scag.ca.gov/peir>.

j) Require contractors to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.
m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
p) As appropriate require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.
q) Require projects within 500 feet of residences, hospitals, or schools to use Tier 4 equipment for all engines above 50 horsepower (hp) unless the individual project can demonstrate that Tier 4 engines would not be required to mitigate emissions below significance thresholds.
r) Projects located within the South Coast Air Basin should consider applying for South Coast AQMD "SOON" funds which provides funds to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles.
s) Projects located within AB 617 communities should review the applicable Community Emissions Reduction Plan (CERP) for additional mitigation that can be applied to individual projects.
t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.
u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).
y) Projects that will introduce sensitive receptors within 500 feet of freeways and other sources should consider installing high efficiency of enhanced filtration units, such as Minimum Efficiency Reporting Value (MERV) 13 or better. Installation of enhanced filtration units can be verified during occupancy inspection prior to the issuance of an occupancy permit.
z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.
aa) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities.
bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible: - Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85% - Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%. - Nonroad diesel engines on site shall be Tier 2 or higher. - Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp.

- Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer.
- Diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 ppm or less.
- The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following:
 - i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
 - ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.
 - iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.
- The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.
- The contractor shall maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes:
 - i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
 - ii. Any problems with the equipment or emission controls.
 - iii. Certified copies of fuel deliveries for the time period that identify:
 - 1. Source of supply
 - 2. Quantity of fuel
 - 3. Quantity of fuel, including sulfur content (percent by weight)

cc) Project should exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code). The following measures can be used to increase energy efficiency:

- Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers.
- Provide traffic calming measures, such as:
 - i. Marked crosswalks
 - ii. Count-down signal timers
 - iii. Curb extensions
 - iv. Speed tables
 - v. Raised crosswalks
 - vi. Raised intersections
 - vii. Median islands
 - viii. Tight corner radii
 - ix. Roundabouts or mini-circles
 - x. On-street parking
 - xi. Chicanes/chokers
- Create urban non-motorized zones
- Provide bike parking in non-residential and multi-unit residential projects
- Dedicate land for bike trails
- Limit parking supply through:
 - i. Elimination (or reduction) of minimum parking requirements
 - ii. Creation of maximum parking requirements
 - iii. Provision of shared parking
- Require residential area parking permit.
- Provide ride-sharing programs

i. Designate a certain percentage of parking spacing for ride sharing vehicles ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles iii. Providing a web site or messaging board for coordinating rides iv. Permanent transportation management association membership and finding requirement.
Greenhouse Gas Project Level Mitigation Measures – PMM-GHG-1 In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the <i>State CEQA Guidelines</i>, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:
b) Reduce emissions resulting from projects through implementation of project features, project design, or other measures, such as those described in Appendix F of the State CEQA Guidelines.
c) Include off-site measures to mitigate a project's emissions.
d) Measures that consider incorporation of Best Available Control Technology (BACT) during design, construction and operation of projects to minimize GHG emissions, including but not limited to: i. Use energy and fuel-efficient vehicles and equipment; ii. Deployment of zero- and/or near zero emission technologies; iii. Use lighting systems that are energy efficient, such as LED technology; iv. Use the minimum feasible amount of GHG-emitting construction materials; v. Use cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production; vi. Incorporate design measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse; vii. Incorporate design measures to reduce energy consumption and increase use of renewable energy; viii. Incorporate design measures to reduce water consumption; ix. Use lighter-colored pavement where feasible; x. Recycle construction debris to maximum extent feasible; xi. Plant shade trees in or near construction projects where feasible; and xii. Solicit bids that include concepts listed above.
e) Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following: i. Promote transit-active transportation coordinated strategies; ii. Increase bicycle carrying capacity on transit and rail vehicles; iii. Improve or increase access to transit; iv. Increase access to common goods and services, such as groceries, schools, and day care; v. Incorporate affordable housing into the project; vi. Incorporate the neighborhood electric vehicle network; vii. Orient the project toward transit, bicycle and pedestrian facilities; viii. Improve pedestrian or bicycle networks, or transit service; ix. Provide traffic calming measures; x. Provide bicycle parking;

xi. Limit or eliminate park supply; xii. Unbundle parking costs; xiii. Provide parking cash-out programs; xiv. Implement or provide access to commute reduction program;
f) Incorporate bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network;
g) Improving transit access to rail and bus routes by incentives for construction and transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and
h) Adopting employer trip reduction measures to reduce employee trips such as vanpool and carpool programs, providing end-of-trip facilities, and telecommuting programs including but not limited to measures that: i. Provide car-sharing, bike sharing, and ride-sharing programs; ii. Provide transit passes; iii. Shift single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services; iv. Provide incentives or subsidies that increase that use of modes other than single-occupancy vehicle; v. Provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms; vi. Provide employee transportation coordinators at employment sites; vii. Provide a guaranteed ride home service to users of non-auto modes.
i) Designate a percentage of parking spaces for ride-sharing vehicles or high-occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;
j) Land use siting and design measures that reduce GHG emissions, including: i. Developing on infill and brownfields sites; ii. Building compact and mixed-use developments near transit; iii. Retaining on-site mature trees and vegetation, and planting new canopy trees; iv. Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging stations or neighborhood electric vehicle networks, or charging for electric bicycles; and v. Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.
k) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities. The measures provided above are also intended to be applied in low income and minority communities as applicable and feasible.
l) Require at least five percent of all vehicle parking spaces include electric vehicle charging stations, or at a minimum, require the appropriate infrastructure to facilitate sufficient electric charging for passenger vehicles and trucks to plug-in.
m) Encourage telecommuting and alternative work schedules, such as: i. Staggered starting times ii. Flexible schedules iii. Compressed work weeks
n) Implement commute trip reduction marketing, such as: i. New employee orientation of trip reduction and alternative mode options ii. Event promotions iii. Publications

o) Implement preferential parking permit program
p) Implement school pool and bus programs
q) Price workplace parking, such as: i. Explicitly charging for parking for its employees; ii. Implementing above market rate pricing; iii. Validating parking only for invited guests; iv. Not providing employee parking and transportation allowances; and v. Educating employees about available alternatives.

Furthermore, we reviewed the December 2010 Public Review Draft Program Environmental Impact Report for the City of Long Beach Downtown Plan (SCH No. 2009071006). The City of Long Beach Downtown Plan, published over a decade ago, incorporates several exhaustive mitigation measures to combat the Plan's significant air quality and GHG impacts. The Downtown Plan reveals how inadequate the San Pedro Community Plan's mitigation measures are, especially considering the Community Plan was adopted years later and thus should be more modern. Therefore, to reduce the Project's emissions, we recommend consideration of the following measures, as described below: ⁴⁴

City of Long Beach Downtown Plan Program Environmental Impact Report	
Air Quality Program Level Mitigation Measures	
<i>Impact/Potential Impact</i>	<i>Mitigation Measure</i>
Construction and operational activities would generate air pollutant emissions of VOCs, NOX, PM ₁₀ , and PM _{2.5} .	AQ-1(a) To reduce short-term construction emissions, the City shall require that all construction projects that would require use of heavy-duty (50 horsepower [hp] or more) offroad vehicles to be used during construction shall require their contractors to implement the Enhanced Exhaust Control Practices (listed below) or whatever mitigation measures are recommended by SCAQMD at the time individual portions of the site undergo construction. <u>Enhanced Exhaust Control Practices</u> The project applicant shall provide a plan for approval by the City, demonstrating that the heavy-duty (50 hp or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet average 20 percent NO_x reduction, 20 percent VOC reduction, and 45 percent particulate reduction compared to the 2011 ARB fleet average, as contained in the URBEMIS output sheets in Appendix C. Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. SCAQMD, which is the resource agency for air quality in the Project area, can be used in an advisory role to demonstrate fleet-wide reductions.

⁴⁴ "Mitigation Monitoring And Reporting Program." City of Long Beach, *available at*: <https://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/environmental/environmental-reports/approvedcertified-part-2/new-civic-center-project/9-0-mmprp>, p. 9-4 – 9-12; 9-20 – 9-27.

	SCAQMD's mitigation measures for off-road engines can be used to identify an equipment fleet that achieves this reduction (SCAQMD 2007b). • The project applicant shall submit to the City a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 hp, that would be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the hp rating, engine production year, and projected hours of use for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of heavy-duty off-road equipment, the project representative shall provide the City with the anticipated construction timeline including start date and name and phone number of the project manager and onsite foreman. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed and the dates of each survey. SCAQMD staff and/or other officials may conduct periodic site inspections to determine compliance. • If, at the time of construction, SCAQMD, CARB, or the EPA has adopted a regulation or new guidance applicable to construction emissions, compliance with the regulation or new guidance may completely or partially replace this mitigation if it is equal to or more effective than the mitigation contained herein, and if the City so permits. Such a determination must be supported by a project-level analysis and be approved by the City.
Construction and operational activities would generate air pollutant emissions of VOCs, NO _x , PM ₁₀ , and PM _{2.5} .	AQ-2 Mitigation to reduce mobile source emissions due to implementation of the Plan addresses reducing the number of motor vehicle trips and reducing the emissions of individual vehicles under the control of the project applicant(s). The following measures shall be implemented by project applicant(s) unless it can be demonstrated to the City that the measures would not be feasible. • The project applicant(s) for all project phases shall require the commercial development operator(s) to operate, maintain, and promote a ride-share program for employees of the various businesses. • The project applicant(s) for all project phases shall include one or more secure bicycle parking areas within the property and encourage bicycle riding for both employees and customers. • The proposed structures shall be designed to meet current Title 24 + 20 percent energy efficiency standards and shall include photovoltaic cells on the rooftops to achieve an additional 25 percent reduction in electricity use on an average sunny day. • The City shall ensure that all new commercial developments include or have access to convenient shower and locker facilities for employees to encourage bicycle, walking, and jogging as options for commuting. • The project applicant(s) for all project phases shall require that all equipment operated by the businesses within the facility be electric or use non-diesel engines.

	• All truck loading and unloading docks shall be equipped with one 110/208-volt power outlet for every two-dock door. Diesel trucks shall be prohibited from idling more than 5 minutes and must be required to connect to the 110/208-volt power to run any • auxiliary equipment. Signs outlining the idling restrictions shall be provided. • If, at the time of construction, SCAQMD, CARB, or EPA has adopted a regulation or new guidance applicable to mobile and area-source emissions, compliance with the regulation or new guidance may completely or partially replace this mitigation if it is equal to or more effective than the mitigation contained herein, and if the City so permits. Such a determination shall be supported by a project-level analysis that is approved by the City.
Toxic air contaminants from Port of Long Beach, offsite stationary sources, and onsite mobile sources would exceed Air Resources Board standards for health risk.	AQ-4(a) The following measures shall be implemented to reduce exposure of sensitive receptors to operational emissions of TACs: • Proposed commercial land uses that have the potential to emit TACs or host TAC-generating activity (e.g., loading docks) shall be located away from existing and proposed onsite sensitive receptors such that they do not expose sensitive receptors to TAC emissions that exceed an incremental increase of 10 in 1 million for the cancer risk and/or a noncarcinogenic Hazard Index of 1.0. • Where necessary to reduce exposure of sensitive receptors to an incremental increase of 10 in 1 million for the cancer risk and/or a noncarcinogenic Hazard Index of 1.0, proposed commercial and industrial land uses that would host diesel trucks shall incorporate idle-reduction strategies that reduce the main propulsion engine idling time through alternative technologies such as IdleAire, electrification of truck parking, and alternative energy sources for TRUs to allow diesel engines to be completely turned off. • Signs shall be posted in at all loading docks and truck loading areas to indicate that diesel-powered delivery trucks must be shut off when not in use for longer than 5 minutes on the premises. This measure is consistent with the ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling, which was approved by the California Office of Administrative Law in January 2005. • Proposed facilities that would require the long-term use of diesel equipment and heavy-duty trucks shall develop a plan to reduce emissions, which may include • such measures as scheduling activities when the residential uses are the least occupied, requiring equipment to be shut off when not in use, and prohibiting heavy trucks from idling. • When determining the exact type of facility that would occupy the proposed commercial space, the City shall take into consideration its toxic-producing potential. • Commercial land uses that accommodate more than 100 trucks per day, or 40 trucks equipped with TRUs, within 1,000 feet of sensitive receptors (e.g., residences or schools) shall perform a site-specific project-level HRA in accordance with SCAQMD guidance for projects generating or attracting vehicular trips, especially heavy-duty diesel fueled vehicles (SCAQMD 2003b). If the incremental increase in cancer risk determined by the HRA exceeds the threshold of significance recommended by SCAQMD or ARB at

	the time (if any), then all feasible mitigation measures shall be employed to minimize the impact.
Toxic air contaminants from Port of Long Beach, offsite stationary sources, and onsite mobile sources would exceed Air Resources Board standards for health risk.	AQ-4(b) The City shall verify that the following measures are implemented by new developments to reduce exposure of sensitive receptors to emissions of TACs from POLB and stationary sources in the vicinity of the Downtown Plan Project area: • All proposed residences in the Downtown Plan Project area shall be equipped with filter systems with high Minimum Efficiency Reporting Value (MERV) for removal of small particles (such as 0.3 micron) at all air intake points to the home. All proposed residences shall be constructed with mechanical ventilation systems that would allow occupants to keep windows and doors closed and allow for the introduction of fresh outside air without the requirement of open windows. • The heating, ventilation, and air conditioning (HVAC) systems shall be used to maintain all residential units under positive pressure at all times. • An ongoing education and maintenance plan about the filtration systems associated with HVAC shall be developed and implemented for residences. • To the extent feasible, sensitive receptors shall be located as far away from the POLB as possible.
Toxic air contaminants from Port of Long Beach, offsite stationary sources, and onsite mobile sources would exceed Air Resources Board standards for health risk.	AQ-5 The following additional guidelines, which are recommended in ARB's <i>Land Use Handbook: A Community Health Perspective</i> (ARB 2005) shall be implemented. The guidelines are considered to be advisory and not regulatory: • Sensitive receptors, such as residential units and daycare centers, shall not be located in the same building as dry-cleaning operations that use perchloroethylene. Dry-cleaning operations that use perchloroethylene shall not be located within 300 feet of any sensitive receptor. A setback of 500 feet shall be provided for operations with two or more machines.
Greenhouse Gas Program Level Mitigation Measures	
Impact/Potential Impact	Mitigation Measure
Emissions of carbon dioxide (CO ₂) and other greenhouse gases may result from construction of individual developments allowed by the proposed Project.	GHG-1(a) Implement Mitigation Measure AQ-1. Implementation of the mitigation measures described in Section 4.2, Air Quality, of this PEIR, which would reduce construction emissions of criteria air pollutants and precursors, would also act to reduce GHG emissions associated with implementation of the Project. The construction mitigation measures for exhaust emissions are relevant to the global climate change impact because both criteria air pollutant and GHG emissions are frequently associated with combustion byproducts.
Emissions of carbon dioxide (CO ₂) and other greenhouse gases may result from construction of individual developments allowed by the proposed Project.	GHG-1(b) Implement Additional Measures to Control Construction-Generated GHG Emissions. To further reduce construction generated GHG emissions, the project applicant(s) of all public and private developments shall implement all feasible measures for reducing GHG emissions associated with construction that are recommended by the City and/or SCAQMD at the time individual portions of the site undergo construction. Such measures may reduce GHG exhaust emissions from the use of onsite equipment, worker commute trips, and truck trips carrying materials and equipment to and from the project site, as well as GHG emissions embodied in the materials selected for construction (e.g., concrete). Other measures may pertain to the materials used in construction. Prior to the construction of each development phase, the project applicant(s) shall obtain the most current list of GHG-reduction measures that are recommended by the City and/or SCAQMD and stipulate that these measures be implemented during the appropriate construction phase. The project applicant(s) for any particular development phase may submit to the City a report that substantiates why specific

	measures are considered infeasible for construction of that particular development phase and/or at that point in time. The report, including the substantiation for not implementing particular GHG reduction measures, shall be approved by the City. The City's recommended measures for reducing construction-related GHG emissions at the time of writing this PEIR are listed below and the project applicant(s) shall, at a minimum, be required to implement the following: • Improve fuel efficiency from construction equipment: ○ reduce unnecessary idling (modify work practices, install auxiliary power for driver comfort), ○ perform equipment maintenance (inspections, detect failures early, corrections), ○ train equipment operators in proper use of equipment, ○ use the proper size of equipment for the job, and ○ use equipment with new technologies (repowered engines, electric drive trains). • Use alternative fuels for electricity generators and welders at construction sites such as propane or solar, or use electrical power. • Use an ARB-approved low-carbon fuel, such as biodiesel or renewable diesel for construction equipment (emissions of NOX from the use of low carbon fuel must be reviewed and increases mitigated). Additional information about low-carbon fuels is available from ARB's Low Carbon Fuel Standard Program (ARB 2010a). • Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes. • Reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones. • Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75 percent by weight). • Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk, and curb materials). • Minimize the amount of concrete used for paved surfaces or use a low carbon concrete option. • Produce concrete onsite if determined to be less emissive than transporting ready mix. • Use EPA-certified SmartWay trucks for deliveries and equipment transport. Additional information about the SmartWay Transport Partnership Program is available from ARB's Heavy-Duty Vehicle GHG Measure (ARB 2010b) and EPA (EPA 2010). • Develop a plan to efficiently use water for adequate dust control. This may consist of the use of non-potable water from a local source.
Emissions of carbon dioxide (CO ₂) and other greenhouse gases may result from construction of individual developments allowed by the proposed Project.	GHG-2(a) Implement Mitigation Measure AQ-3. Implementation of the mitigation measures described in Section 4.2, which would reduce operational emissions of criteria air pollutants and precursors, would also act to reduce GHG emissions associated with implementation of the Project. The operational mitigation measures for exhaust emissions are relevant to the global climate change impact because both criteria air pollutant and GHG emissions are frequently associated with combustion byproducts.
	GHG-2(b) Implement Additional Measures to Reduce Operational GHG Emissions. For each increment of new development within the Project area requiring a discretionary approval (e.g., tentative subdivision map, conditional use permit,

	improvement plan), measures that reduce GHG emissions to the extent feasible and to the extent appropriate with respect to the state's progress at the time toward meeting GHG emissions reductions required by the California Global Warming Solutions Act of 2006 (AB 32) shall be imposed, as follows: • The project applicant shall incorporate feasible GHG reduction measures that, in combination with existing and future regulatory measures developed under AB 32, will reduce GHG emissions associated with the operation of future project development phases and supporting roadway and infrastructure improvements by an amount sufficient to achieve the goal of 6.6 CO₂e/SP/year, if it is feasible to do so. The feasibility of potential GHG reduction measures shall be evaluated by the City at the time each phase of development is proposed to allow for ongoing innovations in GHG reduction technologies and incentives created in the regulatory environment. • For each increment of new development, the project applicant shall obtain a list of potentially feasible GHG reduction measures to be considered in the development design from the City. The City's list of potentially feasible GHG reduction measures shall reflect the current state of the regulatory environment, which will continuously evolve under the mandate of AB 32. The project applicant(s) shall then submit to the City a mitigation report that contains an analysis demonstrating which GHG reduction measures are feasible for the associated reduction in GHG emissions, and the resulting CO₂e/SP/year metric. The report shall also demonstrate why measures not selected are considered infeasible. The mitigation report must be reviewed and approved by the City for the project applicant(s) to receive the City's discretionary approval for the applicable increment of development. In determining what measures should appropriately be imposed by a local government under the circumstances, the following factors shall be considered: ○ The extent to which rates of GHG emissions generated by motor vehicles traveling to, from, and within the Project site are projected to decrease over time as a result of regulations, policies, and/or plans that have already been adopted or may be adopted in the future by ARB or other public agency pursuant to AB 32, or by EPA; ○ The extent to which mobile-source GHG emissions, which at the time of writing this PEIR comprise a substantial portion of the state's GHG inventory, can also be reduced through design measures that result in trip reductions and reductions in trip length; ○ The extent to which GHG emissions emitted by the mix of power generation operated by SCE, the electrical utility that will serve the Project site, are projected to decrease pursuant to the Renewables Portfolio Standard required by SB 1078 and SB 107, as well as any future regulations, policies, and/or plans adopted by the federal and state governments that reduce GHG emissions from power generation; ○ The extent to which replacement of CCR Title 24 with the California Green Building Standards Code or other similar requirements will result in new buildings being more energy efficient and consequently more GHG efficient;
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	○ The extent to which any stationary sources of GHG emissions that would be operated on a proposed land use (e.g., industrial) are already subject to regulations, policies, and/or plans that reduce GHG emissions, particularly any future regulations that will be developed as part of ARB's implementation of AB 32, or other pertinent regulations on stationary sources that have the indirect effect of reducing GHG emissions; ○ The extent to which the feasibility of existing GHG reduction technologies may change in the future, and to which innovation in GHG reduction technologies will continue, effecting cost-benefit analyses that determine economic feasibility; and ○ Whether the total costs of proposed mitigation for GHG emissions, together with other mitigation measures required for the proposed development, are so great that a reasonably prudent property owner would not proceed with the project in the face of such costs. ● In considering how much, and what kind of, mitigation is necessary in light of these factors, the following list of options shall be considered, though the list is not intended to be exhaustive, as GHG-emission reduction strategies and their respective feasibility are likely to evolve over time. These measures are derived from multiple sources including the Mitigation Measure Summary in Appendix B of the California Air Pollution Control Officer's Association (CAPCOA) white paper, CEQA & Climate Change (CAPCOA 2008); CAPCOA's Model Policies for Greenhouse Gases in General Plans (CAPCOA 2009); and the California Attorney General's Office publication, The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level (California Attorney General's Office 2010). Energy Efficiency ○ Include clean alternative energy features to promote energy self-sufficiency (e.g., photovoltaic cells, solar thermal electricity systems, small wind turbines). ○ Design buildings to meet CEC Tier II requirements (e.g., exceeding the requirements of Title 24 [as of 2007] by 20 percent). ○ Site buildings to take advantage of shade and prevailing winds and design landscaping and sun screens to reduce energy use. ○ Install efficient lighting in all buildings (including residential). Also install lighting control systems, where practical. Use daylight as an integral part of lighting systems in all buildings. ○ Install light-colored "cool" pavements, and strategically located shade trees along all bicycle and pedestrian routes. Water Conservation and Efficiency ○ With the exception of ornamental shade trees, use water-efficient landscapes with native, drought-resistant species in all public area and commercial landscaping. Use water-efficient turf in parks and other turf-dependent spaces. ○ Install the infrastructure to use reclaimed water for landscape irrigation and/or washing cars. ○ Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.
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	○ Design buildings and lots to be water efficient. Only install water-efficient fixtures and appliances. ○ Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff. Prohibit businesses from using pressure washers for cleaning driveways, parking lots, sidewalks, and street surfaces. These restrictions should be included in the Covenants, Conditions, and Restrictions of the community. ○ Provide education about water conservation and available programs and incentives. ○ To reduce storm water runoff, which typically bogs down wastewater treatment systems and increases their energy consumption, construct driveways to single-family detached residences and parking lots and driveways of multi-family residential uses, with pervious surfaces. Possible designs include Hollywood drives (two concrete strips with vegetation or aggregate in between) and/or the use of porous concrete, porous asphalt, turf blocks, or pervious pavers. Solid Waste Measures ○ Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). ○ Provide interior and exterior storage areas for recyclables and green waste at all buildings. ○ Provide adequate recycling containers in public areas, including parks, school grounds, golf courses, and pedestrian zones in areas of mixed-use development. ○ Provide education and publicity about reducing waste and available recycling services. Transportation and Motor Vehicles ○ Promote ride-sharing programs and employment centers (e.g., by designating a certain percentage of parking spaces for ride-sharing vehicles, designating adequate passenger loading zones and waiting areas for ride-share vehicles, and providing a website or message board for coordinating ride-sharing). ○ Provide the necessary facilities and infrastructure in all land use types to encourage the use of low- or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations). ○ At industrial and commercial land uses, all forklifts, “yard trucks,” or vehicles that are predominately used onsite at non-residential land uses shall be electric-powered or powered by biofuels (such as biodiesel [B100]) that are produced from waste products, or shall use other technologies that do not rely on direct fossil fuel consumption.
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Furthermore, we identified several mitigation measures from the June 2022 Public Review Draft Subsequent Environmental Impact Report for the City of Huntington Beach 2021-2029 Housing Element Update Implementation Program (SCH No. 2021080104) and the August 2017 Final Program

City of Huntington Beach	
Air Quality Mitigation Measures	
<i>Impact/Potential Impact</i>	<i>Mitigation Measure</i>
Impact AQ-2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	GPU PEIR MM 4.2-1 Project applicants shall require by contract specifications that all diesel-powered equipment used will be retrofitted with after-treatment products (e.g., engine catalysts). Contract specifications shall be included in project construction documents, which shall be reviewed by the City of Huntington Beach prior to issuance of a grading permit. GPU PEIR MM 4.2-2 Project applicants shall require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at the project site use low nitrogen oxides diesel fuel to the extent that it is readily available and cost effective in the Basin (this does not apply to diesel-powered trucks traveling to and from the project site). Contract specifications shall be included in project construction documents, which shall be reviewed by the City of Huntington Beach prior to issuance of a grading permit. GPU PEIR MM 4.2-3 Project applicants shall require by contract specifications that construction equipment engines be maintained in good condition and in proper tune per manufacturer's specification for the duration of construction. Contract specifications shall be included in project construction documents, which shall be reviewed by the City of Huntington Beach prior to issuance of a grading permit. GPU PEIR MM 4.2-4 Project applicants shall require by contract specifications that construction operations rely on the electricity infrastructure surrounding the construction site rather than electrical generators powered by internal combustion engines. Contract specifications shall be included in project construction documents, which shall be reviewed by the City of Huntington Beach prior to issuance of a grading permit. GPU PEIR MM 4.2-5 As required by South Coast Air Quality Management District Rule 403—Fugitive Dust, all construction activities that are capable of generating fugitive dust are required to implement dust control measures during each phase of project development to reduce the amount of particulate matter entrained in the ambient air. These measures include the following: (1) Application of soil stabilizers to inactive construction areas (2) Quick replacement of ground cover in disturbed areas (3) Watering of exposed surfaces three times daily

⁴⁵ [https://www.huntingtonbeachca.gov/government/departments/planning/environmental-reports/files/2021-2029-Housing-Element-Update-Subsequent-Environmental-Impact-Report-\(1-of-3\).pdf](https://www.huntingtonbeachca.gov/government/departments/planning/environmental-reports/files/2021-2029-Housing-Element-Update-Subsequent-Environmental-Impact-Report-(1-of-3).pdf).

- (4) Watering of all unpaved haul roads three times daily
- (5) Covering all stock piles with tarp
- (6) Reduction of vehicle speed on unpaved roads
- (7) Post signs on-site limiting traffic to 15 miles per hour or less
- (8) Sweep streets adjacent to the project site at the end of the day if visible soil material is carried over to adjacent roads
- (9) Cover or have water applied to the exposed surface of all trucks hauling dirt, sand, soil, or other loose materials prior to leaving the site to prevent dust from impacting the surrounding areas
- (10) Install wheel washers where vehicles enter and exit unpaved roads onto paved roads to wash off trucks and any equipment leaving the site each trip

GPU PEIR MM 4.2-6

Project applicants shall require by contract specifications that construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 30 minutes. Diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds shall be turned off when not in use for more than 5 minutes. Contract specifications shall be included in future project construction documents, which shall be approved by the City of Huntington Beach.

GPU PEIR MM 4.2-7

Project applicants shall require by contract specifications that construction parking be configured to minimize traffic interference during the construction period and, therefore, reduce idling of traffic. Contract specifications shall be included in future project construction documents, which shall be approved by the City of Huntington Beach.

GPU PEIR MM 4.2-8

Project applicants shall require by contract specifications that temporary traffic controls are provided, such as a flag person, during all phases of construction to facilitate smooth traffic flow. Contract specifications shall be included in future project construction documents, which shall be approved by the City of Huntington Beach.

GPU PEIR MM 4.2-9

Project applicants shall require by contract specifications that construction activities that affect traffic flow on the arterial system be scheduled to off-peak hours (10:00 a.m. to 4:00 p.m.). Contract specifications shall be included in future project construction documents, which shall be approved by the City of Huntington Beach.

GPU PEIR MM 4.2-10

Project applicants shall require by contract specifications that dedicated on-site and off-site left-turn lanes on truck hauling routes be utilized for movement of construction trucks and equipment on-site and off-site to the extent feasible during construction activities. Contract specifications shall be included in future project construction documents, which shall be approved by the City of Huntington Beach.

GPU PEIR MM 4.2-11

Upon issuance of building or grading permits, whichever is issued earlier, notification shall be mailed to owners and occupants of all developed land uses within 300 feet of a project site providing a schedule for major

	construction activities that will occur through the duration of the construction period. In addition, the notification will include the identification and contact number for a community liaison and designated construction manager that would be available on-site to monitor construction activities. The construction manager shall be responsible for complying with all project requirements related to PM₁₀ generation. The construction manager will be located at the on-site construction office during construction hours for the duration of all construction activities. Contract information for the community liaison and construction manager will be located at the construction office, City Hall, the police department, and a sign on site. GPU PEIR MM 4.2-12 Project applicants shall require by contract specifications that the architectural coating (paint and primer) products used would have a volatile organic compound rating of 50 grams per liter or less. Contract specifications shall be included in future project construction documents, which shall be reviewed and approved by the City of Huntington Beach. GPU PEIR MM 4.2-13 Project applicants shall require by contract specifications that materials that do not require painting be used during construction to the extent feasible. Contract specifications shall be included in future project construction documents, which shall be reviewed and approved by the City of Huntington Beach. GPU PEIR MM 4.2-14 Project applicants shall require by contract specifications that pre-painted construction materials be used to the extent feasible. Contract specifications shall be included in future project construction documents, which shall be reviewed and approved by the City of Huntington Beach.
Impact AQ-3 Would the project expose sensitive receptors to substantial pollutant concentrations?	MM AQ-1 During the site-specific entitlement and/or the design review process, the City of Huntington Beach Community Development Department shall that a project-specific Health Risk Assessment shall be conducted for future residential development proposed within 500 feet of the I-405 freeway right of-way, pursuant to the recommendations set forth in the CARB Air Quality and Land Use Handbook. The Health Risk Assessment shall evaluate a project per the following SCAQMD thresholds: • Cancer Risk: Emit carcinogenic or toxic contaminants that exceed the maximum individual cancer risk of 10 in one million. • Non-Cancer Risk: Emit toxic contaminants that exceed the maximum hazard quotient of one in one million. The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Noncarcinogenic risks are quantified by calculating a “hazard index,” expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index less of than one (1.0) means that adverse health effects are not expected. If projects are found to exceed the SCAQMD’s Health Risk Assessment thresholds, mitigation measures, such as requiring MERV 13 air filters in all dwelling units, shall be incorporated to reduce impacts to below SCAQMD thresholds. MM AQ-2

	During the site-specific entitlement and/or the design review process, the City of Huntington Beach Community Development Department shall ensure that residential development shall not be located closer than 1,000 feet from any existing or proposed distribution center/warehouse facility which generates a minimum of 100 heavy truck trips per day, or 40 truck trips with transport refrigeration units (TRUs) per day, or TRU operations exceeding 300 hours per week, pursuant to the recommendations set forth in the CARB Air Quality and Land Use Handbook. If future residential development cannot meet this setback, a project-specific Health Risk Assessment shall be prepared to evaluate a project for the SCAQMD thresholds (i.e., carcinogenic risk equals or exceeds 10 in one million; acute non-carcinogenic hazard index equals or exceeds one; and/or if chronic non-carcinogenic hazard index equals or exceeds one, as outlined above). If projects are found to exceed the SCAQMD's Health Risk Assessment thresholds, mitigation measures, such as requiring MERV 13 air filters in all dwelling units, shall be incorporated to reduce impacts to below SCAQMD thresholds.
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As demonstrated above, while the San Pedro Community Plan incorporates some of the same mitigation measures as the City of Huntington Beach General Plan Update, the Housing Plan Element incorporates MM AQ-1 and MM AQ-2, which pertain to future health risks. As previously discussed, the proposed Project results in a potentially significant health risk impacts. The Program EIR should have accounted for the health risk to future and existing sensitive receptors but failed to do so.

Furthermore, as demonstrated above, the City of Long Beach and Huntington both offer examples of plans and projects that incorporate mitigation measures that the Program EIR failed to consider. These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduce emissions released during Project construction and operation. The Program EIR's MMP lack of substantial measures to reduce the Project's impact on the environment is clearly negligent. As such, a full CEQA analysis must be prepared in a subsequent EIR to include all feasible mitigation measures, as well as include updated air quality, health risk, and GHG analyses to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The subsequent EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's significant emissions are reduced to the maximum extent possible.

Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or

otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

A handwritten signature in blue ink, appearing to read "Matt Hagemann".

Matt Hagemann, P.G., C.Hg.

A handwritten signature in blue ink, appearing to read "Paul Rosenfeld".

Paul E. Rosenfeld, Ph.D.

Attachment A: CalEEMod Output Files
Attachment B: Health Risk Calculations
Attachment C: AERSCREEN Output Files
Attachment D: Matt Hagemann CV
Attachment E: Paul Rosenfeld CV

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	84.00	Space	0.00	33,600.00	0
Apartments Mid Rise	100.00	Dwelling Unit	0.55	76,145.00	286
Strip Mall	1.80	1000sqft	0.01	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	11			Operational Year	2024

Utility Company Los Angeles Department of Water & Power

CO2 Intensity (lb/MW/hr)	1227.89	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006
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1.3 User Entered Comments & Non-Default Data

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Project Characteristics - Consistent with the Project's air model.

Land Use - See SWAPE comments regarding "Underestimated Land Use Size" and "Unsubstantiated Reduction to Parking Land Use Size"

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths"

Off-road Equipment - See SWAPE comment regarding "Unsubstantiated Changes to Construction Off-Road Equipment Unit Amounts and Usage Hours"

Grading - Consistent with the Project's air model.

Demolition - Consistent with the Project's air model.

Trips and VMT - Hauling trip lengths and number consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reductions to Worker Trip Numbers"

Vehicle Trips - See SWAPE comment regarding "Underestimated Number of Sunday Vehicle Trips"

Woodstoves - Number of wood-burning stoves and fireplaces consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces"

Energy Use -

Construction Off-road Equipment Mitigation - Consistent with the Project's air model.

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Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	46
tblFireplaces	NumberGas	85.00	90.00
tblFireplaces	NumberWood	5.00	0.00
tblGrading	AcresOfGrading	0.00	0.56
tblGrading	MaterialExported	0.00	20,000.00
tblLandUse	LandUseSquareFeet	100,000.00	76,145.00
tblLandUse	LotAcreage	0.76	0.00
tblLandUse	LotAcreage	2.63	0.55
tblLandUse	LotAcreage	0.04	0.01
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripNumber	2,500.00	2,857.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	SU_TR	5.86	5.29
tblVehicleTrips	SU_TR	20.43	37.75
tblVehicleTrips	WD_TR	6.65	5.29
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	5.00	0.00
tblWoodstoves	NumberNoncatalytic	5.00	0.00

2.0 Emissions Summary

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2.1 Overall Construction**Unmitigated Construction**

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
2022	0.0575	0.7682	0.5411	2.2000e-003	0.0864	0.0175	0.1038	0.0213	0.0162	0.0375	0.0000	208.3517	208.3517	0.0232	0.0000	208.9307
2023	0.2665	0.1185	0.1581	3.6000e-004	0.0147	5.1200e-003	0.0198	3.9200e-003	4.7400e-003	8.6600e-003	0.0000	32.1391	32.1391	5.4900e-003	0.0000	32.2765
Maximum	0.2665	0.7682	0.5411	2.2000e-003	0.0864	0.0175	0.1038	0.0213	0.0162	0.0375	0.0000	208.3517	208.3517	0.0232	0.0000	208.9307

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
2022	0.0575	0.7682	0.5411	2.2000e-003	0.0614	0.0175	0.0788	0.0152	0.0162	0.0314	0.0000	208.3517	208.3517	0.0232	0.0000	208.9307
2023	0.2665	0.1185	0.1581	3.6000e-004	8.9100e-003	5.1200e-003	0.0140	2.5100e-003	4.7400e-003	7.2500e-003	0.0000	32.1391	32.1391	5.4900e-003	0.0000	32.2764
Maximum	0.2665	0.7682	0.5411	2.2000e-003	0.0614	0.0175	0.0788	0.0152	0.0162	0.0314	0.0000	208.3517	208.3517	0.0232	0.0000	208.9307

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	30.43	0.00	24.88	29.86	0.00	16.33	0.00	0.00	0.00	0.00	0.00	0.00

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2022	11-30-2022	0.8610	0.8610
2	12-1-2022	2-28-2023	0.4965	0.4965
		Highest	0.8610	0.8610

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3422	0.0306	1.0399	1.7000e-004	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0400e-003	4.0000e-004	23.4680
Energy	4.9900e-003	0.0426	0.0182	2.7000e-004	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	0.0000	393.1015	393.1015	9.0600e-003	2.5800e-003	394.0983
Mobile	0.1571	0.7317	2.1368	8.4100e-003	0.7347	6.4200e-003	0.7411	0.1969	5.9600e-003	0.2029	0.0000	778.3032	778.3032	0.0371	0.0000	779.2312
Waste						0.0000	0.0000		0.0000	0.0000	9.7212	0.0000	9.7212	0.5745	0.0000	24.0840
Water						0.0000	0.0000		0.0000	0.0000	2.1093	74.1404	76.2497	0.2184	5.4800e-003	83.3421
Total	0.5043	0.8049	3.1949	8.8500e-003	0.7347	0.0171	0.7518	0.1969	0.0166	0.2135	11.8306	1,268.844₂	1,280.674₇	0.8411	8.4600e-003	1,304.223₅

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2.2 Overall Operational**Mitigated Operational**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	0.3422	0.0306	1.0399	1.7000e-004	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0400e-003	4.0000e-004	23.4680
Energy	4.9900e-003	0.0426	0.0182	2.7000e-004	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	3.4400e-003	0.0000	393.1015	393.1015	9.0600e-003	2.5800e-003	394.0983
Mobile	0.1571	0.7317	2.1368	8.4100e-003	0.7347	6.4200e-003	0.7411	0.1969	5.9600e-003	0.2029	0.0000	778.3032	778.3032	0.0371	0.0000	779.2312
Waste						0.0000	0.0000	0.0000	0.0000	0.0000	9.7212	0.0000	9.7212	0.5745	0.0000	24.0840
Water						0.0000	0.0000	0.0000	0.0000	0.0000	2.1093	74.1404	76.2497	0.2184	5.4800e-003	83.3421
Total	0.5043	0.8049	3.1949	8.8500e-003	0.7347	0.0171	0.7518	0.1969	0.0166	0.2135	11.8306	1,268.844 2	1,280.674 7	0.8411	8.4600e-003	1,304.223 5

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	9/14/2022	5	10	
2	Site Preparation	Site Preparation	9/15/2022	9/15/2022	5	1	
3	Grading	Grading	9/16/2022	9/19/2022	5	2	
4	Building Construction	Building Construction	9/20/2022	2/6/2023	5	100	
5	Paving	Paving	2/7/2023	2/13/2023	5	5	
6	Architectural Coating	Architectural Coating	2/14/2023	2/20/2023	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0.56

Acres of Paving: 0

Residential Indoor: 154,194; Residential Outdoor: 51,398; Non-Residential Indoor: 2,700; Non-Residential Outdoor: 900; Striped Parking Area: 2,016 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	156.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	2,857.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	87.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0169	0.0000	0.0169	2.5600e-003	0.0000	2.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0321	0.0374	6.0000e-005		1.6900e-003	1.6900e-003	1.6100e-003	1.6100e-003	1.6100e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308
Total	3.5500e-003	0.0321	0.0374	6.0000e-005	0.0169	1.6900e-003	0.0186	2.5600e-003	1.6100e-003	4.1700e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308

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3.2 Demolition - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	1.1500e-003	0.0338	9.1400e-003	1.1000e-004	2.7500e-003	1.1000e-004	2.8600e-003	7.5000e-004	1.1000e-004	8.6000e-004	0.0000	11.2473	11.2473	7.2000e-004	0.0000	11.2652
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4771	0.4771	1.0000e-005	0.0000	0.4774
Total	1.3500e-003	0.0340	0.0109	1.2000e-004	3.3000e-003	1.1000e-004	3.4100e-003	9.0000e-004	1.1000e-004	1.0100e-003	0.0000	11.7244	11.7244	7.3000e-004	0.0000	11.7426

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					0.0169	0.0000	0.0169	2.5600e-003	0.0000	2.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0321	0.0374	6.0000e-005		1.6900e-003	1.6900e-003	1.6100e-003	1.6100e-003	1.6100e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308
Total	3.5500e-003	0.0321	0.0374	6.0000e-005	0.0169	1.6900e-003	0.0186	2.5600e-003	1.6100e-003	4.1700e-003	0.0000	5.2068	5.2068	9.6000e-004	0.0000	5.2308

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3.2 Demolition - 2022**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	1.1500e-003	0.0338	9.1400e-003	1.1000e-004	1.8000e-003	1.1000e-004	1.9100e-003	5.2000e-004	1.1000e-004	6.3000e-004	0.0000	11.2473	11.2473	7.2000e-004	0.0000	11.2652
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.5000e-004	1.7400e-003	1.0000e-005	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.4771	0.4771	1.0000e-005	0.0000	0.4774
Total	1.3500e-003	0.0340	0.0109	1.2000e-004	2.1300e-003	1.1000e-004	2.2400e-003	6.1000e-004	1.1000e-004	7.3000e-004	0.0000	11.7244	11.7244	7.3000e-004	0.0000	11.7426

3.3 Site Preparation - 2022**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-004	3.4700e-003	1.9800e-003	0.0000		1.3000e-004	1.3000e-004	1.2000e-004	1.2000e-004	1.2000e-004	0.0000	0.4275	0.4275	1.4000e-004	0.0000	0.4310
Total	2.9000e-004	3.4700e-003	1.9800e-003	0.0000	2.7000e-004	1.3000e-004	4.0000e-004	3.0000e-005	1.2000e-004	1.5000e-004	0.0000	0.4275	0.4275	1.4000e-004	0.0000	0.4310

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3.3 Site Preparation - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239
Total	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-004	3.4700e-003	1.9800e-003	0.0000		1.3000e-004	1.3000e-004	1.2000e-004	1.2000e-004	1.2000e-004	0.0000	0.4275	0.4275	1.4000e-004	0.0000	0.4310
Total	2.9000e-004	3.4700e-003	1.9800e-003	0.0000	2.7000e-004	1.3000e-004	4.0000e-004	3.0000e-005	1.2000e-004	1.5000e-004	0.0000	0.4275	0.4275	1.4000e-004	0.0000	0.4310

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3.3 Site Preparation - 2022**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239
Total	1.0000e-005	1.0000e-005	9.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0239	0.0239	0.0000	0.0000	0.0239

3.4 Grading - 2022**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					2.1800e-003	0.0000	2.1800e-003	6.2000e-004	0.0000	6.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	6.4100e-003	7.4700e-003	1.0000e-005		3.4000e-004	3.4000e-004	3.2000e-004	3.2000e-004	3.2000e-004	0.0000	1.0414	1.0414	1.9000e-004	0.0000	1.0462
Total	7.1000e-004	6.4100e-003	7.4700e-003	1.0000e-005	2.1800e-003	3.4000e-004	2.5200e-003	6.2000e-004	3.2000e-004	9.4000e-004	0.0000	1.0414	1.0414	1.9000e-004	0.0000	1.0462

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3.4 Grading - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0115	0.3670	0.0912	1.0900e-003	0.0246	1.0300e-003	0.0256	6.7400e-003	9.8000e-004	7.7300e-003	0.0000	107.5991	107.5991	7.4400e-003	0.0000	107.7851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0954	0.0954	0.0000	0.0000	0.0955
Total	0.0115	0.3671	0.0915	1.0900e-003	0.0247	1.0300e-003	0.0257	6.7700e-003	9.8000e-004	7.7600e-003	0.0000	107.6945	107.6945	7.4400e-003	0.0000	107.8806

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					2.1800e-003	0.0000	2.1800e-003	6.2000e-004	0.0000	6.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	6.4100e-003	7.4700e-003	1.0000e-005		3.4000e-004	3.4000e-004	3.2000e-004	3.2000e-004	3.2000e-004	0.0000	1.0414	1.0414	1.9000e-004	0.0000	1.0462
Total	7.1000e-004	6.4100e-003	7.4700e-003	1.0000e-005	2.1800e-003	3.4000e-004	2.5200e-003	6.2000e-004	3.2000e-004	9.4000e-004	0.0000	1.0414	1.0414	1.9000e-004	0.0000	1.0462

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3.4 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0115	0.3670	0.0912	1.0900e-003	0.0161	1.0300e-003	0.0171	4.6600e-003	9.8000e-004	5.6400e-003	0.0000	107.5991	107.5991	7.4400e-003	0.0000	107.7851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0954	0.0954	0.0000	0.0000	0.0955
Total	0.0115	0.3671	0.0915	1.0900e-003	0.0161	1.0300e-003	0.0172	4.6800e-003	9.8000e-004	5.6600e-003	0.0000	107.6945	107.6945	7.4400e-003	0.0000	107.8806

3.5 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0254	0.2600	0.2647	4.2000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	37.0547	37.0547	0.0120	0.0000	37.3543
Total	0.0254	0.2600	0.2647	4.2000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	37.0547	37.0547	0.0120	0.0000	37.3543

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3.5 Building Construction - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7300e-003	0.0555	0.0150	1.5000e-004	3.7300e-003	1.0000e-004	3.8300e-003	1.0800e-003	1.0000e-004	1.1800e-003	0.0000	14.4644	14.4644	8.6000e-004	0.0000	14.4860
Worker	0.0130	9.7400e-003	0.1122	3.4000e-004	0.0353	2.8000e-004	0.0356	9.3700e-003	2.6000e-004	9.6300e-003	0.0000	30.7142	30.7142	8.5000e-004	0.0000	30.7354
Total	0.0147	0.0653	0.1272	4.9000e-004	0.0390	3.8000e-004	0.0394	0.0105	3.6000e-004	0.0108	0.0000	45.1787	45.1787	1.7100e-003	0.0000	45.2214

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0254	0.2600	0.2647	4.2000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	37.0546	37.0546	0.0120	0.0000	37.3542
Total	0.0254	0.2600	0.2647	4.2000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	37.0546	37.0546	0.0120	0.0000	37.3542

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3.5 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7300e-003	0.0555	0.0150	1.5000e-004	2.5200e-003	1.0000e-004	2.6200e-003	7.8000e-004	1.0000e-004	8.8000e-004	0.0000	14.4644	14.4644	8.6000e-004	0.0000	14.4860
Worker	0.0130	9.7400e-003	0.1122	3.4000e-004	0.0212	2.8000e-004	0.0215	5.9200e-003	2.6000e-004	6.1800e-003	0.0000	30.7142	30.7142	8.5000e-004	0.0000	30.7354
Total	0.0147	0.0653	0.1272	4.9000e-004	0.0237	3.8000e-004	0.0241	6.7000e-003	3.6000e-004	7.0600e-003	0.0000	45.1787	45.1787	1.7100e-003	0.0000	45.2214

3.5 Building Construction - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2200e-003	0.0834	0.0923	1.5000e-004		4.1600e-003	4.1600e-003		3.8300e-003	3.8300e-003	0.0000	13.0271	13.0271	4.2100e-003	0.0000	13.1324
Total	8.2200e-003	0.0834	0.0923	1.5000e-004		4.1600e-003	4.1600e-003		3.8300e-003	3.8300e-003	0.0000	13.0271	13.0271	4.2100e-003	0.0000	13.1324

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3.5 Building Construction - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5000e-004	0.0147	4.7200e-003	5.0000e-005	1.3100e-003	2.0000e-005	1.3300e-003	3.8000e-004	2.0000e-005	3.9000e-004	0.0000	4.9230	4.9230	2.7000e-004	0.0000	4.9297
Worker	4.2900e-003	3.1000e-003	0.0362	1.1000e-004	0.0124	1.0000e-004	0.0125	3.2900e-003	9.0000e-005	3.3800e-003	0.0000	10.3966	10.3966	2.7000e-004	0.0000	10.4033
Total	4.7400e-003	0.0178	0.0410	1.6000e-004	0.0137	1.2000e-004	0.0138	3.6700e-003	1.1000e-004	3.7700e-003	0.0000	15.3196	15.3196	5.4000e-004	0.0000	15.3330

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	8.2200e-003	0.0834	0.0923	1.5000e-004		4.1600e-003	4.1600e-003		3.8300e-003	3.8300e-003	0.0000	13.0271	13.0271	4.2100e-003	0.0000	13.1324
Total	8.2200e-003	0.0834	0.0923	1.5000e-004		4.1600e-003	4.1600e-003		3.8300e-003	3.8300e-003	0.0000	13.0271	13.0271	4.2100e-003	0.0000	13.1324

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3.5 Building Construction - 2023**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5000e-004	0.0147	4.7200e-003	5.0000e-005	8.8000e-004	2.0000e-005	9.0000e-004	2.7000e-004	2.0000e-005	2.9000e-004	0.0000	4.9230	4.9230	2.7000e-004	0.0000	4.9297
Worker	4.2900e-003	3.1000e-003	0.0362	1.1000e-004	7.4500e-003	1.0000e-004	7.5500e-003	2.0800e-003	9.0000e-005	2.1700e-003	0.0000	10.3966	10.3966	2.7000e-004	0.0000	10.4033
Total	4.7400e-003	0.0178	0.0410	1.6000e-004	8.3300e-003	1.2000e-004	8.4500e-003	2.3500e-003	1.1000e-004	2.4600e-003	0.0000	15.3196	15.3196	5.4000e-004	0.0000	15.3330

3.6 Paving - 2023**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	1.5300e-003	0.0138	0.0176	3.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	2.3498	2.3498	6.8000e-004	0.0000	2.3669
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.5300e-003	0.0138	0.0176	3.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	2.3498	2.3498	6.8000e-004	0.0000	2.3669

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3.6 Paving - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.2000e-004	1.4400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4137	0.4137	1.0000e-005	0.0000	0.4139
Total	1.7000e-004	1.2000e-004	1.4400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4137	0.4137	1.0000e-005	0.0000	0.4139

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	1.5300e-003	0.0138	0.0176	3.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	2.3498	2.3498	6.8000e-004	0.0000	2.3669
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.5300e-003	0.0138	0.0176	3.0000e-005		6.6000e-004	6.6000e-004		6.2000e-004	6.2000e-004	0.0000	2.3498	2.3498	6.8000e-004	0.0000	2.3669

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3.6 Paving - 2023**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.2000e-004	1.4400e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.4137	0.4137	1.0000e-005	0.0000	0.4139
Total	1.7000e-004	1.2000e-004	1.4400e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.4137	0.4137	1.0000e-005	0.0000	0.4139

3.7 Architectural Coating - 2023**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Archit. Coating	0.2512					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-004	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393
Total	0.2517	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393

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3.7 Architectural Coating - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004	0.0000	0.3907	0.3907	1.0000e-005	0.0000	0.3909
Total	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004	0.0000	0.3907	0.3907	1.0000e-005	0.0000	0.3909

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2512					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-004	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393
Total	0.2517	3.2600e-003	4.5300e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6393

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3.7 Architectural Coating - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	2.8000e-004	0.0000	2.8000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3907	0.3907	1.0000e-005	0.0000	0.3909
Total	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	2.8000e-004	0.0000	2.8000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3907	0.3907	1.0000e-005	0.0000	0.3909

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1571	0.7317	2.1368	8.4100e-003	0.7347	6.4200e-003	0.7411	0.1969	5.9600e-003	0.2029	0.0000	778.3032	778.3032	0.0371	0.0000	779.2312
Unmitigated	0.1571	0.7317	2.1368	8.4100e-003	0.7347	6.4200e-003	0.7411	0.1969	5.9600e-003	0.2029	0.0000	778.3032	778.3032	0.0371	0.0000	779.2312

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated		Mitigated		
	Weekday	Saturday	Sunday	Annual VMT		Annual VMT		
Apartment Mid Rise	529.00	529.00	529.00	1,806,580		1,806,580		
Enclosed Parking with Elevator	0.00	0.00	0.00					
Strip Mall	67.95	67.95	67.95	129,281		129,281		
Total	596.95	596.95	596.95	1,935,861		1,935,861		

4.3 Trip Type Information

Land Use	Miles				Trip %				Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-C	H-W or C-NW	H-W or C-W	H-S or C-C	H-O or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartment Mid Rise	14.70	5.90	8.70	40.00	19.00	19.00	41.00	41.00	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0.00	0.00	0	0	0
Strip Mall	16.60	8.40	6.90	16.60	64.40	64.40	19.00	19.00	45	40	15

4.4 Fleet Mix

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Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Enclosed Parking with Elevator	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Strip Mall	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
tons/yr																
MT/yr																
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	343.7589	343.7589	8.1200e-003	1.6800e-003	344.4624
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	343.7589	343.7589	8.1200e-003	1.6800e-003	344.4624
Natural Gas Mitigated	4.9900e-003	0.0426	0.0182	2.7000e-004		3.4400e-003	3.4400e-003		3.4400e-003	3.4400e-003	0.0000	49.3426	49.3426	9.5000e-004	9.0000e-004	49.6359
Natural Gas Unmitigated	4.9900e-003	0.0426	0.0182	2.7000e-004		3.4400e-003	3.4400e-003		3.4400e-003	3.4400e-003	0.0000	49.3426	49.3426	9.5000e-004	9.0000e-004	49.6359

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5.2 Energy by Land Use - NaturalGas**Unmitigated**

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
tons/yr																	
Apartment Mid Rise	921694	4.9700e-003	0.0425	0.0181	2.7000e-004	3.4300e-003	3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	49.1851	49.1851	9.4000e-004	9.0000e-004	49.4774
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	2952	2.0000e-005	1.4000e-004	1.2000e-004	0.0000	1.0000e-005	1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1575	0.1575	0.0000	0.0000	0.1585
Total		4.9900e-003	0.0426	0.0182	2.7000e-004	3.4400e-003	3.4400e-003	3.4400e-003		3.4400e-003	3.4400e-003	0.0000	49.3426	49.3426	9.4000e-004	9.0000e-004	49.6359

Mitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
tons/yr																	
Apartment Mid Rise	921694	4.9700e-003	0.0425	0.0181	2.7000e-004	3.4300e-003	3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	49.1851	49.1851	9.4000e-004	9.0000e-004	49.4774
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	2952	2.0000e-005	1.4000e-004	1.2000e-004	0.0000	1.0000e-005	1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1575	0.1575	0.0000	0.0000	0.1585
Total		4.9900e-003	0.0426	0.0182	2.7000e-004	3.4400e-003	3.4400e-003	3.4400e-003		3.4400e-003	3.4400e-003	0.0000	49.3426	49.3426	9.4000e-004	9.0000e-004	49.6359

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	396008	220.5612	5.2100e-003	1.0800e-003	221.0126
Enclosed Parking with Elevator	196896	109.6635	2.5900e-003	5.4000e-004	109.8879
Strip Mall	24300	13.5342	3.2000e-004	7.0000e-005	13.5619
Total		343.7589	8.1200e-003	1.6900e-003	344.4624

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	396008	220.5612	5.2100e-003	1.0800e-003	221.0126
Enclosed Parking with Elevator	196896	109.6635	2.5900e-003	5.4000e-004	109.8879
Strip Mall	24300	13.5342	3.2000e-004	7.0000e-005	13.5619
Total		343.7589	8.1200e-003	1.6900e-003	344.4624

6.0 Area Detail

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6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3422	0.0306	1.0399	1.7000e-004	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0400e-003	4.0000e-004	23.4680
Unmitigated	0.3422	0.0306	1.0399	1.7000e-004	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0400e-003	4.0000e-004	23.4680

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6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0251					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2838					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.1800e-003	0.0187	7.9400e-003	1.2000e-004		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	21.6123	21.6123	4.1000e-004	4.0000e-004	21.7408
Landscaping	0.0311	0.0119	1.0319	5.0000e-005		5.7200e-003	5.7200e-003		5.7200e-003	5.7200e-003	0.0000	1.6867	1.6867	1.6200e-003	0.0000	1.7272
Total	0.3422	0.0306	1.0399	1.7000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0300e-003	4.0000e-004	23.4680

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6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0251					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2838					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.1800e-003	0.0187	7.9400e-003	1.2000e-004		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	21.6123	21.6123	4.1000e-004	4.0000e-004	21.7408
Landscaping	0.0311	0.0119	1.0319	5.0000e-005		5.7200e-003	5.7200e-003		5.7200e-003	5.7200e-003	0.0000	1.6867	1.6867	1.6200e-003	0.0000	1.7272
Total	0.3422	0.0306	1.0399	1.7000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	23.2990	23.2990	2.0300e-003	4.0000e-004	23.4680

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	76.2497	0.2184	5.4800e-003	83.3421
Unmitigated	76.2497	0.2184	5.4800e-003	83.3421

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartment Mid Rise	6.5154 / 4.10754	74.7348	0.2140	5.3700e-003	81.6850
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.133331 / 0.0817187	1.5149	4.3800e-003	1.1000e-004	1.6571
Total		76.2497	0.2184	5.4800e-003	83.3421

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.5154 / 4.10754	74.7348	0.2140	5.3700e-003	81.6850
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.133331 / 0.0817187	1.5149	4.3800e-003	1.1000e-004	1.6571
Total		76.2497	0.2184	5.4800e-003	83.3421

8.0 Waste Detail**8.1 Mitigation Measures Waste**

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Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.7212	0.5745	0.0000	24.0840
Unmitigated	9.7212	0.5745	0.0000	24.0840

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	46	9.3376	0.5518	0.0000	23.1335
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	1.89	0.3837	0.0227	0.0000	0.9505
Total		9.7212	0.5745	0.0000	24.0840

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8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	46	9.3376	0.5518	0.0000	23.1335
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	1.89	0.3837	0.0227	0.0000	0.9505
Total		9.7212	0.5745	0.0000	24.0840

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

2111 South Pacific Avenue Future
Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	84.00	Space	0.00	33,600.00	0
Apartments Mid Rise	100.00	Dwelling Unit	0.55	76,145.00	286
Strip Mall	1.80	1000sqft	0.01	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	11			Operational Year	2024

Utility Company Los Angeles Department of Water & Power

CO2 Intensity (lb/MW/hr)	1227.89	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006
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1.3 User Entered Comments & Non-Default Data

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the Project's air model.

Land Use - See SWAPE comments regarding "Underestimated Land Use Size" and "Unsubstantiated Reduction to Parking Land Use Size"

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths"

Off-road Equipment - See SWAPE comment regarding "Unsubstantiated Changes to Construction Off-Road Equipment Unit Amounts and Usage Hours"

Grading - Consistent with the Project's air model.

Demolition - Consistent with the Project's air model.

Trips and VMT - Hauling trip lengths and number consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reductions to Worker Trip Numbers"

Vehicle Trips - See SWAPE comment regarding "Underestimated Number of Sunday Vehicle Trips"

Woodstoves - Number of wood-burning stoves and fireplaces consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces"

Energy Use -

Construction Off-road Equipment Mitigation - Consistent with the Project's air model.

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	46
tblFireplaces	NumberGas	85.00	90.00
tblFireplaces	NumberWood	5.00	0.00
tblGrading	AcresOfGrading	0.00	0.56
tblGrading	MaterialExported	0.00	20,000.00
tblLandUse	LandUseSquareFeet	100,000.00	76,145.00
tblLandUse	LotAcreage	0.76	0.00
tblLandUse	LotAcreage	2.63	0.55
tblLandUse	LotAcreage	0.04	0.01
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripNumber	2,500.00	2,857.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	SU_TR	5.86	5.29
tblVehicleTrips	SU_TR	20.43	37.75
tblVehicleTrips	WD_TR	6.65	5.29
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	5.00	0.00
tblWoodstoves	NumberNoncatalytic	5.00	0.00

2.0 Emissions Summary

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

2.1 Overall Construction (Maximum Daily Emission)**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	12.0844	362.4033	96.7738	1.1130	27.2714	1.3603	28.6317	7.4940	1.3010	8.7951	0.0000	120,742.5081	120,742.5081	8.2976	0.0000	120,949.9481
2023	100.7537	7.7490	10.4213	0.0246	1.0749	0.3289	1.4038	0.2874	0.3027	0.5901	0.0000	2,447.7401	2,447.7401	0.4032	0.0000	2,457.8204
Maximum	100.7537	362.4033	96.7738	1.1130	27.2714	1.3603	28.6317	7.4940	1.3010	8.7951	0.0000	120,742.5081	120,742.5081	8.2976	0.0000	120,949.9481

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	12.0844	362.4033	96.7738	1.1130	18.5390	1.3603	19.8993	5.3506	1.3010	6.6516	0.0000	120,742.5081	120,742.5081	8.2976	0.0000	120,949.9481
2023	100.7537	7.7490	10.4213	0.0246	0.6524	0.3289	0.9814	0.1837	0.3027	0.4864	0.0000	2,447.7401	2,447.7401	0.4032	0.0000	2,457.8204
Maximum	100.7537	362.4033	96.7738	1.1130	18.5390	1.3603	19.8993	5.3506	1.3010	6.6516	0.0000	120,742.5081	120,742.5081	8.2976	0.0000	120,949.9481

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	32.30	0.00	30.48	28.88	0.00	23.94	0.00	0.00	0.00	0.00	0.00	0.00

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Area	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Energy	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Mobile	0.9125	3.8634	12.2131	0.0479	4.1161	0.0352	4.1514	1.1014	0.0328	1.1342		4,881.6466	4,881.6466	0.2264		4,887.3055
Total	3.0562	5.6849	21.2035	0.0594	4.1161	0.2206	4.3367	1.1014	0.2181	1.3195	0.0000	7,100.4355	7,100.4355	0.2829	0.0404	7,119.5488

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Area	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Energy	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Mobile	0.9125	3.8634	12.2131	0.0479	4.1161	0.0352	4.1514	1.1014	0.0328	1.1342		4,881.6466	4,881.6466	0.2264		4,887.3055
Total	3.0562	5.6849	21.2035	0.0594	4.1161	0.2206	4.3367	1.1014	0.2181	1.3195	0.0000	7,100.4355	7,100.4355	0.2829	0.0404	7,119.5488

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	9/14/2022	5	10	
2	Site Preparation	Site Preparation	9/15/2022	9/15/2022	5	1	
3	Grading	Grading	9/16/2022	9/19/2022	5	2	
4	Building Construction	Building Construction	9/20/2022	2/6/2023	5	100	
5	Paving	Paving	2/7/2023	2/13/2023	5	5	
6	Architectural Coating	Architectural Coating	2/14/2023	2/20/2023	5	5	

Acres of Grading (Site Preparation Phase): 0.5**Acres of Grading (Grading Phase): 0.56****Acres of Paving: 0**

Residential Indoor: 154,194; Residential Outdoor: 51,398; Non-Residential Indoor: 2,700; Non-Residential Outdoor: 900; Striped Parking Area: 2,016 (Architectural Coating – sqft)

OffRoad Equipment

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	156.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	2,857.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	87.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					3.3832	0.0000	3.3832	0.5122	0.0000	0.5122			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	3.3832	0.3375	3.7207	0.5122	0.3225	0.8348		1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.2 Demolition - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.2294	6.4907	1.8088	0.0229	0.5589	0.0224	0.5813	0.1532	0.0214	0.1746		2,489.179 6	2,489.179 6	0.1569		2,493.101 8
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e- 003	0.1118	8.7000e- 004	0.1127	0.0296	8.1000e- 004	0.0305		109.8712	109.8712	3.0300e- 003		109.9470
Total	0.2695	6.5173	2.1804	0.0240	0.6706	0.0233	0.6939	0.1828	0.0222	0.2050		2,599.050 9	2,599.050 9	0.1599		2,603.048 9

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					3.3832	0.0000	3.3832	0.5122	0.0000	0.5122			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.902 5	1,147.902 5	0.2119		1,153.200 1
Total	0.7094	6.4138	7.4693	0.0120	3.3832	0.3375	3.7207	0.5122	0.3225	0.8348	0.0000	1,147.902 5	1,147.902 5	0.2119		1,153.200 1

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.2 Demolition - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2294	6.4907	1.8088	0.0229	0.3644	0.0224	0.3868	0.1054	0.0214	0.1269		2,489.1796	2,489.1796	0.1569		2,493.1018
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.0671	8.7000e-004	0.0680	0.0187	8.1000e-004	0.0195		109.8712	109.8712	3.0300e-003		109.9470
Total	0.2695	6.5173	2.1804	0.0240	0.4315	0.0233	0.4547	0.1241	0.0222	0.1463		2,599.0509	2,599.0509	0.1599		2,603.0489

3.3 Site Preparation - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5797	6.9332	3.9597	9.7300e-003		0.2573	0.2573		0.2367	0.2367		942.5179	942.5179	0.3048		950.1386
Total	0.5797	6.9332	3.9597	9.7300e-003	0.5303	0.2573	0.7876	0.0573	0.2367	0.2940		942.5179	942.5179	0.3048		950.1386

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.3 Site Preparation - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735
Total	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5797	6.9332	3.9597	9.7300e-003		0.2573	0.2573		0.2367	0.2367	0.0000	942.5179	942.5179	0.3048		950.1386
Total	0.5797	6.9332	3.9597	9.7300e-003	0.5303	0.2573	0.7876	0.0573	0.2367	0.2940	0.0000	942.5179	942.5179	0.3048		950.1386

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.3 Site Preparation - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0335	4.4000e-004	0.0340	9.3400e-003	4.0000e-004	9.7400e-003		54.9356	54.9356	1.5200e-003		54.9735
Total	0.0201	0.0133	0.1858	5.5000e-004	0.0335	4.4000e-004	0.0340	9.3400e-003	4.0000e-004	9.7400e-003		54.9356	54.9356	1.5200e-003		54.9735

3.4 Grading - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1806	0.0000	2.1806	0.6171	0.0000	0.6171			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375	0.3225	0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	2.1806	0.3375	2.5181	0.6171	0.3225	0.9396		1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.4 Grading - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	11.3349	355.9629	88.9328	1.0999	24.9791	1.0219	26.0010	6.8473	0.9777	7.8250		119,484.7344	119,484.7344	8.0827		119,686.8009
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	11.3750	355.9895	89.3044	1.1010	25.0908	1.0228	26.1136	6.8769	0.9785	7.8554		119,594.6056	119,594.6056	8.0857		119,796.7480

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					2.1806	0.0000	2.1806	0.6171	0.0000	0.6171			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	2.1806	0.3375	2.5181	0.6171	0.3225	0.9396	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

3.4 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.3349	355.9629	88.9328	1.0999	16.2913	1.0219	17.3132	4.7149	0.9777	5.6925		119,484.7344	119,484.7344	8.0827		119,686.8009
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.0671	8.7000e-004	0.0680	0.0187	8.1000e-004	0.0195		109.8712	109.8712	3.0300e-003		109.9470
Total	11.3750	355.9895	89.3044	1.1010	16.3584	1.0228	17.3812	4.7335	0.9785	5.7120		119,594.6056	119,594.6056	8.0857		119,796.7480

3.5 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652

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3.5 Building Construction - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0456	1.4773	0.3842	4.0800e-003	0.1024	2.7800e-003	0.1052	0.0295	2.6600e-003	0.0322		435.9774	435.9774	0.0250		436.6029
Worker	0.3493	0.2315	3.2329	9.5900e-003	0.9725	7.6100e-003	0.9801	0.2579	7.0100e-003	0.2649		955.8797	955.8797	0.0264		956.5393
Total	0.3950	1.7088	3.6172	0.0137	1.0749	0.0104	1.0853	0.2874	9.6700e-003	0.2971		1,391.857 1	1,391.857 1	0.0514		1,393.142 2

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.939	1,103.939	0.3570		1,112.865
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.939 3	1,103.939 3	0.3570		1,112.865 2

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3.5 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0456	1.4773	0.3842	4.0800e-003	0.0689	2.7800e-003	0.0716	0.0213	2.6600e-003	0.0239		435.9774	435.9774	0.0250		436.6029
Worker	0.3493	0.2315	3.2329	9.5900e-003	0.5836	7.6100e-003	0.5912	0.1624	7.0100e-003	0.1695		955.8797	955.8797	0.0264		956.5393
Total	0.3950	1.7088	3.6172	0.0137	0.6524	0.0104	0.6628	0.1837	9.6700e-003	0.1934		1,391.8571	1,391.8571	0.0514		1,393.1422

3.5 Building Construction - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402
Total	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402

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3.5 Building Construction - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0339	1.1209	0.3470	3.9400e-003	0.1024	1.2900e-003	0.1037	0.0295	1.2400e-003	0.0307		422.2519	422.2519	0.0222		422.8062
Worker	0.3280	0.2095	2.9773	9.2400e-003	0.9725	7.4000e-003	0.9799	0.2579	6.8100e-003	0.2647		920.8793	920.8793	0.0238		921.4740
Total	0.3619	1.3304	3.3243	0.0132	1.0749	8.6900e-003	1.0836	0.2874	8.0500e-003	0.2954		1,343.1312	1,343.1312	0.0460		1,344.2802

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402
Total	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402

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3.5 Building Construction - 2023**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0339	1.1209	0.3470	3.9400e-003	0.0689	1.2900e-003	0.0702	0.0213	1.2400e-003	0.0225		422.2519	422.2519	0.0222		422.8062
Worker	0.3280	0.2095	2.9773	9.2400e-003	0.5836	7.4000e-003	0.5910	0.1624	6.8100e-003	0.1693		920.8793	920.8793	0.0238		921.4740
Total	0.3619	1.3304	3.3243	0.0132	0.6524	8.6900e-003	0.6611	0.1837	8.0500e-003	0.1917		1,343.1312	1,343.1312	0.0460		1,344.2802

3.6 Paving - 2023**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466		1,036.0878	1,036.0878	0.3018		1,043.6331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466		1,036.0878	1,036.0878	0.3018		1,043.6331

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3.6 Paving - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0433	0.6160	1.9100e-003	0.2012	1.5300e-003	0.2027	0.0534	1.4100e-003	0.0548		190.5268	190.5268	4.9200e-003		190.6498
Total	0.0679	0.0433	0.6160	1.9100e-003	0.2012	1.5300e-003	0.2027	0.0534	1.4100e-003	0.0548		190.5268	190.5268	4.9200e-003		190.6498

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466	0.0000	1,036.0878	1,036.0878	0.3018		1,043.6331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466	0.0000	1,036.0878	1,036.0878	0.3018		1,043.6331

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3.6 Paving - 2023**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0433	0.6160	1.9100e-003	0.1207	1.5300e-003	0.1223	0.0336	1.4100e-003	0.0350		190.5268	190.5268	4.9200e-003		190.6498
Total	0.0679	0.0433	0.6160	1.9100e-003	0.1207	1.5300e-003	0.1223	0.0336	1.4100e-003	0.0350		190.5268	190.5268	4.9200e-003		190.6498

3.7 Architectural Coating - 2023**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	100.4979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	100.6896	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690

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3.7 Architectural Coating - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0641	0.0409	0.5818	1.8100e-003	0.1900	1.4500e-003	0.1915	0.0504	1.3300e-003	0.0517		179.9419	179.9419	4.6500e-003		180.0581
Total	0.0641	0.0409	0.5818	1.8100e-003	0.1900	1.4500e-003	0.1915	0.0504	1.3300e-003	0.0517		179.9419	179.9419	4.6500e-003		180.0581

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	100.4979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	100.6896	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690

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3.7 Architectural Coating - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0641	0.0409	0.5818	1.8100e-003	0.1140	1.4500e-003	0.1155	0.0317	1.3300e-003	0.0331		179.9419	179.9419	4.6500e-003		180.0581
Total	0.0641	0.0409	0.5818	1.8100e-003	0.1140	1.4500e-003	0.1155	0.0317	1.3300e-003	0.0331		179.9419	179.9419	4.6500e-003		180.0581

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9125	3.8634	12.2131	0.0479	4.1161	0.0352	4.1514	1.1014	0.0328	1.1342	4,881.646	6	4,881.646	0.2264		4,887.305
Unmitigated	0.9125	3.8634	12.2131	0.0479	4.1161	0.0352	4.1514	1.1014	0.0328	1.1342	4,881.646	6	4,881.646	0.2264		4,887.305

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate				Unmitigated		Mitigated	
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT	Annual VMT	Annual VMT	Annual VMT
Apartment Mid Rise	529.00	529.00	529.00	1,806,580	1,806,580	1,806,580	1,806,580	1,806,580
Enclosed Parking with Elevator	0.00	0.00	0.00					
Strip Mall	67.95	67.95	67.95	129,281	129,281	129,281	129,281	129,281
Total	596.95	596.95	596.95	1,935,861	1,935,861	1,935,861	1,935,861	1,935,861

4.3 Trip Type Information

Land Use	Miles				Trip %				Trip Purpose %			
	H-W or C-W	H-S or C-C	H-O or C-C	H-W or C-NW	H-S or C-C	H-O or C-C	H-W or C-NW	H-S or C-C	Primary	Diverted	Pass-by	Pass-by
Apartment Mid Rise	14.70	5.90	8.70	40.00	19.00	41.00	40.00	19.00	86	11	3	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0.00	0.00	0	0	0	0
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	16.60	64.40	45	40	15	15

4.4 Fleet Mix

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Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Enclosed Parking with Elevator	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Strip Mall	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Natural Gas Mitigated	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Natural Gas Unmitigated	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036

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5.2 Energy by Land Use - NaturalGas**Unmitigated**

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
Apartment Mid Rise	2525.19	0.0272	0.2327	0.0990	1.4900e-003		0.0188	0.0188		0.0188	0.0188		297.0811	297.0811	5.6900e-003	5.4500e-003	298.8465
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8.08767	9.0000e-005	7.9000e-004	6.7000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.9515	0.9515	2.0000e-005	2.0000e-005	0.9571
Total		0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4700e-003	299.8036

Mitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
Apartment Mid Rise	2.52519	0.0272	0.2327	0.0990	1.4900e-003		0.0188	0.0188		0.0188	0.0188		297.0811	297.0811	5.6900e-003	5.4500e-003	298.8465
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.00808767	9.0000e-005	7.9000e-004	6.7000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.9515	0.9515	2.0000e-005	2.0000e-005	0.9571
Total		0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4700e-003	299.8036

6.0 Area Detail

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6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Unmitigated	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396

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6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5552					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1747	1.4929	0.6353	9.5300e-003		0.1207	0.1207		0.1207	0.1207	0.0000	1.9058824	1.9058824	0.0365	0.0349	1.917.2081
Landscaping	0.2488	0.0951	8.2554	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8740	14.8740	0.0143		15.2316
Total	2.1164	1.5880	8.8907	9.9700e-003		0.1665	0.1665		0.1665	0.1665	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5552					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1747	1.4929	0.6353	9.5300e-003		0.1207	0.1207		0.1207	0.1207	0.0000	1,905.882 ₄	1,905.882 ₄	0.0365	0.0349	1,917.208 ₁
Landscaping	0.2488	0.0951	8.2554	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8740	14.8740	0.0143		15.2316
Total	2.1164	1.5880	8.8907	9.9700e-003		0.1665	0.1665		0.1665	0.1665	0.0000	1,920.756₄	1,920.756₄	0.0508	0.0349	1,932.439₆

7.0 Water Detail**7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Summer

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

2111 South Pacific Avenue Future
Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	84.00	Space	0.00	33,600.00	0
Apartments Mid Rise	100.00	Dwelling Unit	0.55	76,145.00	286
Strip Mall	1.80	1000sqft	0.01	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	33
Climate Zone	11			Operational Year	2024

Utility Company Los Angeles Department of Water & Power

CO2 Intensity (lb/MW/hr)	1227.89	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006
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1.3 User Entered Comments & Non-Default Data

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the Project's air model.

Land Use - See SWAPE comments regarding "Underestimated Land Use Size" and "Unsubstantiated Reduction to Parking Land Use Size"

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths"

Off-road Equipment - See SWAPE comment regarding "Unsubstantiated Changes to Construction Off-Road Equipment Unit Amounts and Usage Hours"

Grading - Consistent with the Project's air model.

Demolition - Consistent with the Project's air model.

Trips and VMT - Hauling trip lengths and number consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reductions to Worker Trip Numbers"

Vehicle Trips - See SWAPE comment regarding "Underestimated Number of Sunday Vehicle Trips"

Woodstoves - Number of wood-burning stoves and fireplaces consistent with the Project's air model. See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces"

Energy Use -

Construction Off-road Equipment Mitigation - Consistent with the Project's air model.

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	46
tblFireplaces	NumberGas	85.00	90.00
tblFireplaces	NumberWood	5.00	0.00
tblGrading	AcresOfGrading	0.00	0.56
tblGrading	MaterialExported	0.00	20,000.00
tblLandUse	LandUseSquareFeet	100,000.00	76,145.00
tblLandUse	LotAcreage	0.76	0.00
tblLandUse	LotAcreage	2.63	0.55
tblLandUse	LotAcreage	0.04	0.01
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripLength	20.00	41.00
tblTripsAndVMT	HaulingTripNumber	2,500.00	2,857.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	42.04	37.75
tblVehicleTrips	SU_TR	5.86	5.29
tblVehicleTrips	SU_TR	20.43	37.75
tblVehicleTrips	WD_TR	6.65	5.29
tblVehicleTrips	WD_TR	44.32	37.75
tblWoodstoves	NumberCatalytic	5.00	0.00
tblWoodstoves	NumberNoncatalytic	5.00	0.00

2.0 Emissions Summary

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

2.1 Overall Construction (Maximum Daily Emission)**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	12.3627	366.4717	101.9148	1.0937	27.2714	1.3762	28.6477	7.4940	1.3163	8.8103	0.0000	118,647.8802	118,647.8802	8.5731	0.0000	118,862.2080
2023	100.7613	7.7662	10.1873	0.0240	1.0749	0.3290	1.4039	0.2874	0.3027	0.5901	0.0000	2,382.5419	2,382.5419	0.4030	0.0000	2,392.6175
Maximum	100.7613	366.4717	101.9148	1.0937	27.2714	1.3762	28.6477	7.4940	1.3163	8.8103	0.0000	118,647.8802	118,647.8802	8.5731	0.0000	118,862.2080

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	12.3627	366.4717	101.9148	1.0937	18.5390	1.3762	19.9152	5.3506	1.3163	6.6669	0.0000	118,647.8802	118,647.8802	8.5731	0.0000	118,862.2080
2023	100.7613	7.7662	10.1873	0.0240	0.6524	0.3290	0.9814	0.1837	0.3027	0.4864	0.0000	2,382.5419	2,382.5419	0.4030	0.0000	2,392.6175
Maximum	100.7613	366.4717	101.9148	1.0937	18.5390	1.3762	19.9152	5.3506	1.3163	6.6669	0.0000	118,647.8802	118,647.8802	8.5731	0.0000	118,862.2080

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	32.30	0.00	30.46	28.88	0.00	23.90	0.00	0.00	0.00	0.00	0.00	0.00

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Area	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Energy	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Mobile	0.8837	3.9529	11.5669	0.0456	4.1161	0.0354	4.1515	1.1014	0.0329	1.1343		4,648.6938	4,648.6938	0.2257		4,654.3357
Total	3.0273	5.7744	20.5573	0.0570	4.1161	0.2207	4.3368	1.1014	0.2182	1.3196	0.0000	6,867.4827	6,867.4827	0.2822	0.0404	6,886.5789

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Area	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Energy	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Mobile	0.8837	3.9529	11.5669	0.0456	4.1161	0.0354	4.1515	1.1014	0.0329	1.1343		4,648.6938	4,648.6938	0.2257		4,654.3357
Total	3.0273	5.7744	20.5573	0.0570	4.1161	0.2207	4.3368	1.1014	0.2182	1.3196	0.0000	6,867.4827	6,867.4827	0.2822	0.0404	6,886.5789

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	9/14/2022	5	10	
2	Site Preparation	Site Preparation	9/15/2022	9/15/2022	5	1	
3	Grading	Grading	9/16/2022	9/19/2022	5	2	
4	Building Construction	Building Construction	9/20/2022	2/6/2023	5	100	
5	Paving	Paving	2/7/2023	2/13/2023	5	5	
6	Architectural Coating	Architectural Coating	2/14/2023	2/20/2023	5	5	

Acres of Grading (Site Preparation Phase): 0.5**Acres of Grading (Grading Phase): 0.56****Acres of Paving: 0**

Residential Indoor: 154,194; Residential Outdoor: 51,398; Non-Residential Indoor: 2,700; Non-Residential Outdoor: 900; Striped Parking Area: 2,016 (Architectural Coating – sqft)

OffRoad Equipment

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	156.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	41.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	2,857.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	87.00	16.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					3.3832	0.0000	3.3832	0.5122	0.0000	0.5122			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	3.3832	0.3375	3.7207	0.5122	0.3225	0.8348		1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.2 Demolition - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day											lb/day					
Hauling	0.2323	6.6370	1.8594	0.0227	0.5589	0.0226	0.5814	0.1532	0.0216	0.1748		2,466.375 ₂	2,466.375 ₂	0.1599		2,470.371 ₉
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		103.4570	103.4570	2.8500e-003		103.5282
Total	0.2771	6.6665	2.1986	0.0237	0.6706	0.0234	0.6941	0.1828	0.0224	0.2052		2,569.832₂	2,569.832₂	0.1627		2,573.900₀

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day											lb/day					
Fugitive Dust					3.3832	0.0000	3.3832	0.5122	0.0000	0.5122			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.902 ₅	1,147.902 ₅	0.2119		1,153.200 ₁
Total	0.7094	6.4138	7.4693	0.0120	3.3832	0.3375	3.7207	0.5122	0.3225	0.8348	0.0000	1,147.902₅	1,147.902₅	0.2119		1,153.200₁

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.2 Demolition - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2323	6.6370	1.8594	0.0227	0.3644	0.0226	0.3869	0.1054	0.0216	0.1270		2,466.375 ₂	2,466.375 ₂	0.1599		2,470.371 ₉
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.0671	8.7000e-004	0.0680	0.0187	8.1000e-004	0.0195		103.4570	103.4570	2.8500e-003		103.5282
Total	0.2771	6.6665	2.1986	0.0237	0.4315	0.0234	0.4549	0.1241	0.0224	0.1465		2,569.832₂	2,569.832₂	0.1627		2,573.900₀

3.3 Site Preparation - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5797	6.9332	3.9597	9.7300e-003		0.2573	0.2573		0.2367	0.2367		942.5179	942.5179	0.3048		950.1386
Total	0.5797	6.9332	3.9597	9.7300e-003	0.5303	0.2573	0.7876	0.0573	0.2367	0.2940		942.5179	942.5179	0.3048		950.1386

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.3 Site Preparation - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641
Total	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5797	6.9332	3.9597	9.7300e-003		0.2573	0.2573		0.2367	0.2367	0.0000	942.5179	942.5179	0.3048		950.1386
Total	0.5797	6.9332	3.9597	9.7300e-003	0.5303	0.2573	0.7876	0.0573	0.2367	0.2940	0.0000	942.5179	942.5179	0.3048		950.1386

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.3 Site Preparation - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0335	4.4000e-004	0.0340	9.3400e-003	4.0000e-004	9.7400e-003		51.7285	51.7285	1.4200e-003		51.7641
Total	0.0224	0.0147	0.1696	5.2000e-004	0.0335	4.4000e-004	0.0340	9.3400e-003	4.0000e-004	9.7400e-003		51.7285	51.7285	1.4200e-003		51.7641

3.4 Grading - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1806	0.0000	2.1806	0.6171	0.0000	0.6171			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225		1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	2.1806	0.3375	2.5181	0.6171	0.3225	0.9396		1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.4 Grading - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.6085	360.0284	94.1063	1.0806	24.9791	1.0378	26.0169	6.8473	0.9929	7.8402		117,396.5208	117,396.5208	8.3584		117,605.4798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		103.4570	103.4570	2.8500e-003		103.5282
Total	11.6533	360.0579	94.4454	1.0817	25.0908	1.0387	26.1295	6.8769	0.9937	7.8707		117,499.9778	117,499.9778	8.3612		117,709.0079

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1806	0.0000	2.1806	0.6171	0.0000	0.6171			0.0000			0.0000
Off-Road	0.7094	6.4138	7.4693	0.0120		0.3375	0.3375		0.3225	0.3225	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001
Total	0.7094	6.4138	7.4693	0.0120	2.1806	0.3375	2.5181	0.6171	0.3225	0.9396	0.0000	1,147.9025	1,147.9025	0.2119		1,153.2001

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.4 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.6085	360.0284	94.1063	1.0806	16.2913	1.0378	17.3292	4.7149	0.9929	5.7078		117,396.5208	117,396.5208	8.3584		117,605.4798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.0671	8.7000e-004	0.0680	0.0187	8.1000e-004	0.0195		103.4570	103.4570	2.8500e-003		103.5282
Total	11.6533	360.0579	94.4454	1.0817	16.3584	1.0387	17.3971	4.7335	0.9937	5.7273		117,499.9778	117,499.9778	8.3612		117,709.0079

3.5 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422		1,103.9393	1,103.9393	0.3570		1,112.8652

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.5 Building Construction - 2022**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0479	1.4733	0.4252	3.9600e-003	0.1024	2.8700e-003	0.1053	0.0295	2.7400e-003	0.0322		423.9525	423.9525	0.0266		424.6186
Worker	0.3896	0.2563	2.9508	9.0300e-003	0.9725	7.6100e-003	0.9801	0.2579	7.0100e-003	0.2649		900.0754	900.0754	0.0248		900.6950
Total	0.4376	1.7295	3.3761	0.0130	1.0749	0.0105	1.0854	0.2874	9.7500e-003	0.2972		1,324.0279	1,324.0279	0.0514		1,325.3136

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652
Total	0.6863	7.0258	7.1527	0.0114		0.3719	0.3719		0.3422	0.3422	0.0000	1,103.9393	1,103.9393	0.3570		1,112.8652

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.5 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0479	1.4733	0.4252	3.9600e-003	0.0689	2.8700e-003	0.0717	0.0213	2.7400e-003	0.0240		423.9525	423.9525	0.0266		424.6186
Worker	0.3896	0.2563	2.9508	9.0300e-003	0.5836	7.6100e-003	0.5912	0.1624	7.0100e-003	0.1695		900.0754	900.0754	0.0248		900.6950
Total	0.4376	1.7295	3.3761	0.0130	0.6524	0.0105	0.6629	0.1837	9.7500e-003	0.1935		1,324.0279	1,324.0279	0.0514		1,325.3136

3.5 Building Construction - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402
Total	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.5 Building Construction - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.1158	0.3779	3.8400e-003	0.1024	1.3600e-003	0.1038	0.0295	1.3000e-003	0.0308		410.7861	410.7861	0.0235		411.3725
Worker	0.3671	0.2318	2.7124	8.7000e-003	0.9725	7.4000e-003	0.9799	0.2579	6.8100e-003	0.2647		867.1469	867.1469	0.0223		867.7048
Total	0.4027	1.3476	3.0902	0.0125	1.0749	8.7600e-003	1.0837	0.2874	8.1100e-003	0.2955		1,277.9330	1,277.9330	0.0458		1,279.0773

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402
Total	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402

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3.5 Building Construction - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.1158	0.3779	3.8400e-003	0.0689	1.3600e-003	0.0702	0.0213	1.3000e-003	0.0226		410.7861	410.7861	0.0235		411.3725
Worker	0.3671	0.2318	2.7124	8.7000e-003	0.5836	7.4000e-003	0.5910	0.1624	6.8100e-003	0.1693		867.1469	867.1469	0.0223		867.7048
Total	0.4027	1.3476	3.0902	0.0125	0.6524	8.7600e-003	0.6612	0.1837	8.1100e-003	0.1918		1,277.9330	1,277.9330	0.0458		1,279.0773

3.6 Paving - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466		1,036.0878	1,036.0878	0.3018		1,043.6331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466		1,036.0878	1,036.0878	0.3018		1,043.6331

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3.6 Paving - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Worker	0.0759	0.0480	0.5612	1.8000e-003	0.2012	1.5300e-003	0.2027	0.0534	1.4100e-003	0.0548	179.4097	179.4097	179.4097	4.6200e-003		179.5251
Total	0.0759	0.0480	0.5612	1.8000e-003	0.2012	1.5300e-003	0.2027	0.0534	1.4100e-003	0.0548	179.4097	179.4097	179.4097	4.6200e-003		179.5251

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466	0.0000	1,036.0878	1,036.0878	0.3018		1,043.6331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.6112	5.5046	7.0209	0.0113		0.2643	0.2643		0.2466	0.2466	0.0000	1,036.0878	1,036.0878	0.3018		1,043.6331

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.6 Paving - 2023**Mitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0759	0.0480	0.5612	1.8000e-003	0.1207	1.5300e-003	0.1223	0.0336	1.4100e-003	0.0350		179.4097	179.4097	4.6200e-003		179.5251
Total	0.0759	0.0480	0.5612	1.8000e-003	0.1207	1.5300e-003	0.1223	0.0336	1.4100e-003	0.0350		179.4097	179.4097	4.6200e-003		179.5251

3.7 Architectural Coating - 2023**Unmitigated Construction On-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	100.4979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	100.6896	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.7 Architectural Coating - 2023**Unmitigated Construction Off-Site**

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0717	0.0453	0.5300	1.7000e-003	0.1900	1.4500e-003	0.1915	0.0504	1.3300e-003	0.0517		169.4425	169.4425	4.3600e-003		169.5515
Total	0.0717	0.0453	0.5300	1.7000e-003	0.1900	1.4500e-003	0.1915	0.0504	1.3300e-003	0.0517		169.4425	169.4425	4.3600e-003		169.5515

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	100.4979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	100.6896	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

3.7 Architectural Coating - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0717	0.0453	0.5300	1.7000e-003	0.1140	1.4500e-003	0.1155	0.0317	1.3300e-003	0.0331		169.4425	169.4425	4.3600e-003		169.5515
Total	0.0717	0.0453	0.5300	1.7000e-003	0.1140	1.4500e-003	0.1155	0.0317	1.3300e-003	0.0331		169.4425	169.4425	4.3600e-003		169.5515

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8837	3.9529	11.5669	0.0456	4.1161	0.0354	4.1515	1.1014	0.0329	1.1343	4,648,693	8	4,648,693	0.2257		4,654,335
Unmitigated	0.8837	3.9529	11.5669	0.0456	4.1161	0.0354	4.1515	1.1014	0.0329	1.1343	4,648,693	8	4,648,693	0.2257		4,654,335

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate				Unmitigated		Mitigated	
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT	Annual VMT	Annual VMT	Annual VMT
Apartment Mid Rise	529.00	529.00	529.00	1,806,580	1,806,580	1,806,580	1,806,580	1,806,580
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Strip Mall	67.95	67.95	67.95	129,281	129,281	129,281	129,281	129,281
Total	596.95	596.95	596.95	1,935,861	1,935,861	1,935,861	1,935,861	1,935,861

4.3 Trip Type Information

Land Use	Miles				Trip %				Trip Purpose %			
	H-W or C-W	H-S or C-C	H-O or C-C	H-W or C-NW	H-S or C-C	H-O or C-C	H-W or C-NW	H-S or C-C	Primary	Diverted	Pass-by	Pass-by
Apartment Mid Rise	14.70	5.90	8.70	40.00	19.00	41.00	40.00	19.00	86	11	3	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0.00	0.00	0	0	0	0
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	16.60	64.40	45	40	15	15

4.4 Fleet Mix

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Enclosed Parking with Elevator	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850
Strip Mall	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Natural Gas Mitigated	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036
Natural Gas Unmitigated	0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4600e-003	299.8036

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

5.2 Energy by Land Use - NaturalGas**Unmitigated**

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
Apartment Mid Rise	2525.19	0.0272	0.2327	0.0990	1.4900e-003		0.0188	0.0188		0.0188	0.0188		297.0811	297.0811	5.6900e-003	5.4500e-003	298.8465
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8.08767	9.0000e-005	7.9000e-004	6.7000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.9515	0.9515	2.0000e-005	2.0000e-005	0.9571
Total		0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4700e-003	299.8036

Mitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr																
Apartment Mid Rise	2.52519	0.0272	0.2327	0.0990	1.4900e-003		0.0188	0.0188		0.0188	0.0188		297.0811	297.0811	5.6900e-003	5.4500e-003	298.8465
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.00808767	9.0000e-005	7.9000e-004	6.7000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.9515	0.9515	2.0000e-005	2.0000e-005	0.9571
Total		0.0273	0.2335	0.0997	1.4900e-003		0.0189	0.0189		0.0189	0.0189		298.0326	298.0326	5.7100e-003	5.4700e-003	299.8036

6.0 Area Detail

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Mitigated	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396
Unmitigated	2.1164	1.5880	8.8907	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5552					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1747	1.4929	0.6353	9.5300e-003		0.1207	0.1207		0.1207	0.1207	0.0000	1.9058824	1.905.8824	0.0365	0.0349	1.917.2081
Landscaping	0.2488	0.0951	8.2554	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8740	14.8740	0.0143		15.2316
Total	2.1164	1.5880	8.8907	9.9700e-003		0.1665	0.1665		0.1665	0.1665	0.0000	1,920.7564	1,920.7564	0.0508	0.0349	1,932.4396

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5552					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1747	1.4929	0.6353	9.5300e-003		0.1207	0.1207		0.1207	0.1207	0.0000	1.905.882 ₄	1.905.882 ₄	0.0365	0.0349	1.917.208 ₁
Landscaping	0.2488	0.0951	8.2554	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8740	14.8740	0.0143		15.2316
Total	2.1164	1.5880	8.8907	9.9700e-003		0.1665	0.1665		0.1665	0.1665	0.0000	1,920.756₄	1,920.756₄	0.0508	0.0349	1,932.439₆

7.0 Water Detail**7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

2111 South Pacific Avenue Future - Los Angeles-South Coast County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Operation	
Emission Rate	
Annual Emissions (tons/year)	0.0171
Daily Emissions (lbs/day)	0.09369863
Total DPM (lbs)	34.2
Emission Rate (g/s)	0.000491918
Release Height (meters)	3
Total Acreage	0.56
Max Horizontal (meters)	67.32
Min Horizontal (meters)	33.66
Initial Vertical Dimension (meters)	1.5
Setting	Urban
Population	3,849,297

Start date and time 08/11/22 13:49:32

AERSCREEN 21112

2139 South Pacific Avenue Operation

2139 South Pacific Avenue Operation

----- DATA ENTRY VALIDATION -----

METRIC

ENGLISH

** AREADATA **

Emission Rate: 0.492E-03 g/s 0.390E-02 lb/hr

Area Height: 3.00 meters 9.84 feet

Area Source Length: 67.32 meters 220.87 feet

Area Source Width: 33.66 meters 110.43 feet

Vertical Dimension: 1.50 meters 4.92 feet

Model Mode: URBAN

Population: 3849297

Dist to Ambient Air: 1.0 meters 3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u^*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2022.08.11_2139SouthPacificAvenue_Operations.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 08/11/22 13:50:54

Running AERMOD

Processing Winter

Processing surface roughness sector 1

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 0

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 5

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 10

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 15

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 20

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 25

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 30

***** WARNING MESSAGES *****

*** NONE ***

Running AERMOD

Processing Spring

Processing surface roughness sector 1

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 0

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 5

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 10

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 15

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 20

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 25

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 30

***** WARNING MESSAGES *****

*** NONE ***

Running AERMOD

Processing Summer

Processing surface roughness sector 1

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 0

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 5

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 10

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 15

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 20

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 25

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 30

***** WARNING MESSAGES *****

*** NONE ***

Running AERMOD

Processing Autumn

Processing surface roughness sector 1

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 0

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 5

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 10

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 15

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 20

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 25

***** WARNING MESSAGES *****

*** NONE ***

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 30

***** WARNING MESSAGES *****

*** NONE ***

FLOWSECTOR ended 08/11/22 13:51:01

REFINE started 08/11/22 13:51:01

AERMOD Finishes Successfully for REFINE stage 3 Winter sector 0

***** WARNING MESSAGES *****

*** NONE ***

REFINE ended 08/11/22 13:51:02

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

Ending date and time 08/11/22 13:51:09

Concentration	Distance	Elevation	Diag	Season/Month	Zo sector	Date	H0	U*	W*	DT/DZ	ZICNV	
ZIMCH M-O LEN	Z0 BOWEN	ALBEDO	REF WS	HT	REF TA	HT						
0.25793E+01	1.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.31836E+01	25.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
* 0.33296E+01	35.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.19068E+01	50.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.98236E+00	75.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.63334E+00	100.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.45590E+00	125.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.35048E+00	150.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.28120E+00	175.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.23281E+00	200.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.19719E+00	225.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.17011E+00	250.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.14893E+00	275.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.13198E+00	300.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.11811E+00	325.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.10658E+00	350.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.96814E-01	375.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.88507E-01	400.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.81365E-01	425.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.75168E-01	450.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.69748E-01	475.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.64973E-01	500.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.60738E-01	525.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.56961E-01	550.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.53573E-01	575.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000 1.50 0.35	0.50	10.0	310.0	2.0								
0.50521E-01	600.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.47872E-01			625.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.45353E-01			650.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.43056E-01			675.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.40952E-01			700.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.39021E-01			725.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.37242E-01			750.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.35599E-01			775.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.34077E-01			800.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.32665E-01			825.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.31351E-01			850.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.30126E-01			875.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.28982E-01			900.00	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.27911E-01			925.00	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.26906E-01			950.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.25963E-01			975.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.25075E-01			1000.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.24239E-01			1025.00	0.00	20.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.23450E-01			1050.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.22704E-01			1075.00	0.00	25.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.21998E-01			1100.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.21330E-01			1125.00	0.00	20.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.20696E-01			1149.99	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.20094E-01			1175.00	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.19521E-01			1200.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.18976E-01			1225.00	0.00	20.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.18457E-01			1249.99	0.00	25.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.17962E-01			1275.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.17490E-01			1300.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.17039E-01			1325.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.16608E-01			1350.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.16195E-01			1375.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.15799E-01			1400.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.15420E-01			1425.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.15057E-01			1450.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.14708E-01			1475.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.14373E-01			1500.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.14050E-01			1525.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.13741E-01			1550.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.13442E-01			1575.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.13155E-01			1600.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.12878E-01			1625.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.12612E-01			1650.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.12354E-01			1675.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.12106E-01			1700.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.11866E-01			1725.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.11634E-01			1750.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.11410E-01			1775.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.11194E-01			1800.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10984E-01			1825.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10781E-01			1850.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10585E-01			1875.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10394E-01			1900.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10210E-01			1924.99	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.10031E-01			1950.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.98571E-02			1975.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.96887E-02			2000.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.95252E-02			2025.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.93664E-02			2050.00	0.00	30.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.92122E-02			2075.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.90623E-02			2100.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.89166E-02			2124.99	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.87749E-02			2150.00	0.00	30.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.86371E-02			2175.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.85030E-02			2200.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.83725E-02			2224.99	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.82453E-02			2250.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.81216E-02			2275.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.80010E-02			2300.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.78835E-02			2325.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.77690E-02			2350.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.76573E-02			2375.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.75484E-02			2400.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.74421E-02			2425.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.73383E-02			2449.99	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.72370E-02			2475.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.71381E-02			2500.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.70415E-02			2525.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.69471E-02			2550.00	0.00	30.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.68549E-02			2575.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.67648E-02			2600.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.66767E-02			2625.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.65906E-02			2650.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.65064E-02			2675.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.64240E-02			2700.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.63435E-02			2725.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.62647E-02			2750.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.61875E-02			2775.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.61120E-02			2800.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.60381E-02			2825.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.59657E-02			2850.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.58947E-02			2875.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.58253E-02			2900.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.57572E-02			2925.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.56905E-02			2950.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.56252E-02			2975.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.55611E-02			3000.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.54983E-02			3025.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.54367E-02			3050.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.53763E-02			3075.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.53170E-02			3100.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.52588E-02			3125.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.52018E-02			3150.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.51458E-02			3174.99	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.50909E-02			3199.99	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.50369E-02			3225.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.49839E-02			3250.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.49319E-02			3275.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0									
0.48809E-02			3300.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21. 6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.48307E-02			3325.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.47814E-02			3350.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.47330E-02			3375.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.46855E-02			3400.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.46387E-02			3425.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.45928E-02			3450.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.45476E-02			3475.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.45032E-02			3500.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.44596E-02			3525.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.44166E-02			3550.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.43744E-02			3575.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.43329E-02			3600.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.42920E-02			3625.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.42518E-02			3650.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.42123E-02			3675.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.41734E-02			3700.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.41351E-02			3724.99	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.40975E-02			3750.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.40604E-02			3775.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.40238E-02			3800.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.39879E-02			3825.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.39525E-02			3849.99	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.39176E-02			3875.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.38833E-02			3900.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.38495E-02			3925.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.38162E-02			3950.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.37834E-02			3975.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0

1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.37511E-02			4000.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.37192E-02			4025.00	0.00	5.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.36879E-02			4050.00	0.00	30.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.36569E-02			4075.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.36265E-02			4100.00	0.00	25.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.35964E-02			4125.00	0.00	15.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.35668E-02			4149.99	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.35376E-02			4175.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.35088E-02			4200.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.34805E-02			4225.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.34525E-02			4250.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.34249E-02			4275.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.33977E-02			4300.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.33708E-02			4325.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.33444E-02			4350.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.33182E-02			4375.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.32925E-02			4400.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.32670E-02			4425.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.32419E-02			4450.00	0.00	10.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.32172E-02			4475.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.31928E-02			4500.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.31686E-02			4525.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.31449E-02			4550.00	0.00	20.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.31214E-02			4575.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.30982E-02			4600.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.30753E-02			4625.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0
1.000	1.50	0.35	0.50	10.0	310.0	2.0										
0.30527E-02			4650.00	0.00	0.0		Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0

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Technical Consultation, Data Analysis and
Litigation Support for the Environment

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**Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review**

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.

B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist

California Certified Hydrogeologist

Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt’s responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., Matt’s duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, *Oxygenates in Water: Critical Information and Research Needs*.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.

- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Colorado.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F.** 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukunaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.



Technical Consultation, Data Analysis and
Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE

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Paul Rosenfeld, Ph.D.

Principal Environmental Chemist

Chemical Fate and Transport & Air Dispersion Modeling

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, industrial, military and agricultural sources, unconventional oil drilling operations, and locomotive and construction engines. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities. Dr. Rosenfeld has also successfully modeled exposure to contaminants distributed by water systems and via vapor intrusion.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, creosote, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at sites and has testified as an expert witness on numerous cases involving exposure to soil, water and air contaminants from industrial, railroad, agricultural, and military sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H₂O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health*. 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P.**, (2015) Modeling the Effect of Refinery Emission On Residential Property Value. *Journal of Real Estate Research*. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.**, Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermid and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste*. Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries*. Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P.** (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution*, 123 (17), 319-327.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities*. Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004*. New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellev, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS-6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality*. 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld**. (1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., "The science for Perfluorinated Chemicals (PFAS): What makes remediation so hard?" Law Seminars International, (May 9-10, 2018) 800 Fifth Avenue, Suite 101 Seattle, WA.

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society*. Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States” Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P.** (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International*

Conferences on Soils Sediment and Water. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The 23rd *Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting*. Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition*. Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference*. Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference*. Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants..* Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conference*. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation*. Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest*. Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell*. Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest*. Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. \$41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: \$10,000 grant awarded to San Diego State University. Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. \$100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. \$20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: \$10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: \$15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. \$500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 5-14-2021
Trial, October 8-4-2021

In the Circuit Court of Cook County Illinois
Joseph Rafferty, Plaintiff vs. Consolidated Rail Corporation and National Railroad Passenger Corporation d/b/a AMTRAK,
Case No.: No. 18-L-6845
Rosenfeld Deposition, 6-28-2021

In the United States District Court For the Northern District of Illinois
Theresa Romcoe, Plaintiff vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail, Defendants
Case No.: No. 17-cv-8517
Rosenfeld Deposition, 5-25-2021

In the Superior Court of the State of Arizona In and For the Cuntly of Maricopa
Mary Tryon et al., Plaintiff vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case Number CV20127-094749
Rosenfeld Deposition: 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division
Robinson, Jeremy et al *Plaintiffs*, vs. CNA Insurance Company et al.
Case Number 1:17-cv-000508
Rosenfeld Deposition: 3-25-2021

In the Superior Court of the State of California, County of San Bernardino
Gary Garner, Personal Representative for the Estate of Melvin Garner vs. BNSF Railway Company.
Case No. 1720288
Rosenfeld Deposition 2-23-2021

In the Superior Court of the State of California, County of Los Angeles, Spring Street Courthouse
Benny M Rodriguez vs. Union Pacific Railroad, A Corporation, et al.
Case No. 18STCV01162
Rosenfeld Deposition 12-23-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, *Plaintiff*, vs. Marathon Petroleum, LP, *Defendant*.
Case No.: 1716-CV10006
Rosenfeld Deposition. 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs*, vs. United States Metals Refining Company et. al. *Defendant*.
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs*, vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS “Conti Perdido”
Defendant.
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case No.: 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosiences, LLC, et al., Defendants
Cause No.: 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case: No 1:19-cv-00315-RHW
Rosenfeld Deposition, 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.: LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs*, vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action NO. 14-C-30000
Rosenfeld Deposition, June 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant*.
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs*, vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.
Civil Action Number 2:09-cv-232-WHA-TFM
Rosenfeld Deposition: July 2010, June 2011

In the Circuit Court of Jefferson County Alabama
Jaeanette Moss Anthony, et al., *Plaintiffs*, vs. Drummond Company Inc., et al., *Defendants*
Civil Action No. CV 2008-2076
Rosenfeld Deposition: September 2010

In the United States District Court, Western District Lafayette Division
Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 2:07CV1052
Rosenfeld Deposition: July 2009