Michael Baker INTERNATIONAL

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MEMORANDUM

To: Jonathan Kwan, City of Norwalk

From: Kristen Bogue, Michael Baker International

Date: October 28, 2024

Subject: City of Norwalk, Norwalk Transit Village Final EIR – Responses to Comment Letter Re: Comment on the Final Environmental Impact Report, Norwalk Transit Village (SCH NO. 2022070103), City Council Hearing – Agenda Item 11

Michael Baker International (Michael Baker), on behalf of the City of Norwalk (City), is writing to provide responses to comment letter *Comment on the Final Environmental Impact Report, Norwalk Transit Village (SCH NO. 2022070103), City Council Hearing – Agenda Item 11*, submitted by Lozeau Drury, LLP, dated October 14, 2024, regarding the *Norwalk Transit Village Final Environmental Impact Report* (Final EIR) prepared for the proposed Norwalk Transit Village Project (project). Individual comments within the comment letter have been bracketed and numbered so comments can be cross-referenced with the corresponding responses; refer to Attachment A. It is acknowledged that many of these comments/concerns were similarly raised in prior comments submitted by the commenter as part of the public review period of the EIR, as well as during the Planning Commission meeting on July 10, 2024. As such, applicable responses provided in the Final EIR have been referenced and/or reiterated here for clarification.

1 This comment begins by summarizing the proposed project description and introduces Supporters Alliance for Environmental Responsibility (SAFER). The commenter acknowledges the use of air quality experts (Soil/Water/Air Protection Enterprise [SWAPE]. Written comments by SWAPE are provided as Exhibits to the comment letter (Exhibits A and B); refer to Responses to Comments 9 through 15.

2 The commenter requests Council refrain from approving the project and recirculate the EIR to address the concerns addressed in this letter. Refer to Responses to Comments 3 through 15. As explained herein, and as detailed in the Final EIR, the EIR adequately analyzed the proposed project and evaluated and disclosed the potential environmental impacts associated with the proposed project, consistent with the requirements of CEQA. The EIR is comprehensive and none of the circumstances requiring recirculation of a draft EIR set forth in CEQA Guidelines Section 15088.5 have been met. Specifically, based on the comments and responses within the Final EIR and this memo, no new significant impacts or substantial increases in already identified significant impacts have been identified.

3 The commenter provides a description of the legal standard for CEQA, and states that SAFER is concerned that the Final EIR fails as an informational document and fails to impose all feasible mitigation measures to reduce the Project's impacts. The comment is substantially similar to comments submitted previously by the commenter on the Draft EIR and addressed in the Final EIR.

As such, refer to Final EIR Section 2.0, *Responses to Comments*, Responses to Comments O2-2 and O2-3. As explained in the Final EIR Responses O2-2, CEQA does not require the incorporation of mitigation measures that are infeasible for specific legal, economic, technological, or other reasons. (Public Resources Code Section 21002.1(c); CEQA Guidelines Section 15091(a)(3)). If there are not sufficient mitigation measures that the lead agency determines are feasible to achieve the less than significant level, the lead agency should adopt those measures that are feasible, and adopt a Statement of Overriding Considerations that explains why further mitigation is not feasible. As previously explained in the Final EIR Response to Comment O2-3, the decision whether to approve the project and adopt a Statement of Overriding Considerations would be made by the decision-makers consistent with CEQA. Additionally, refer to Responses to Comments 5, 13, and 14 below.

4 The commenter states that the EIR's air quality analysis is not based on substantial evidence because it fails to use substantiated input parameters to estimate project construction-related emissions, by referring to a memorandum prepared by SWAPE. As discussed in Response to Comment 10 below, the Draft and Final EIR appropriately adjusted construction architectural coating emission factors based on applicable rules and substantial evidence, and therefore no revisions are necessary.

5 The commenter states that the EIR failed to adequately analyze the project's significant volatile organic compound (VOC) emissions and greenhouse gas (GHG) emissions, by referring to a memorandum prepared by SWAPE. As discussed in Responses to Comments 10 to 14 below, the Draft and Final EIR appropriately adjusted construction architectural coating and operational area coating emission factors based on applicable rules and substantial evidence and incorporated all feasible mitigation measures to reduce GHG emissions. As such, no revisions are necessary.

6 The commenter lists eight suggested mitigation measures to reduce GHG emissions. The comment is substantially similar to prior comments submitted by the commenter on the Draft EIR and responded to in the Final EIR. As such, please refer to Final EIR Section 2.0, Responses to Comments, Response to Comment O2-2, including Table 2-2, Analysis of Measures Recommended in Comment O2-2, which includes discussion of each measure suggested by the commenter.

7 The commenter states that the EIR failed to disclose and mitigate the project's significant indoor air quality impacts, by referring to a memorandum prepared by Francis J. Offermann PE CIH. As discussed in Response to Comment 15 below, the commenter significantly overestimates health risk levels by making unreasonable assumptions, and additional indoor air quality analyses recommended by the commenter either are not required by CEQA or have been analyzed in the Draft EIR. As such, no revisions to the Draft and Final EIR are necessary.

8 The commenter reiterates that impacts to air quality would be significant and unmitigated, and asserts that a Statement of Overriding Considerations include economic benefits of the project that outweigh such unmitigated impacts, in addition to other significant and unavoidable impacts. Regarding the project's impacts on air quality, refer to Responses to Comments 4, 7, 9 through 12, 14, and 15 herein. Regarding the feasibility of mitigation measures and a Statement of Overriding considerations, refer to Response to Comment 3 above.

9 One of the additional exhibits appended to this comment letter is a letter prepared by SWAPE titled, "Comments on the Norwalk Transit Village Project (SCH No. 2022070103)" and dated October 10,

2024. Refer to Responses to Comments 10 through 14 below for specific responses to the SWAPE letter.

10 The commenter states that the air quality analysis incorrectly includes reductions to the default construction architectural coating emission factors. The commenter references the February 2016 South Coast Air Quality Management District (SCAQMD) Rule 1113 Advisory Notice. In this document, SCAQMD primarily requires 50 grams per liter VOC limits for coating applications applicable to the proposed project, including flat coatings, non-flat coatings, and building envelope coatings, effective January 1, 2019. Coatings with more than 50 grams per liter VOC limits are specialty coatings and would not be used by the proposed project. Therefore, the Draft and Final EIR adjusted construction architectural coating emission factors based on applicable rules and substantial evidence, and no revisions are necessary.

11 The commenter states that the air quality analysis incorrectly includes reductions to the default operational area coating emission factors by modeling mitigation in CalEEMod but not including mitigation measures in the Draft and Final EIR. As discussed in Response to Comment 10, SCAQMD Rule 1113 requires 50 grams per liter VOC limits for coating applications applicable to the proposed project, including flat coatings, non-flat coatings, and building envelope coatings. In addition, although compliance with this rule was modeled as mitigation in CalEEMod, it is a regulatory requirement and not a project design feature or mitigation measure. Modeling mitigation was the only way to account for this regulatory requirement in CalEEMod version 2020.4.0, which was the latest version when the Draft EIR was prepared. Therefore, the Draft and Final EIR adjusted operational area coating emission factors based on applicable rules and substantial evidence, and no revisions are necessary.

12 The commenter prepared an updated model in CalEEMod without the incorporation of SCAQMD Rule 1113 during construction and operation, demonstrated that the project would exceed SCAQMD significance threshold for VOC during construction, and claims that the project would result in a potentially significant air quality impact that was not previously identified or addressed by the Draft or Final EIR. As discussed in Responses to Comments 10 and 11, the Draft EIR correctly incorporated applicable rules and regulations in the modeling and concluded less than significant air quality impact. On the contrary, the commenter's updated model did not incorporate applicable rules and regulations, and therefore demonstrated exceedance of threshold. As such, as the Draft and Final EIR correctly modeled project emissions during construction and operation, no revisions are necessary.

13 The commenter states that the Draft and Final EIR fail to implement all feasible mitigation measures to mitigate the significant GHG emissions impact. The commenter recommends additional mitigation measures to be incorporated by the project. The project has applied all the feasible mitigation measures to minimize the GHG impact. Refer to Response to Comment 14 below on the responses to the mitigation measures recommended by the commenter.

14 The commenter recommended additional mitigation measures to reduce air quality and GHG emissions, including requiring the use of super low VOC paints less than 10 grams per liter during construction, implementing Southern California Association of Governments' (SCAG) 2020 RTP/SCS Program Environmental Impact Report Mitigation Measures (PMM-GHG-1), maximizing the use of solar energy by installing solar arrays, and purchasing carbon offsets and carbon credits. The commenter also disclaims that the comments were provided based on the limited discovery regarding the project, which may be revised or amended when additional information becomes available.

As discussed in Response to Comment 10 above, compliance with SCAQMD Rule 1113 would ensure project emissions during construction would not exceed SCAQMD thresholds. As the project would not cause significant air quality impacts, mitigation measures are not required, and super low VOC paints are not necessary.

The mitigation measures included in SCAG's 2020 RTP/SCS Program EIR are recommended but not mandatory for individual development projects. Nevertheless, the project would implement measures referenced by the commenter as project design features. As a transit-oriented development, the project design incorporates multiple features to encourage transit use, and as a mixed-use development, the project reduces vehicle trips by locating neighborhood-serving commercial uses near existing and proposed residential uses. The project does not propose commercial office use and therefore the commute trip reduction and workplace parking measures do not apply.

As discussed in Draft EIR Table 5.9-2, *Consistency with the 2020-2045 RTP/SCS*, the project would install solar panels on residential development, and therefore would maximize the use of solar energy.

It is acknowledged that purchasing carbon credits can be a feasible way to mitigate GHG emissions, but it comes with many challenges. To ensure carbon credits meet the criteria under CEQA, they must be permanent, additional, verifiable, enforceable, and real. There are very limited number of projects that could meet all criteria and approved by California Air Resources Board (CARB) to be eligible to receive offset credits. On the other hand, the demand for carbon credits has been increasing significantly due to the more stringent GHG reduction goals. As such, it is unsure at this time of the availability of carbon credits when the proposed project needs to purchase them, and therefore it is inappropriate for the project to rely on carbon credits purchasing to reduce the GHG impacts, and this measure is deemed infeasible.

In summary, the additional mitigation measures recommended by the commenter are either not necessary, or already incorporated in project design, or not feasible. As such, no revisions to the Draft and Final EIR are necessary.

15 One of the additional exhibits appended to this comment letter is a letter prepared by Francis J. Offermann PE CIH titled, "Indoor Air Quality: Norwalk Transit Village, Norwalk, CA. (IEE File Reference: P-4817)" and dated October 10, 2024. The commenter provides background of indoor formaldehyde concentrations impact and estimates the project's future residences would be exposed to cancer risk of 120 per million and future employees would be exposed to cancer risk of 17.7 per million, both exceeding the CEQA threshold of 10 per million. The commenter continues to state that the Draft and Final EIR should analyze pre-construction building material/furnishing formaldehyde emissions, analyze interior noise levels to determine the Sound Transmission Class (STC) rating of windows and doors of the proposed buildings, analyze $PM_{2.5}$ outdoor concentration impact, and include mitigation measures to minimize indoor air quality impacts.

The indoor air quality impact analysis focuses on the project's impact on its future residences and workers. It should be acknowledged that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents." (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal.4th

369, Case No. S213478.) Similarly, CEQA also does not require analysis of the project's impact on itself. Therefore, the indoor air quality impact analysis is not required by CEQA.

Nevertheless, it is acknowledged that the commenter significantly overestimates the amount of daily formaldehyde exposure from the project and makes inaccurate exposure assumptions. The commenter assumes that residents would inhale 20 cubic meters of air per day, live in the project for an average 70-year lifetime, and occupy their units 24 hours per day, and the employees would work at the project site for eight hours per day, five days per week, 50 weeks per year for 45 years (starting at 20 years and retiring at age 65). The commenter also assumes that the formaldehyde daily emissions from construction materials would be constant over 45 years. These assumptions are unreasonable and are not based on real life exposure potential. Further, building materials and furniture generally contain the highest formaldehyde concentration when products are new, and such concentrations gradually decrease with age. Thus, the commenter substantially overestimates the amount of formaldehyde emissions to which future residents and workers in the project could be exposed, as well as potential health impacts.

It should be noted that the project would be required to comply with all applicable regulations governing building materials, including the toxic air contaminants contained in the building materials. These regulations include but are not limited to, Title 24 Standards, CALGreen Code, California Division of Occupational Safety and Health rules, etc. Complying with these regulations would ensure the project would not cause significant health impacts due to the toxic air contaminants emissions from building materials. In addition, the City of Norwalk has not established interior noise standards and therefore interior noise level analysis is not required. The Draft EIR quantified project generated $PM_{2.5}$ emissions during construction and operation and determined $PM_{2.5}$ emissions would be well below SCAQMD's regional and localized thresholds of significance; refer to Draft EIR Table 5.8-5, Table 5.8-6, and Table 5.8-7. The SCAQMD has established thresholds of significance for development projects to align with Federal and California Ambient Air Quality Standards and protect public health. Projects generating emissions below the SCAQMD thresholds are not considered to contribute to the exceedance of ambient air quality standards or localized impacts. As such, the Draft EIR adequately analyzed the $PM_{2.5}$ emissions impact of the project.

In summary, the additional analyses recommended by the commenter either are not required by CEQA or have been analyzed in the Draft EIR. As such, no revisions to the Draft and Final EIR are necessary.

ATTACHMENT A

LOZEAU DRURY LLP
T 510.836.4200
F 510.836.4205
1939 Harrison Street, Ste. 150
Oakland, CA 94612
www.lozeaudrury.com
richard@lozeaudrury.com

Via Email

October 14, 2024

Margarita L. Rios, Mayor
Tony Ayala, Vice Mayor
Jennifer Perez, Councilmember
Rick Ramirez, Councilmember
Ana Valencia, Councilmember
City Council
City of Norwalk
12700 Norwalk Blvd
Norwalk, CA 90650
mlrios@norwalkca.gov
tayala@norwalkca.gov
jperez@norwalkca.gov
rramirez@norwalkca.gov
avalencia@norwalkca.gov

Alexander Hamilton, Interim Director
Community Development Department
City of Norwalk
12700 Norwalk Blvd
Norwalk, CA 90650
ahamilton@norwalkca.gov

Re: Comment on Final Environmental Impact Report, Norwalk Transit Village (SCH NO. 2022070103); October 15, 2024, Planning Commission Meeting – Agenda Item 11

Dear Honorable Mayor Rios, Vice Mayor Ayala, Vice Mayor, City Council Members, and Director Hamilton:

This comment is submitted on behalf of Supporters Alliance for Environmental Responsibility ("SAFER") regarding the Final Environmental Impact Report ("FEIR") prepared for the Norwalk Transit Village (SCH NO. 2022070103), which proposes the construction of a new approximately 66,647 square-foot neighborhood commercial center, a 150-key hotel, and 770 new residential units consisting of a mix of multi-family units, apartments, and townhomes, located at 13200 Bloomfield Avenue (APN 8045-008-902) in the City of Norwalk ("Project"). The Project is scheduled to be heard at the City Council meeting on October 15, 2024. 1

SAFER's review of the EIR was assisted by air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise ("SWAPE"), and Certified Industrial Hygienist, Francis Offermann, PE, CIH. The written comments of SWAPE and Mr. Offermann are attached hereto as Exhibit A and Exhibit B, respectively.

SAFER respectfully requests that the City Council refrain from approving the Project at this time and instead revise and recirculate the EIR to address the concerns discussed below. 2

PROJECT DESCRIPTION

The Project proposes the Norwalk Transit Village Specific Plan and Tentative Tract Map to allow for the demolition of the former CYA facility and construction of a mixed-use transit-oriented community with a mix of retail, hospitality, multi-family residential, and park/open space land uses. Specifically, the Project allows for the development of a new approximately 66,647 square-foot neighborhood commercial center, a 150-key hotel, and 770 new residential units consisting of a mix of multi-family units, apartments, and townhomes, located at 13200 Bloomfield Avenue (APN 8045-008-902) in the City of Norwalk.

LEGAL STANDARD

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an EIR (except in certain limited circumstances). (See, e.g., Pub. Resources Code, § 21100.) The EIR is the very heart of CEQA. (*Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 109.) 3

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. (14 CCR § 15002(a)(1).) "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'" (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.) The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." (*Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs*. (2001) 91 Cal.App.4th 1344, 1354 (*Berkeley Jets*); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.)

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures. (14 CCR § 15002(a)(2) and (3); see also *Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley,* 52 Cal.3d at 564.) The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced." (14 CCR § 15002(a)(2).) If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are

"acceptable due to overriding concerns." (Pub. Res. Code, § 21081; 14 CCR § 15092(b)(2)(A) and (B).)

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" (*Berkeley Jets*, 91 Cal.App.4th at 1355 [quoting, *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal. 3d 376, 391, 409, n. 12.) "A prejudicial abuse of discretion occurs 'if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process.'" (*Berkeley Jets*, *supra*, 91 Cal.App.4th at 1355.)

An EIR must "include[] sufficient detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues the proposed project raises." (*Sierra Club v. Cty. of Fresno* (2018) 6 Cal.5th 502, 510.) "Whether or not the alleged inadequacy is the complete omission of a required discussion or a patently inadequate one-paragraph discussion devoid of analysis, the reviewing court must decide whether the EIR serves its purpose as an informational document." (*Id*. at 516.) "The determination whether a discussion is sufficient is not solely a matter of discerning whether there is substantial evidence to support the agency's factual conclusions." (*Id*.) As the Court emphasized:

> [W]hether a description of an environmental impact is insufficient because it lacks analysis or omits the magnitude of the impact is not a substantial evidence question. A conclusory discussion of an environmental impact that an EIR deems significant can be determined by a court to be inadequate as an informational document without reference to substantial evidence.

(*Id.* at 514.)

In general, mitigation measures must be designed to minimize, reduce or avoid an identified environmental impact or to rectify or compensate for that impact. (14 CCR § 15370.) Where several mitigation measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. (14 CCR § 15126.4(a)(1)(B).) A lead agency may not make the required CEQA findings unless the administrative record clearly shows that all uncertainties regarding the mitigation of significant environmental impacts have been resolved.

3 cont'd

DISCUSSION

SAFER is concerned that the FEIR fails as an informational document and fails to impose all feasible mitigation measures to reduce the Project's impacts. Among other concerns, SAFER has identified several issues discussed below.

4

I. The EIR Fails to Adequately Analyze and Mitigate the Project's Significant Air Quality and Greenhouse Gas Impacts.

SAFER's review of the EIR was assisted by air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of SWAPE. SWAPE's comments and CV are attached hereto as Exhibit A. SWAPE found that the EIR failed to adequately analyze the Project's significant air quality and greenhouse gas impacts.

A. The EIR's air quality analysis is not based on substantial evidence because it fails to use substantiated input parameters to estimate project construction-related emissions.

SWAPE found that the EIR incorrectly estimated the Project's construction-related emissions and therefore cannot be relied upon to determine the significance of the Project's impacts on local and regional air quality. (See, Ex. A, pp. 2-4.) SWAPE explains that the California Emissions Estimator Model ("CalEEMod") Version 2020.4.0 modeling inputs from the Air Quality/Greenhouse Gas Emissions/Energy Data ("AQ & GHG Report") as Appendix 11.7 to the DEIR for Project construction are inconsistent with the DEIR project description or are otherwise inaccurate or not supported by substantial evidence. (Ex. A, pp. 1-2.) According to SWAPE:

> When reviewing the Project's CalEEMod output files, provided in the [AQ & GHG Report]…, we found that several model inputs are not consistent with information disclosed in the DEIR. As a result, the Project's construction-related and operational emissions may be underestimated. A revised EIR should be prepared 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.

(*Id.*, p. 2.)

As SWAPE explains, the EIR relies on emissions calculated from CalEEMod, which is an air model used to generate a project's construction and operational emissions. This model relies on recommended default values based on site specific information related to a number of factors. CEQA requires any changes to the default values to be justified by substantial evidence. SWAPE reviewed the EIR's CalEEMod output files and found that several of the values input into the model associated with the Project's construction-related activities were inconsistent with information provided in the EIR. (Ex. A, pp. .) Specifically, SWAPE found that the following values used in the EIR's construction air quality analysis were either inconsistent with information provided in the EIR or otherwise unjustified:

1. Unsubstantiated Changes to Architectural and Area Coating Emission Factors. (Ex. A, pp. 2-3.)

4 cont'd

2. Incorrect Application of Operational Area-Related Mitigation Measures. (Ex. A, pp. 3-4.)

In conclusion, these mistakes in the air modeling and impact analyses as related to the Project's construction emissions render the air pollution analysis and corresponding EIR discussion inaccurate and not based on substantial evidence. In order to provide accurate information to the public and decision makers and to determine whether or not the Project will have significant construction air quality impacts and sufficient mitigation requirements, a new discussion of air impacts must be prepared and circulated to the public in a Revised Draft EIR ("RDEIR"). 4 cont'd

B. <u>The EIR failed to adequately analyze the project's significant VOC emissions.</u>

In an effort to accurately determine the proposed Project's construction and operational emissions, SWAPE prepared an updated CalEEMod with the site-specific information provided in the EIR. (Ex. A, pp. 4-5.) SWAPE's updated model omitted the unsubstantiated changes to the architectural and area coating emission factors as well as the area-related operational mitigation measures included in the EIR. (*Id.*) SWAPE's updated analysis found that the Project's construction-related VOC emissions exceed the 75 pounds per day ("lbs/day") significance threshold set by South Coast Air Quality Management District ("SCAQMD"). (*Id.*, p. 5.)

SWAPE Criteria Air Pollutant Emissions	
Construction	**VOC** (lbs/day)
DEIR	55.3
SWAPE	87.7
% Increase	59%
SCAQMD Threshold	**75**
Exceeds?	***Yes***

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SWAPE's expert analysis of the Project's air quality impacts is substantial evidence that the Project will result in significant VOC impacts. SWAPE also provided a number of mitigation measures that could be applied to the Project to reduce air quality impacts. (Ex. A, pp. 7-10.) A RDEIR must be prepared and circulated to the public that analyzes the Project's significant VOC emissions.

C. <u>The EIR failed to adequately analyze the project's significant greenhouse gas emissions.</u>

SWAPE found that the EIR fails to ensure that the Project's GHG emissions are less than significant. According to SWAPE, "[t]he EIR estimates that the Project would result in net annual greenhouse gas ("GHG") emissions of 11,500.67 metric tons of carbon dioxide

equivalents per year ("MT CO2e/year"), which exceed the SCAQMD bright-line threshold of 3,000 MT CO2e/year." (Ex. A, p. 6.) As such, the EIR concludes that the Project would result in a significant-and-unavoidable GHG impact, stating:

> Consequently, despite implementation of GHG-1 and GHG-2, project-related GHG impacts would continue to be significant and unavoidable.

(DEIR, p. 5.9-17).

While SWAPE agrees "that the Project would result in a significant GHG impact," it found that the EIR's "assertion that this impact is significant-and-unavoidable" to be "unsupported." (Ex. A, p. 6.) As SWAPE explains, CEQA Guidelines § 15096(g)(2) states:

> When an updated EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment. (*Id.*)

However, SWAPE notes that "[a]n impact can only be labeled as significant and unavoidable after all available, feasible mitigation is considered. While the FEIR and DEIR implement mitigation measure ("MM") GHG-1 through MM GHG-4, the FEIR and DEIR fail to implement all feasible mitigation measures." (*Id.*) Therefore, SWAPE proposed additional, feasible mitigation measures that the Project can identify and incorporate into a revised EIR. (See, Ex. A, pp. 7-10.) Thus, these GHG mitigation measures should be considered and circulated to the public in a RDEIR.

5 cont'd

D. <u>The EIR fails to adopt all feasible mitigation measures to reduce the project's unmitigated significant greenhouse gases.</u>

The EIR concludes that the Project will have significant unmitigated greenhouse gas (GHG) impacts. Yet, the EIR fails to propose all feasible mitigation measures. A Revised Draft EIR should be prepared to analyze the following mitigation measures, and require implementation of the measures unless they are proven to be infeasible:

1. 100% electric vehicle charging.
2. Solar photo-voltaic rooftop.
3. Heat-pumps for heating and cooling.
4. Light-colored roofing materials to reduce heat-island effect.
5. Local-hire requirement for construction workers to reduce worker travel distances and related vehicle emissions.
6. Reduce water usage and related water pumping requirements by requiring xeroscaping, and low-water usage fixtures.
7. LEED certified building.

6

8. Consider all measures suggested in California Attorney General Greenhouse Gas Guidance Document. (chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://opr.ca.gov/docs/june08-ceqa.pdf?)

6 cont'd

(See, Ex. A, pp. 7-10.)

II. The EIR Fails to Disclose and Mitigate the Project's Significant Indoor Air Quality Impacts.

The EIR fails to discuss, disclose, analyze, and mitigate the significant health risks posed by the Project from formaldehyde, a toxic air contaminant ("TAC"). Certified Industrial Hygienist, Francis Offermann, PE, CIH, conducted a review of the Project and EIR. Mr. Offermann's comment and CV are attached as Exhibit B.

Mr. Offermann is one of the world's leading experts on indoor air quality, in particular emissions of formaldehyde, and has published extensively on the topic. As discussed below and set forth in Mr. Offermann's comment, the Project's emissions of formaldehyde will result in significant cancer risks to future residents of the Project's residential component and to future hotel and commercial employees. Mr. Offermann's expert opinion demonstrates the Project's significant health risk impacts, which the City has a duty to investigate, disclose, and mitigate in a recirculated EIR.

Formaldehyde is a known human carcinogen and listed by the State as a TAC. The South Coast Air Quality Management District ("SCAQMD") has established a significance threshold of health risks for carcinogenic TACs of 10 in a million (Ex. B, p. 2.). The EIR fails to acknowledge the significant indoor air emissions that will result from the Project. Specifically, there is no discussion of impacts or health risks, no analysis, and no identification of mitigations for significant emissions of formaldehyde to air from the Project.

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Mr. Offermann explains that many composite wood products typically used in home and apartment building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential, office, and retail building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." (Ex. B, pp. 2-3.)

Mr. Offermann found that future residents of the Project's residential units will be exposed to a cancer risk from formaldehyde of approximately 120 per million, *even assuming that* all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. (Ex. B, p. 4.) This is more than 12 times SCAQMD's CEQA significance threshold of 10 per million. (*Id*.)

Mr. Offermann found that future employees of the hotel and commercial spaces will be exposed to a cancer risk from formaldehyde of approximately 17.7 per million, *even assuming that* all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure, exceeding SCAQMD's CEQA significance threshold of 10 per million. (Ex. B, p. 5.)

Mr. Offermann concludes that these significant environmental impacts must be analyzed in the EIR and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (Ex. B, pp. 6, 12-14.) He prescribes a methodology for estimating the Project's formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id*., pp. 6-10.). Mr. Offermann also suggests several feasible mitigation measures, such as requiring the use of no-added-formaldehyde composite wood products, which are readily available. (*Id*., pp. 12-14.) Mr. Offermann also suggests requiring air ventilation systems which would reduce formaldehyde levels. (*Id*.) Since the EIR does not analyze this impact at all, none of these or other mitigation measures have been considered.

When a Project exceeds a duly adopted CEQA significance threshold, as here, this alone establishes substantial evidence that the project will have a significant adverse environmental impact. Indeed, in many instances, such air quality thresholds are the only criteria reviewed and treated as dispositive in evaluating the significance of a project's air quality impacts. (See, e.g. *Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District's "published CEQA quantitative criteria" and "threshold level of cumulative significance"]; see *also Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 110-111 ["A 'threshold of significance' for a given environmental effect is simply that level at which the lead agency finds the effects of the project to be significant"].) 7 cont'd

The California Supreme Court made clear the substantial importance that an air district significance threshold plays in providing substantial evidence of a significant adverse impact. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 327 ["As the District's established significance threshold for NOx is 55 pounds per day, these estimates [of NOx emissions of 201 to 456 pounds per day] constitute substantial evidence supporting a fair argument for a significant adverse impact."].) Since expert evidence demonstrates that the Project will exceed the SCAQMD's CEQA significance threshold, there is substantial evidence that an "unstudied, *potentially significant environmental effect[]*" exists. (See *Friends of Coll. of San Mateo Gardens v. San Mateo Cty. Cmty. Coll. Dist.* (2016) 1 Cal.5th 937, 958 [emphasis added].)

The failure of the EIR to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("*CBIA*"). In that case, the Supreme Court expressly holds that potential adverse impacts to future users and residents from pollution generated by a proposed project *must be addressed* under CEQA. At issue in *CBIA* was whether the Air District could enact CEQA guidelines that advised lead agencies that they must analyze the impacts of adjacent environmental conditions on a project. The Supreme Court held that CEQA does not generally require lead agencies to consider the environment's effects on a

project. (*CBIA*, 62 Cal.4th at 800-01.) However, to the extent a project may exacerbate existing environmental conditions at or near a project site, those would still have to be considered pursuant to CEQA. (*Id*. at 801.) In so holding, the Court expressly held that CEQA's statutory language required lead agencies to disclose and analyze "impacts on *a project's users or residents* that arise *from the project's effects* on the environment." (*Id*. at 800 [emphasis added].)

The carcinogenic formaldehyde emissions identified by Mr. Offermann are not an existing environmental condition. Those emissions to the air will be from the Project. People will be residing in and working in the Project's buildings once built and emitting formaldehyde. Once built, the Project will begin to emit formaldehyde at levels that pose significant direct and cumulative health risks. The Supreme Court in *CBIA* expressly finds that this type of air emission and health impact by the project on the environment and a "project's users and residents" must be addressed in the CEQA process. The existing TAC sources near the Project site would have to be considered in evaluating the cumulative effect on future residents of both the Project's TAC emissions as well as those existing off-site emissions.

The Supreme Court's reasoning is well-grounded in CEQA's statutory language. CEQA expressly includes a project's effects on human beings as an effect on the environment that must be addressed in an environmental review. "Section 21083(b)(3)'s express language, for example, requires a finding of a 'significant effect on the environment' (§ 21083(b)) whenever the 'environmental effects of a project will cause substantial adverse effects *on human beings,* either directly or indirectly.'" (*CBIA*, 62 Cal.4th at 800.) Likewise, "the Legislature has made clear—in declarations accompanying CEQA's enactment—that public health and safety are of great importance in the statutory scheme." (*Id*. [citing e.g., PRC §§ 21000, 21001].) It goes without saying that the future residents and employees of the Project are human beings and their health and safety must be subject to CEQA's safeguards. 7 cont'd

The City has a duty to investigate issues relating to a project's potential environmental impacts. (*See County Sanitation Dist. No. 2 v. County of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98. ["[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts."].) The proposed buildings will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose future residents to cancer risks potentially in excess of SCAQMD's threshold of significance for cancer health risks of 10 in a million. Currently, outside of Mr. Offermann's comments, the City does not have any idea what risks will be posed by formaldehyde emissions from the Project. As a result, the City must include an analysis and discussion in an updated EIR which discloses and analyzes the health risks that the Project's formaldehyde emissions may have on future residents and employees and identifies appropriate mitigation measures.

III. The EIR Fails to Provide Substantial Evidence to Support a Finding of Overriding Considerations

The EIR concludes that the Project will have significant, unmitigated environmental impacts, particularly in the area of noise. (DEIR, ES-20). In addition, as discussed above, the Project will have significant unmitigated air quality impacts. As a result, the City will need to 8

adopt a statement of overriding considerations. Under CEQA, when an agency approves a project with significant environmental impacts that will not be fully mitigated, it must adopt a "statement of overriding considerations" finding that, because of the project's overriding benefits, it is approving the project despite its environmental harm. (14 CCR §15043; Pub. Res. Code §21081(B); *Sierra Club v. Contra Costa County* (1992) 10 Cal.App.4th 1212, 1222). A statement of overriding considerations expresses the "larger, more general reasons for approving the project, such as the need to create new jobs, provide housing, generate taxes and the like." (*Concerned Citizens of South Central LA v. Los Angeles Unif. Sch. Dist*. (1994) 24 Cal.App.4th 826, 847).

A statement of overriding considerations must be supported by substantial evidence in the record. (14 CCR §15093(b); *Sierra Club v. Contra Costa Co*. (1992) 10 Cal.App.4th 1212, 1223)). The agency must make "a fully informed and publicly disclosed" decision that "specifically identified expected benefits from the project outweigh the policy of reducing or avoiding significant environmental impacts of the project." (15 CCR §15043(b)). As with all findings, the agency must present an explanation to supply the logical steps between the ultimate finding and the facts in the record. (*Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515).

8 cont'd

Key among the findings that the lead agency *must* make is that:

> Specific economic, legal, social, technological, or other considerations, including *the provision of employment opportunities for highly trained workers*, make infeasible the mitigation measures or alternatives identified in the environmental impact report…[and that those] benefits of the project outweigh the significant effects on the environment.

(Pub. Res. Code §21081(a)(3), (b)).

Thus, the City must make specific findings, supported by substantial evidence, concerning both the environmental impacts of the Project, and the economic benefits including "the provision of employment opportunities for highly trained workers" created. The EIR and its supporting documents fails to provide substantial evidence to support a statement of overriding considerations.

In short, the City cannot find that the economic benefits of the Project outweigh the environmental costs if it does not know what the economic benefits will be. A revised EIR, Fiscal Analysis and Statement of Overriding Considerations is required to provide this information.

CONCLUSION

SAFER requests that the City Council deny recommending that the City Council approve the Project, and instead, direct staff to address these shortcomings in a RDEIR and recirculate the RDEIR prior to considering approvals for the Project. SAFER reserves the right to supplement

these comments during the administrative process. (*Galante Vineyards v. Monterey Peninsula Water Management Dist*. (1997) 60 Cal.App.4th 1109, 1121.)

8 cont'd

Sincerely,

Victoria Yundt
Lozeau Drury LLP

EXHIBIT A

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G, C.Hg.
(949) 887-9013
mhagemann@swape.com

Paul E. Rosenfeld, PhD
(310) 795-2335
prosenfeld@swape.com

October 10, 2024

Victoria Yundt
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, CA 94618

Subject: Comments on the Norwalk Transit Village Project (SCH No. 2022070103)

Dear Ms. Yundt,

We have reviewed the June 2024 Final Environmental Impact Report ("FEIR") and the February 2024 Draft Environmental Impact Report ("DEIR") for the Norwalk Transit Village Project ("Project") located in the City of Norwalk ("City"). The Project proposes the Norwalk Transit Village Specific Plan and Tentative Tract Map to allow for the demolition of the former CYA facility and construction of a mixed-use transit-oriented community with a mix of retail, hospitality, multi-family residential, and park/open space land uses.

Our review concludes that the FEIR and DEIR fail to adequately evaluate the Project's air quality and greenhouse gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project may be underestimated and inadequately addressed. A revised Environmental Impact Report ("EIR") should be prepared to adequately assess and mitigate the potential air quality, and greenhouse gas impacts that the project may have on the environment.

9

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The DEIR's air quality analysis relies on emissions calculated with California Emissions Estimator Model ("CalEEMod") Version 2020.4.0 (p. 5.8-15). [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

[1] "CalEEMod Version 2020.4.0." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at:* http://www.aqmd.gov/caleemod/download-model.

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 which parameters are used in calculating the Project's air pollutant emissions by identifying any changes to default values. Justifications are provided for each altered value.

9 cont'd

When reviewing the Project's CalEEMod output files, provided in the Air Quality/Greenhouse Gas Emissions/Energy Data ("AQ & GHG Report") as Appendix 11.7 to the DEIR, we found that several model inputs are not consistent with information disclosed in the DEIR. As a result, the Project's construction-related and operational emissions may be underestimated. A revised EIR should be prepared 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.

Unsubstantiated Changes to Architectural and Area Coating Emission Factors

Review of the CalEEMod output files demonstrates that the "Norwalk Transit Village" model includes changes to the default architectural and area coating emission factors (see excerpt below) (Appendix 11.7, pp. 4, 34, 64).

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50

10

As demonstrated above, the nonresidential interior and exterior architectural and area coating emission factors are reduced from their default values of 100- to 50-grams per liter ("g/L"). As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[2] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is:

> "SCAQMD Rule 1113" (Appendix 11.7, pp. 3, 33, 63).

Furthermore, the DEIR states:

> "As required by SCAQMD Regulation XI, Rule 1113, Architectural Coating, all architectural coatings for the proposed structures would comply with specifications on painting practices as well as regulation on the ROG content of paint" (p. 5.8-17).

[2] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.

However, the reductions to the architectural and area coating emission factors remain unsubstantiated, as we cannot verify the accuracy of the revised architectural coating emission factors based on the South Coast Management District ("SCAQMD") Rule 1113 alone. The SCAQMD Rule 1113 Table of Standards provides the required volatile organic compound ("VOC") limits (grams of VOC per liter of coating) for 57 different coating categories.[3] The VOC limits for each coating varies from a minimum value of 50 g/L to a maximum value of 730 g/L. As such, we cannot verify that SCAQMD Rule 1113 substantiates reductions to the default coating values without more information regarding what category of coating will be used. As the FEIR and DEIR fail to explicitly require the use of a specific type of coating which would adhere to a specific VOC limit, we are unable to verify the model's revised coating emission factors. 10 cont'd

These unsubstantiated reductions present an issue, as CalEEMod uses the architectural and area coating emission factors to calculate the Project's VOC emissions.[4] By including unsubstantiated reductions to the default architectural coating emission factors, the model may underestimate the Project's construction-related VOC emissions and should not be relied upon to determine Project significance.

Incorrect Application of Operational Area-Related Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Norwalk Transit Village" model includes the following area-related mitigation measures (see excerpt below) (Appendix 11.7, pp. 29, 59 92).

Use Low VOC Paint - Residential Interior
Use Low VOC Paint - Residential Exterior
Use Low VOC Paint - Non-Residential Interior
Use Low VOC Paint - Non-Residential Exterior
Use only Natural Gas Hearths

Furthermore, as a result of the implementation of the above-mentioned mitigation measures, the models include the following area-related operational mitigation measures (Appendix 11.7, pp. 4, 34, 64). 11

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	50	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	50	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	50	100

[3] "SCAQMD Rule 1113 Advisory Notice." SCAQMD, February 2016, *available at:* http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1113.pdf?sfvrsn=24, p. 1113-14, Table of Standards 1.

[4] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 35, 40.

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[5] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is:

> "SCAQMD Rule 1113" (Appendix 11.7, pp. 4, 34, 64).

However, the inclusion of the above-mentioned mitigation measures is unsupported for two reasons. First, as previously stated, we cannot verify the use of low VOC area coatings based on SCAQMD Rule 1113 alone. Second, the FEIR and DEIR fails to explicitly require the use of low VOC coatings whatsoever. This is incorrect, as according to the California 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."[6]

11 cont'd

Project design features are not mitigation measures and may be eliminated from the Project's design. As use of low VOC area coatings on the Project site is not formally included as a mitigation measure, we cannot guarantee that it would be implemented, monitored, and enforced on the Project site. As a result, the inclusion of the above-mentioned area-related operational mitigation measures in the model is incorrect. By including operational mitigation measures without properly committing to its implementation, the model may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

Updated Analysis Indicates a Potentially Significant Air Quality Impact

In an effort to quantitatively estimate the Project's construction-related and operational emissions, we prepared an updated model in CalEEMod using Project-specific information provided by the DEIR. We omitted the unsubstantiated changes to the architectural and area coating emission factors as well as the area-related operational mitigation measures. All other values are consistent with the DEIR's model.[7]

12

[5] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.
[6] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.
[7] See Attachment A for CalEEMod model.

Our updated analysis estimates that the VOC emissions associated with Project construction exceed the applicable SCAQMD threshold of 75 pounds per day ("lbs/day"), as referenced by the DEIR (p. 5.8-16, Table 5.8-5) (see table below).[8]

SWAPE Criteria Air Pollutant Emissions	
Construction	**VOC** (lbs/day)
DEIR	55.3
SWAPE	87.7
% Increase	59%
SCAQMD Threshold	**75**
Exceeds?	***Yes***

As demonstrated above, construction-related VOC emissions, as estimated by SWAPE, increase by approximately 59% and exceed the applicable SCAQMD significance threshold. Our updated modeling demonstrates that the Project would result in a potentially significant air quality impact that was not previously identified or addressed by the FEIR or DEIR. As a result, a revised EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on the environment.

12 cont'd

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The DEIR estimates that the Project would result in net annual greenhouse gas ("GHG") emissions of 11,500.67 metric tons of carbon dioxide equivalents per year ("MT CO_2e/year"), which exceed the SCAQMD bright-line threshold of 3,000 MT CO_2e/year (see excerpt below) (p. 5.9-14, Table 5.9-1).

13

[8] "South Coast AQMD Air Quality Significance Thresholds." SCAQMD, April 2019, *available at*: https://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25.

Table 5.9-1
Project Annual Greenhouse Gas Emissions

Source[1]	CO_2	CH_4	N_2O	Refrigerants	CO_2e
	Metric Tons/year[2]				
Direct Emissions[4]					
Construction (amortized over 30 years)[4]	149.36	0.01	0.01	0.12	153.17
Area Source	184.76	<0.01	<0.01	0.00	184.99
Mobile Source	8,214.29	0.38	0.33	8.17	8,331.07
Refrigerants	0.00	0.00	0.00	57.34	57.34
Total Direct Emissions[3]	***8,548.41***	***0.39***	***0.35***	***65.63***	***8,726.58***
Indirect Emissions[4]					
Energy	2,528.53	0.18	0.01	0.00	2,537.21
Water Demand	81.64	1.25	0.03	0.00	122.02
Solid Waste	32.83	3.28	0.00	0.00	114.87
Total Indirect Emissions[3]	***2,643.00***	***4.72***	***0.04***	***0.00***	***2,774.09***
Total Project-Related Emissions[3]	***11,500.67 $MTCO_2e$/year***				
SCAQMD Interim Threshold	***3,000 MTCO2e/year***				
Exceed the Threshold?	***Yes***				

Notes: Carbon dioxide equivalent = CO_2e; metric tons of carbon dioxide equivalent per year = $MTCO_2e$ per year
1. It should be noted that these estimates represent gross emissions for the project and do not include emissions generated by current on-site uses, which consist of temporary DSH satellite facility operations on a nominal portion of the project site. As such, these project emissions are conservative.
2. Project emissions were calculated using CalEEMod version 2022.1.
3. Totals may be slightly off due to rounding.
4. Emission reductions applied in the CalEEMod model, or "mitigated emission", include Rule 445 and AB 341.

Refer to Appendix 11.7, *Air Quality/Greenhouse Gas Emissions/Energy Data* for detailed model input/output data.

13 cont'd

As such, the DEIR concludes that the Project would result in a significant-and-unavoidable GHG impact, stating:

> "Consequently, despite implementation of GHG-1 and GHG-2, project-related GHG impacts would continue to be significant and unavoidable" (p. 5.9-17).

While we agree that the Project would result in a significant GHG impact, the DEIR's assertion that this impact is significant-and-unavoidable is unsupported. According to CEQA Guidelines § 15096(g)(2):

> "When an updated EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment." [9]

An impact can only be labeled as significant and unavoidable after all available, feasible mitigation is considered. While the FEIR and DEIR implement mitigation measure ("MM") GHG-1 through MM GHG-4, the FEIR and DEIR fail to implement all feasible mitigation measures. We will propose additional, feasible mitigation measures that the Project can identify and incorporate into a revised EIR.

[9] "Cal. Code Regs. tit. 14 § 15096." CEQA Guidelines, May 2024, *available at*: https://casetext.com/regulation/california-code-of-regulations/title-14-natural-resources/division-6-resources-agency/chapter-3-guidelines-for-implementation-of-the-california-environmental-quality-act/article-7-eir-process/section-15096-process-for-a-responsible-agency.

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

As previously mentioned, CEQA guidelines state that an impact can only be labeled as significant-and-unavoidable after all available, feasible mitigation is considered. [10] The FEIR is consequently required under CEQA to implement all feasible mitigation to reduce the Project's potential impacts. As stated in the sections above, the Project would result in potentially significant air quality and GHG impacts that should be mitigated further. In order to reduce the GHG emissions associated with the Project, we recommend several mitigation measures (see list below).

First, in order to reduce the VOC emissions associated with Project construction we recommend the use of low-VOC paints. As stated above, the DEIR references the use of low-VOC paints, however the inclusion of said measure is not substantiated. We recommend the DEIR consider formally incorporating the following mitigation measure from the California Department of Justice:[11]

- Require the use of super compliant, low-VOC paints less than 10 g/L during the architectural coating construction phase.

Additionally, Los Angeles County recommends:[12]

- If paints and coatings with VOC content of 0 grams/liter to less than 10 grams/liter cannot be utilized, the developer shall avoid application of architectural coatings during the peak smog season: July, August, and September.

Second, in order to reduce the Project's anticipated GHG emissions, the Southern California Association of Governments ("SCAG")'s 2020 RTP/SCS Program Environmental Impact Report recommends the following Greenhouse Gas Project Level Mitigation Measures ("PMM-GHG-1"), which are applicable to the Project: [13]

- Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following:
    - Promote transit-active transportation coordinated strategies,
    - Increase bicycle carrying capacity on transit and rail vehicles,
    - Improve or increase access to transit,

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[10] *Ibid.* (g)(2).
[11] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice, September 2022, *available at*: https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf, p. 8 – 10.
[12] "Mitigation Monitoring and Reporting Program." Los Angeles County Housing Element Update Program EIR. August 2021, *available at*: https://planning.lacounty.gov/wp-content/uploads/2023/07/Housing_final-peir-mitigation-monitoring.pdf.
[13] "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_connectsocal_addendum_4_mitigationmeasures.pdf?1606004420, p. 4.0-21 – 4.0-23; See also: "Certified Final Connect SoCal Program Environmental Impact Report." SCAG, May 2020, *available at:* https://scag.ca.gov/peir.

    - Increase access to common goods and services, such as groceries, schools, and day care,
    - Incorporate the neighborhood electric vehicle network,
    - Orient the project toward transit, bicycle and pedestrian facilities,
    - Improve pedestrian or bicycle networks, or transit service,
    - Provide traffic calming measures,
    - Provide bicycle parking,
    - Limit or eliminate park supply,
    - Unbundle parking costs,
    - Provide parking cash-out programs, and
    - Implement or provide access to commute reduction program;
- 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;
- 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;
- Designate a percentage of parking spaces for ride-sharing vehicles or high-occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;
- 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;
- Implement preferential parking permit program;
- Implement school pool and bus programs;
- Encourage telecommuting and alternative work schedules, such as:
    - Staggered starting times,
    - Flexible schedules, and
    - Compressed work weeks;
- Implement commute trip reduction marketing, such as:
    - New employee orientation of trip reduction and alternative mode options,
    - Event promotions, and
    - Publications;
- Price workplace parking, such as:
    - Explicitly charging for parking for its employees,
    - Implementing above market rate pricing,
    - Validating parking only for invited guests,
    - Not providing employee parking and transportation allowances, and
    - Educating employees about available alternatives; and
- 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:
    - Provide car-sharing, bike sharing, and ride-sharing programs,
    - Provide transit passes,

14 cont'd

- Shift single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services,
- Provide incentives or subsidies that increase that use of modes other than single-occupancy vehicle,
- Provide employee transportation coordinators at employment sites, and
- Provide a guaranteed ride home service to users of non-auto modes.

SCAQMD staff recommends maximizing the use of solar energy by installing solar energy arrays.[14]

Additionally, CEQA Guidelines 15126.4 (c)(3) suggest the consideration of "[o]ffsite measures, including offsets that are not otherwise required, to mitigate a project's emissions" when implementing GHG mitigation measures.[15] Specifically, a CARB-sponsored study concluded that:

> "If emissions remain above threshold after the maximization of feasible on-site and off-site mitigation, then some lead agencies—on the advice of their CEQA consultants—are directing applicants to consider carbon offsets. Best practice has been to use carbon offsets provided through the three CARB-approved compliance market registries (though these are voluntary offsets): American Carbon Registry, Climate Action Reserve, and Verra. In addition, lead agencies are suggesting the use of existing carbon offsets that have been verified rather than the purchase of Forecasted Mitigation Units (FMUs) that would occur in the future. These FMUs may be held to higher scrutiny by courts since the actual offset activity would occur after the CEQA document (unlike existing offsets which reflect an action in the past). However, there is CEQA precedent for mitigation related to actions that happen in the future, including Voluntary Emissions Reduction Agreements, air quality credits, and wildlife habitat credits."[16]

14 cont'd

We recommend the consideration of CARB-approved carbon offset purchases, and other credit purchases, in order to reduce the Project's GHG impacts.

We have provided several mitigation measures that would reduce Project-related air quality and GHG emissions. 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.

A revised EIR should be prepared that includes *all* feasible mitigation measures, as well as an updated air quality and GHG analysis to ensure that the necessary mitigation measures are implemented to reduce

[14] "Draft Environmental Impact Report (EIR) for the Proposed CADO Menifee Industrial Warehouse Project (Proposed Project)." SCAQMD, April 2024, *available at*: https://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2024/april-2024/RVC240313-05.pdf?sfvrsn=8, p. 3.
[15] "Cal. Code Regs. tit. 14 § 15126.4." CEQA Guidelines, May 2024, *available at*: https://casetext.com/regulation/california-code-of-regulations/title-14-natural-resources/division-6-resources-agency/chapter-3-guidelines-for-implementation-of-the-california-environmental-quality-act/article-9-contents-of-environmental-impact-reports/section-151264-consideration-and-discussion-of-mitigation-measures-proposed-to-minimize-significant-effects.
[16] "Local CEQA Mitigation Best Practices and Lessons Learned." CARB, September 2023, *available at*: https://ww2.arb.ca.gov/sites/default/files/2023-11/CARB%2021STC001%20White%20Paper.pdf, p.8.

emissions to the maximum extent feasible. The revised EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's potentially 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. 14 cont'd

Sincerely,

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

Paul E. Rosenfeld, Ph.D.

Attachment A: CalEEMod Output Files
Attachment B: Matt Hagemann CV
Attachment C: Paul Rosenfeld CV

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Norwalk Transit Village

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.62	Acre	3.62	157,687.20	0
Hotel	150.00	Room	5.00	217,800.00	0
Apartments Mid Rise	650.00	Dwelling Unit	17.11	650,000.00	1859
Condo/Townhouse	120.00	Dwelling Unit	7.50	120,000.00	343
Strip Mall	80.15	1000sqft	1.84	80,147.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - Consistent with the DEIR's model.

Construction Phase - Consistent with the DEIR's model.

Grading - Consistent with the DEIR's model.

Demolition - Consistent with the DEIR's model.

Architectural Coating - See SWAPE comment regarding architectural and area coating emission factors.

Vehicle Trips - Consistent with the DEIR's model.

Woodstoves - Consistent with the DEIR's model.

Norwalk Transit Village - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Area Coating - See SWAPE comment regarding architectural and area coating emission factors.

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

Area Mitigation - See SWAPE comment regarding area-related mitigation.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	55.00	87.00
tblConstructionPhase	NumDays	740.00	154.00
tblConstructionPhase	NumDays	50.00	120.00
tblConstructionPhase	NumDays	75.00	86.00
tblConstructionPhase	NumDays	55.00	175.00
tblConstructionPhase	PhaseEndDate	1/6/2028	6/30/2026
tblConstructionPhase	PhaseEndDate	8/5/2027	1/30/2026
tblConstructionPhase	PhaseEndDate	5/9/2024	8/15/2024
tblConstructionPhase	PhaseEndDate	10/3/2024	12/12/2024
tblConstructionPhase	PhaseEndDate	10/21/2027	1/30/2026
tblConstructionPhase	PhaseStartDate	10/22/2027	3/1/2026
tblConstructionPhase	PhaseStartDate	10/4/2024	7/1/2025
tblConstructionPhase	PhaseStartDate	6/21/2024	8/15/2024
tblConstructionPhase	PhaseStartDate	8/6/2027	6/1/2025
tblFireplaces	NumberGas	552.50	585.00
tblFireplaces	NumberGas	102.00	107.00
tblFireplaces	NumberWood	32.50	0.00
tblFireplaces	NumberWood	6.00	0.00
tblGrading	MaterialImported	0.00	60,510.00
tblLandUse	LandUseSquareFeet	80,150.00	80,147.00
tblVehicleTrips	ST_TR	4.91	3.51
tblVehicleTrips	ST_TR	1.96	25.14
tblVehicleTrips	ST_TR	8.14	1.45
tblVehicleTrips	ST_TR	8.19	4.68

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	ST_TR	42.04	52.93
tblVehicleTrips	SU_TR	4.09	3.51
tblVehicleTrips	SU_TR	2.19	25.14
tblVehicleTrips	SU_TR	6.28	1.45
tblVehicleTrips	SU_TR	5.95	4.68
tblVehicleTrips	SU_TR	20.43	52.93
tblVehicleTrips	WD_TR	5.44	3.51
tblVehicleTrips	WD_TR	0.78	25.14
tblVehicleTrips	WD_TR	7.32	1.45
tblVehicleTrips	WD_TR	8.36	4.68
tblVehicleTrips	WD_TR	44.32	52.93
tblWoodstoves	NumberCatalytic	32.50	0.00
tblWoodstoves	NumberNoncatalytic	32.50	0.00

Type text here

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

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	tons/yr										MT/yr					
2024	0.2939	3.6787	2.6965	9.4600e-003	1.5128	0.1214	1.6341	0.3443	0.1124	0.4567	0.0000	882.8626	882.8626	0.1575	0.0686	907.2446
2025	0.3094	1.9965	3.7969	9.8400e-003	0.6116	0.0719	0.6835	0.1640	0.0670	0.2309	0.0000	896.6598	896.6598	0.1013	0.0361	909.9485
2026	3.8628	0.3772	0.8479	2.2600e-003	0.1722	0.0138	0.1860	0.0460	0.0130	0.0590	0.0000	205.3178	205.3178	0.0173	7.0300e-003	207.8465
Maximum	**3.8628**	**3.6787**	**3.7969**	**9.8400e-003**	**1.5128**	**0.1214**	**1.6341**	**0.3443**	**0.1124**	**0.4567**	**0.0000**	**896.6598**	**896.6598**	**0.1575**	**0.0686**	**909.9485**

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	tons/yr										MT/yr					
2024	0.2939	3.6787	2.6965	9.4600e-003	1.5128	0.1214	1.6341	0.3443	0.1124	0.4567	0.0000	882.8620	882.8620	0.1575	0.0686	907.2440
2025	0.3094	1.9965	3.7969	9.8400e-003	0.6116	0.0719	0.6835	0.1640	0.0670	0.2309	0.0000	896.6594	896.6594	0.1013	0.0361	909.9482
2026	3.8628	0.3772	0.8478	2.2600e-003	0.1722	0.0138	0.1860	0.0460	0.0130	0.0590	0.0000	205.3178	205.3178	0.0173	7.0300e-003	207.8464
Maximum	**3.8628**	**3.6787**	**3.7969**	**9.8400e-003**	**1.5128**	**0.1214**	**1.6341**	**0.3443**	**0.1124**	**0.4567**	**0.0000**	**896.6594**	**896.6594**	**0.1575**	**0.0686**	**909.9482**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2024	5-31-2024	1.0930	1.0930
2	6-1-2024	8-31-2024	1.1719	1.1719
3	9-1-2024	11-30-2024	1.4695	1.4695
4	12-1-2024	2-28-2025	0.1943	0.1943
6	6-1-2025	8-31-2025	0.8323	0.8323
7	9-1-2025	11-30-2025	1.0840	1.0840
8	12-1-2025	2-28-2026	0.7275	0.7275
9	3-1-2026	5-31-2026	2.9273	2.9273
10	6-1-2026	8-31-2026	0.9543	0.9543
		Highest	2.9273	2.9273

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4.5353	0.2409	8.3649	2.5300e-003		0.1156	0.1156		0.1156	0.1156	8.0308	179.1518	187.1826	0.0532	3.0500e-003	189.4196
Energy	0.0849	0.7410	0.4232	4.6300e-003		0.0587	0.0587		0.0587	0.0587	0.0000	1,855.1064	1,855.1064	0.1018	0.0258	1,865.3349
Mobile	3.1414	3.2032	29.4750	0.0619	6.9137	0.0457	6.9594	1.8446	0.0424	1.8871	0.0000	5,731.7305	5,731.7305	0.4264	0.2637	5,820.9581
Waste						0.0000	0.0000		0.0000	0.0000	105.7177	0.0000	105.7177	6.2477	0.0000	261.9111
Water						0.0000	0.0000		0.0000	0.0000	19.0069	217.1641	236.1710	1.9705	0.0483	299.8323
Total	**7.7615**	**4.1851**	**38.2631**	**0.0691**	**6.9137**	**0.2200**	**7.1337**	**1.8446**	**0.2167**	**2.0613**	**132.7554**	**7,983.1528**	**8,115.9082**	**8.7996**	**0.3408**	**8,437.4560**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

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	tons/yr										MT/yr					
Area	4.4948	0.2349	7.9973	1.3400e-003		0.0556	0.0556		0.0556	0.0556	0.0000	179.1518	179.1518	0.0156	3.0500e-003	180.4502
Energy	0.0849	0.7410	0.4232	4.6300e-003		0.0587	0.0587		0.0587	0.0587	0.0000	1,855.1064	1,855.1064	0.1018	0.0258	1,865.3349
Mobile	3.1414	3.2032	29.4750	0.0619	6.9137	0.0457	6.9594	1.8446	0.0424	1.8871	0.0000	5,731.7305	5,731.7305	0.4264	0.2637	5,820.9581
Waste						0.0000	0.0000		0.0000	0.0000	105.7177	0.0000	105.7177	6.2477	0.0000	261.9111
Water						0.0000	0.0000		0.0000	0.0000	19.0069	217.1641	236.1710	1.9705	0.0483	299.8323
Total	**7.7210**	**4.1791**	**37.8955**	**0.0679**	**6.9137**	**0.1600**	**7.0737**	**1.8446**	**0.1567**	**2.0014**	**124.7245**	**7,983.1528**	**8,107.8774**	**8.7620**	**0.3408**	**8,428.4866**

	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	N20	CO2e
Percent Reduction	**0.52**	**0.14**	**0.96**	**1.72**	**0.00**	**27.27**	**0.84**	**0.00**	**27.68**	**2.91**	**6.05**	**0.00**	**0.10**	**0.43**	**0.00**	**0.11**

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	3/1/2024	8/15/2024	5	120	
2	Grading	Grading	8/15/2024	12/12/2024	5	86	
3	Building Construction	Building Construction	7/1/2025	1/30/2026	5	154	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Paving	Paving	6/1/2025	1/30/2026	5	175	
5	Architectural Coating	Architectural Coating	3/1/2026	6/30/2026	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 258

Acres of Paving: 0

Residential Indoor: 1,559,250; Residential Outdoor: 519,750; Non-Residential Indoor: 446,921; Non-Residential Outdoor: 148,974; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	6	15.00	0.00	8,957.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	5,983.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	738.00	157.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	148.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2024

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					0.9692	0.0000	0.9692	0.1468	0.0000	0.1468	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1346	1.2527	1.1824	2.3300e-003		0.0576	0.0576		0.0535	0.0535	0.0000	203.9763	203.9763	0.0571	0.0000	205.4030
Total	**0.1346**	**1.2527**	**1.1824**	**2.3300e-003**	**0.9692**	**0.0576**	**1.0268**	**0.1468**	**0.0535**	**0.2003**	**0.0000**	**203.9763**	**203.9763**	**0.0571**	**0.0000**	**205.4030**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	9.3900e-003	0.6175	0.1596	2.5800e-003	0.0771	3.7200e-003	0.0808	0.0212	3.5600e-003	0.0247	0.0000	257.5197	257.5197	0.0145	0.0409	270.0738
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	2.6600e-003	2.0200e-003	0.0285	8.0000e-005	9.8600e-003	6.0000e-005	9.9200e-003	2.6200e-003	5.0000e-005	2.6700e-003	0.0000	7.6282	7.6282	1.9000e-004	1.9000e-004	7.6896
Total	**0.0121**	**0.6195**	**0.1881**	**2.6600e-003**	**0.0869**	**3.7800e-003**	**0.0907**	**0.0238**	**3.6100e-003**	**0.0274**	**0.0000**	**265.1479**	**265.1479**	**0.0147**	**0.0411**	**277.7633**

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					0.9692	0.0000	0.9692	0.1468	0.0000	0.1468	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1346	1.2527	1.1824	2.3300e-003		0.0576	0.0576		0.0535	0.0535	0.0000	203.9760	203.9760	0.0571	0.0000	205.4028
Total	**0.1346**	**1.2527**	**1.1824**	**2.3300e-003**	**0.9692**	**0.0576**	**1.0268**	**0.1468**	**0.0535**	**0.2003**	**0.0000**	**203.9760**	**203.9760**	**0.0571**	**0.0000**	**205.4028**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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	9.3900e-003	0.6175	0.1596	2.5800e-003	0.0771	3.7200e-003	0.0808	0.0212	3.5600e-003	0.0247	0.0000	257.5197	257.5197	0.0145	0.0409	270.0738
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	2.6600e-003	2.0200e-003	0.0285	8.0000e-005	9.8600e-003	6.0000e-005	9.9200e-003	2.6200e-003	5.0000e-005	2.6700e-003	0.0000	7.6282	7.6282	1.9000e-004	1.9000e-004	7.6896
Total	**0.0121**	**0.6195**	**0.1881**	**2.6600e-003**	**0.0869**	**3.7800e-003**	**0.0907**	**0.0238**	**3.6100e-003**	**0.0274**	**0.0000**	**265.1479**	**265.1479**	**0.0147**	**0.0411**	**277.7633**

3.3 Grading - 2024

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					0.3958	0.0000	0.3958	0.1571	0.0000	0.1571	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1384	1.3922	1.1921	2.6700e-003		0.0574	0.0574		0.0528	0.0528	0.0000	234.4340	234.4340	0.0758	0.0000	236.3295
Total	**0.1384**	**1.3922**	**1.1921**	**2.6700e-003**	**0.3958**	**0.0574**	**0.4532**	**0.1571**	**0.0528**	**0.2099**	**0.0000**	**234.4340**	**234.4340**	**0.0758**	**0.0000**	**236.3295**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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	6.2700e-003	0.4124	0.1066	1.7200e-003	0.0515	2.4800e-003	0.0540	0.0141	2.3800e-003	0.0165	0.0000	172.0152	172.0152	9.6900e-003	0.0273	180.4010
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	2.5500e-003	1.9300e-003	0.0273	8.0000e-005	9.4200e-003	6.0000e-005	9.4800e-003	2.5000e-003	5.0000e-005	2.5500e-003	0.0000	7.2892	7.2892	1.8000e-004	1.8000e-004	7.3478
Total	**8.8200e-003**	**0.4144**	**0.1338**	**1.8000e-003**	**0.0609**	**2.5400e-003**	**0.0634**	**0.0166**	**2.4300e-003**	**0.0191**	**0.0000**	**179.3044**	**179.3044**	**9.8700e-003**	**0.0275**	**187.7488**

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					0.3958	0.0000	0.3958	0.1571	0.0000	0.1571	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1384	1.3922	1.1921	2.6700e-003		0.0574	0.0574		0.0528	0.0528	0.0000	234.4337	234.4337	0.0758	0.0000	236.3292
Total	**0.1384**	**1.3922**	**1.1921**	**2.6700e-003**	**0.3958**	**0.0574**	**0.4532**	**0.1571**	**0.0528**	**0.2099**	**0.0000**	**234.4337**	**234.4337**	**0.0758**	**0.0000**	**236.3292**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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	6.2700e-003	0.4124	0.1066	1.7200e-003	0.0515	2.4800e-003	0.0540	0.0141	2.3800e-003	0.0165	0.0000	172.0152	172.0152	9.6900e-003	0.0273	180.4010
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	2.5500e-003	1.9300e-003	0.0273	8.0000e-005	9.4200e-003	6.0000e-005	9.4800e-003	2.5000e-003	5.0000e-005	2.5500e-003	0.0000	7.2892	7.2892	1.8000e-004	1.8000e-004	7.3478
Total	**8.8200e-003**	**0.4144**	**0.1338**	**1.8000e-003**	**0.0609**	**2.5400e-003**	**0.0634**	**0.0166**	**2.4300e-003**	**0.0191**	**0.0000**	**179.3044**	**179.3044**	**9.8700e-003**	**0.0275**	**187.7488**

3.4 Building Construction - 2025

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	0.0903	0.8230	1.0616	1.7800e-003		0.0348	0.0348		0.0328	0.0328	0.0000	153.0668	153.0668	0.0360	0.0000	153.9664
Total	**0.0903**	**0.8230**	**1.0616**	**1.7800e-003**		**0.0348**	**0.0348**		**0.0328**	**0.0328**	**0.0000**	**153.0668**	**153.0668**	**0.0360**	**0.0000**	**153.9664**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	0.0110	0.4164	0.1502	1.8600e-003	0.0653	2.0200e-003	0.0673	0.0189	1.9400e-003	0.0208	0.0000	182.2387	182.2387	6.3700e-003	0.0263	190.2261
Worker	0.1349	0.0983	1.4361	4.3500e-003	0.5337	2.9800e-003	0.5367	0.1418	2.7500e-003	0.1445	0.0000	398.8114	398.8114	9.2300e-003	9.6000e-003	401.9022
Total	**0.1459**	**0.5147**	**1.5863**	**6.2100e-003**	**0.5991**	**5.0000e-003**	**0.6041**	**0.1606**	**4.6900e-003**	**0.1653**	**0.0000**	**581.0501**	**581.0501**	**0.0156**	**0.0359**	**592.1283**

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	0.0903	0.8230	1.0616	1.7800e-003		0.0348	0.0348		0.0328	0.0328	0.0000	153.0667	153.0667	0.0360	0.0000	153.9662
Total	**0.0903**	**0.8230**	**1.0616**	**1.7800e-003**		**0.0348**	**0.0348**		**0.0328**	**0.0328**	**0.0000**	**153.0667**	**153.0667**	**0.0360**	**0.0000**	**153.9662**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	0.0110	0.4164	0.1502	1.8600e-003	0.0653	2.0200e-003	0.0673	0.0189	1.9400e-003	0.0208	0.0000	182.2387	182.2387	6.3700e-003	0.0263	190.2261
Worker	0.1349	0.0983	1.4361	4.3500e-003	0.5337	2.9800e-003	0.5367	0.1418	2.7500e-003	0.1445	0.0000	398.8114	398.8114	9.2300e-003	9.6000e-003	401.9022
Total	**0.1459**	**0.5147**	**1.5863**	**6.2100e-003**	**0.5991**	**5.0000e-003**	**0.6041**	**0.1606**	**4.6900e-003**	**0.1653**	**0.0000**	**581.0501**	**581.0501**	**0.0156**	**0.0359**	**592.1283**

3.4 Building Construction - 2026

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	0.0150	0.1372	0.1769	3.0000e-004		5.8000e-003	5.8000e-003		5.4600e-003	5.4600e-003	0.0000	25.5111	25.5111	6.0000e-003	0.0000	25.6611
Total	**0.0150**	**0.1372**	**0.1769**	**3.0000e-004**		**5.8000e-003**	**5.8000e-003**		**5.4600e-003**	**5.4600e-003**	**0.0000**	**25.5111**	**25.5111**	**6.0000e-003**	**0.0000**	**25.6611**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.7900e-003	0.0689	0.0247	3.0000e-004	0.0109	3.4000e-004	0.0112	3.1400e-003	3.2000e-004	3.4600e-003	0.0000	29.8098	29.8098	1.0700e-003	4.3000e-003	31.1176
Worker	0.0212	0.0149	0.2245	7.0000e-004	0.0890	4.7000e-004	0.0894	0.0236	4.3000e-004	0.0241	0.0000	64.4483	64.4483	1.4000e-003	1.5100e-003	64.9323
Total	**0.0230**	**0.0837**	**0.2492**	**1.0000e-003**	**0.0998**	**8.1000e-004**	**0.1007**	**0.0268**	**7.5000e-004**	**0.0275**	**0.0000**	**94.2581**	**94.2581**	**2.4700e-003**	**5.8100e-003**	**96.0499**

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	0.0150	0.1372	0.1769	3.0000e-004		5.8000e-003	5.8000e-003		5.4600e-003	5.4600e-003	0.0000	25.5111	25.5111	6.0000e-003	0.0000	25.6610
Total	**0.0150**	**0.1372**	**0.1769**	**3.0000e-004**		**5.8000e-003**	**5.8000e-003**		**5.4600e-003**	**5.4600e-003**	**0.0000**	**25.5111**	**25.5111**	**6.0000e-003**	**0.0000**	**25.6610**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.7900e-003	0.0689	0.0247	3.0000e-004	0.0109	3.4000e-004	0.0112	3.1400e-003	3.2000e-004	3.4600e-003	0.0000	29.8098	29.8098	1.0700e-003	4.3000e-003	31.1176
Worker	0.0212	0.0149	0.2245	7.0000e-004	0.0890	4.7000e-004	0.0894	0.0236	4.3000e-004	0.0241	0.0000	64.4483	64.4483	1.4000e-003	1.5100e-003	64.9323
Total	**0.0230**	**0.0837**	**0.2492**	**1.0000e-003**	**0.0998**	**8.1000e-004**	**0.1007**	**0.0268**	**7.5000e-004**	**0.0275**	**0.0000**	**94.2581**	**94.2581**	**2.4700e-003**	**5.8100e-003**	**96.0499**

3.5 Paving - 2025

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	0.0700	0.6565	1.1152	1.7400e-003		0.0320	0.0320		0.0295	0.0295	0.0000	153.1473	153.1473	0.0495	0.0000	154.3856
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0700**	**0.6565**	**1.1152**	**1.7400e-003**		**0.0320**	**0.0320**		**0.0295**	**0.0295**	**0.0000**	**153.1473**	**153.1473**	**0.0495**	**0.0000**	**154.3856**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	3.1800e-003	2.3100e-003	0.0338	1.0000e-004	0.0126	7.0000e-005	0.0126	3.3400e-003	6.0000e-005	3.4000e-003	0.0000	9.3955	9.3955	2.2000e-004	2.3000e-004	9.4683
Total	**3.1800e-003**	**2.3100e-003**	**0.0338**	**1.0000e-004**	**0.0126**	**7.0000e-005**	**0.0126**	**3.3400e-003**	**6.0000e-005**	**3.4000e-003**	**0.0000**	**9.3955**	**9.3955**	**2.2000e-004**	**2.3000e-004**	**9.4683**

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	0.0700	0.6565	1.1152	1.7400e-003		0.0320	0.0320		0.0295	0.0295	0.0000	153.1471	153.1471	0.0495	0.0000	154.3854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0700**	**0.6565**	**1.1152**	**1.7400e-003**		**0.0320**	**0.0320**		**0.0295**	**0.0295**	**0.0000**	**153.1471**	**153.1471**	**0.0495**	**0.0000**	**154.3854**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	3.1800e-003	2.3100e-003	0.0338	1.0000e-004	0.0126	7.0000e-005	0.0126	3.3400e-003	6.0000e-005	3.4000e-003	0.0000	9.3955	9.3955	2.2000e-004	2.3000e-004	9.4683
Total	**3.1800e-003**	**2.3100e-003**	**0.0338**	**1.0000e-004**	**0.0126**	**7.0000e-005**	**0.0126**	**3.3400e-003**	**6.0000e-005**	**3.4000e-003**	**0.0000**	**9.3955**	**9.3955**	**2.2000e-004**	**2.3000e-004**	**9.4683**

3.5 Paving - 2026

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	0.0101	0.0944	0.1604	2.5000e-004		4.6000e-003	4.6000e-003		4.2400e-003	4.2400e-003	0.0000	22.0212	22.0212	7.1200e-003	0.0000	22.1992
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0101**	**0.0944**	**0.1604**	**2.5000e-004**		**4.6000e-003**	**4.6000e-003**		**4.2400e-003**	**4.2400e-003**	**0.0000**	**22.0212**	**22.0212**	**7.1200e-003**	**0.0000**	**22.1992**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	4.3000e-004	3.0000e-004	4.5600e-003	1.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3099	1.3099	3.0000e-005	3.0000e-005	1.3198
Total	**4.3000e-004**	**3.0000e-004**	**4.5600e-003**	**1.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3099**	**1.3099**	**3.0000e-005**	**3.0000e-005**	**1.3198**

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	0.0101	0.0944	0.1604	2.5000e-004		4.6000e-003	4.6000e-003		4.2400e-003	4.2400e-003	0.0000	22.0212	22.0212	7.1200e-003	0.0000	22.1992
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0101**	**0.0944**	**0.1604**	**2.5000e-004**		**4.6000e-003**	**4.6000e-003**		**4.2400e-003**	**4.2400e-003**	**0.0000**	**22.0212**	**22.0212**	**7.1200e-003**	**0.0000**	**22.1992**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	4.3000e-004	3.0000e-004	4.5600e-003	1.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3099	1.3099	3.0000e-005	3.0000e-005	1.3198
Total	**4.3000e-004**	**3.0000e-004**	**4.5600e-003**	**1.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3099**	**1.3099**	**3.0000e-005**	**3.0000e-005**	**1.3198**

3.6 Architectural Coating - 2026

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					
Archit. Coating	3.7900					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4300e-003	0.0498	0.0787	1.3000e-004		2.2400e-003	2.2400e-003		2.2400e-003	2.2400e-003	0.0000	11.1067	11.1067	6.1000e-004	0.0000	11.1218
Total	**3.7975**	**0.0498**	**0.0787**	**1.3000e-004**		**2.2400e-003**	**2.2400e-003**		**2.2400e-003**	**2.2400e-003**	**0.0000**	**11.1067**	**11.1067**	**6.1000e-004**	**0.0000**	**11.1218**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	0.0168	0.0118	0.1781	5.6000e-004	0.0706	3.7000e-004	0.0709	0.0187	3.4000e-004	0.0191	0.0000	51.1109	51.1109	1.1100e-003	1.2000e-003	51.4947
Total	**0.0168**	**0.0118**	**0.1781**	**5.6000e-004**	**0.0706**	**3.7000e-004**	**0.0709**	**0.0187**	**3.4000e-004**	**0.0191**	**0.0000**	**51.1109**	**51.1109**	**1.1100e-003**	**1.2000e-003**	**51.4947**

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	3.7900					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4300e-003	0.0498	0.0787	1.3000e-004		2.2400e-003	2.2400e-003		2.2400e-003	2.2400e-003	0.0000	11.1066	11.1066	6.1000e-004	0.0000	11.1218
Total	**3.7975**	**0.0498**	**0.0787**	**1.3000e-004**		**2.2400e-003**	**2.2400e-003**		**2.2400e-003**	**2.2400e-003**	**0.0000**	**11.1066**	**11.1066**	**6.1000e-004**	**0.0000**	**11.1218**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	0.0168	0.0118	0.1781	5.6000e-004	0.0706	3.7000e-004	0.0709	0.0187	3.4000e-004	0.0191	0.0000	51.1109	51.1109	1.1100e-003	1.2000e-003	51.4947
Total	**0.0168**	**0.0118**	**0.1781**	**5.6000e-004**	**0.0706**	**3.7000e-004**	**0.0709**	**0.0187**	**3.4000e-004**	**0.0191**	**0.0000**	**51.1109**	**51.1109**	**1.1100e-003**	**1.2000e-003**	**51.4947**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Norwalk Transit Village - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	3.1414	3.2032	29.4750	0.0619	6.9137	0.0457	6.9594	1.8446	0.0424	1.8871	0.0000	5,731.7305	5,731.7305	0.4264	0.2637	5,820.9581
Unmitigated	3.1414	3.2032	29.4750	0.0619	6.9137	0.0457	6.9594	1.8446	0.0424	1.8871	0.0000	5,731.7305	5,731.7305	0.4264	0.2637	5,820.9581

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,281.50	2,281.50	2281.50	7,796,232	7,796,232
City Park	91.01	91.01	91.01	261,876	261,876
Condo/Townhouse	174.00	174.00	174.00	594,584	594,584
Hotel	702.00	702.00	702.00	1,675,092	1,675,092
Strip Mall	4,242.34	4,242.34	4242.34	8,071,455	8,071,455
Total	7,490.85	7,490.85	7,490.85	18,399,239	18,399,239

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Hotel	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Strip Mall	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,015.0184	1,015.0184	0.0857	0.0104	1,020.2547
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,015.0184	1,015.0184	0.0857	0.0104	1,020.2547
NaturalGas Mitigated	0.0849	0.7410	0.4232	4.6300e-003		0.0587	0.0587		0.0587	0.0587	0.0000	840.0880	840.0880	0.0161	0.0154	845.0802
NaturalGas Unmitigated	0.0849	0.7410	0.4232	4.6300e-003		0.0587	0.0587		0.0587	0.0587	0.0000	840.0880	840.0880	0.0161	0.0154	845.0802

Norwalk Transit Village - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	8.49328e+006	0.0458	0.3914	0.1665	2.5000e-003		0.0316	0.0316		0.0316	0.0316	0.0000	453.2340	453.2340	8.6900e-003	8.3100e-003	455.9273
City Park	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
Condo/Townhouse	1.93945e+006	0.0105	0.0894	0.0380	5.7000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	103.4963	103.4963	1.9800e-003	1.9000e-003	104.1113
Hotel	5.17928e+006	0.0279	0.2539	0.2133	1.5200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.3863	276.3863	5.3000e-003	5.0700e-003	278.0287
Strip Mall	130640	7.0000e-004	6.4000e-003	5.3800e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	6.9714	6.9714	1.3000e-004	1.3000e-004	7.0129
Total		**0.0849**	**0.7410**	**0.4232**	**4.6300e-003**		**0.0587**	**0.0587**		**0.0587**	**0.0587**	**0.0000**	**840.0880**	**840.0880**	**0.0161**	**0.0154**	**845.0802**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	8.49328e+006	0.0458	0.3914	0.1665	2.5000e-003		0.0316	0.0316		0.0316	0.0316	0.0000	453.2340	453.2340	8.6900e-003	8.3100e-003	455.9273
City Park	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
Condo/Townhouse	1.93945e+006	0.0105	0.0894	0.0380	5.7000e-004		7.2300e-003	7.2300e-003		7.2300e-003	7.2300e-003	0.0000	103.4963	103.4963	1.9800e-003	1.9000e-003	104.1113
Hotel	5.17928e+006	0.0279	0.2539	0.2133	1.5200e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.3863	276.3863	5.3000e-003	5.0700e-003	278.0287
Strip Mall	130640	7.0000e-004	6.4000e-003	5.3800e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	6.9714	6.9714	1.3000e-004	1.3000e-004	7.0129
Total		**0.0849**	**0.7410**	**0.4232**	**4.6300e-003**		**0.0587**	**0.0587**		**0.0587**	**0.0587**	**0.0000**	**840.0880**	**840.0880**	**0.0161**	**0.0154**	**845.0802**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.50208e+006	443.7323	0.0375	4.5400e-003	446.0214
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	581677	103.1579	8.7100e-003	1.0600e-003	103.6900
Hotel	1.59212e+006	282.3550	0.0238	2.8900e-003	283.8117
Strip Mall	1.04752e+006	185.7732	0.0157	1.9000e-003	186.7316
Total		**1,015.0184**	**0.0857**	**0.0104**	**1,020.2547**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.50208e+006	443.7323	0.0375	4.5400e-003	446.0214
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	581677	103.1579	8.7100e-003	1.0600e-003	103.6900
Hotel	1.59212e+006	282.3550	0.0238	2.8900e-003	283.8117
Strip Mall	1.04752e+006	185.7732	0.0157	1.9000e-003	186.7316
Total		**1,015.0184**	**0.0857**	**0.0104**	**1,020.2547**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	4.4948	0.2349	7.9973	1.3400e-003		0.0556	0.0556		0.0556	0.0556	0.0000	179.1518	179.1518	0.0156	3.0500e-003	180.4502
Unmitigated	4.5353	0.2409	8.3649	2.5300e-003		0.1156	0.1156		0.1156	0.1156	8.0308	179.1518	187.1826	0.0532	3.0500e-003	189.4196

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	0.3790					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8605					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0573	0.1495	0.4287	2.1200e-003		0.0716	0.0716		0.0716	0.0716	8.0308	166.1749	174.2057	0.0407	3.0500e-003	176.1318
Landscaping	0.2385	0.0914	7.9362	4.2000e-004		0.0440	0.0440		0.0440	0.0440	0.0000	12.9769	12.9769	0.0124	0.0000	13.2878
Total	**4.5353**	**0.2409**	**8.3649**	**2.5400e-003**		**0.1156**	**0.1156**		**0.1156**	**0.1156**	**8.0308**	**179.1518**	**187.1826**	**0.0532**	**3.0500e-003**	**189.4196**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.3790					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.8605					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0168	0.1435	0.0611	9.2000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	166.1749	166.1749	3.1900e-003	3.0500e-003	167.1624
Landscaping	0.2385	0.0914	7.9362	4.2000e-004		0.0440	0.0440		0.0440	0.0440	0.0000	12.9769	12.9769	0.0124	0.0000	13.2878
Total	**4.4948**	**0.2349**	**7.9973**	**1.3400e-003**		**0.0556**	**0.0556**		**0.0556**	**0.0556**	**0.0000**	**179.1518**	**179.1518**	**0.0156**	**3.0500e-003**	**180.4502**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	236.1710	1.9705	0.0483	299.8323
Unmitigated	236.1710	1.9705	0.0483	299.8323

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	42.3501 / 26.699	163.8366	1.3927	0.0341	208.8221
City Park	0 / 4.31316	8.4983	7.2000e-004	9.0000e-005	8.5421
Condo/Townhouse	7.81848 / 4.92904	30.2468	0.2571	6.3000e-003	38.5518
Hotel	3.80502 / 0.422779	10.8268	0.1248	3.0300e-003	14.8485
Strip Mall	5.93691 / 3.63875	22.7626	0.1952	4.7800e-003	29.0679
Total		**236.1709**	**1.9705**	**0.0483**	**299.8323**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	42.3501 / 26.699	163.8366	1.3927	0.0341	208.8221
City Park	0 / 4.31316	8.4983	7.2000e-004	9.0000e-005	8.5421
Condo/Townhouse	7.81848 / 4.92904	30.2468	0.2571	6.3000e-003	38.5518
Hotel	3.80502 / 0.422779	10.8268	0.1248	3.0300e-003	14.8485
Strip Mall	5.93691 / 3.63875	22.7626	0.1952	4.7800e-003	29.0679
Total		**236.1709**	**1.9705**	**0.0483**	**299.8323**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	105.7177	6.2477	0.0000	261.9111
Unmitigated	105.7177	6.2477	0.0000	261.9111

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	299	60.6943	3.5869	0.0000	150.3676
City Park	0.31	0.0629	3.7200e-003	0.0000	0.1559
Condo/Townhouse	55.2	11.2051	0.6622	0.0000	27.7602
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Strip Mall	84.16	17.0837	1.0096	0.0000	42.3242
Total		**105.7177**	**6.2477**	**0.0000**	**261.9111**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	299	60.6943	3.5869	0.0000	150.3676
City Park	0.31	0.0629	3.7200e-003	0.0000	0.1559
Condo/Townhouse	55.2	11.2051	0.6622	0.0000	27.7602
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Strip Mall	84.16	17.0837	1.0096	0.0000	42.3242
Total		**105.7177**	**6.2477**	**0.0000**	**261.9111**

9.0 Operational Offroad

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

10.0 Stationary Equipment

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Norwalk Transit Village

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.62	Acre	3.62	157,687.20	0
Hotel	150.00	Room	5.00	217,800.00	0
Apartments Mid Rise	650.00	Dwelling Unit	17.11	650,000.00	1859
Condo/Townhouse	120.00	Dwelling Unit	7.50	120,000.00	343
Strip Mall	80.15	1000sqft	1.84	80,147.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - Consistent with the DEIR's model.

Construction Phase - Consistent with the DEIR's model.

Grading - Consistent with the DEIR's model.

Demolition - Consistent with the DEIR's model.

Architectural Coating - See SWAPE comment regarding architectural and area coating emission factors.

Vehicle Trips - Consistent with the DEIR's model.

Woodstoves - Consistent with the DEIR's model.

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Area Coating - See SWAPE comment regarding architectural and area coating emission factors.

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

Area Mitigation - See SWAPE comment regarding area-related mitigation.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	55.00	87.00
tblConstructionPhase	NumDays	740.00	154.00
tblConstructionPhase	NumDays	50.00	120.00
tblConstructionPhase	NumDays	75.00	86.00
tblConstructionPhase	NumDays	55.00	175.00
tblConstructionPhase	PhaseEndDate	1/6/2028	6/30/2026
tblConstructionPhase	PhaseEndDate	8/5/2027	1/30/2026
tblConstructionPhase	PhaseEndDate	5/9/2024	8/15/2024
tblConstructionPhase	PhaseEndDate	10/3/2024	12/12/2024
tblConstructionPhase	PhaseEndDate	10/21/2027	1/30/2026
tblConstructionPhase	PhaseStartDate	10/22/2027	3/1/2026
tblConstructionPhase	PhaseStartDate	10/4/2024	7/1/2025
tblConstructionPhase	PhaseStartDate	6/21/2024	8/15/2024
tblConstructionPhase	PhaseStartDate	8/6/2027	6/1/2025
tblFireplaces	NumberGas	552.50	585.00
tblFireplaces	NumberGas	102.00	107.00
tblFireplaces	NumberWood	32.50	0.00
tblFireplaces	NumberWood	6.00	0.00
tblGrading	MaterialImported	0.00	60,510.00
tblLandUse	LandUseSquareFeet	80,150.00	80,147.00
tblVehicleTrips	ST_TR	4.91	3.51
tblVehicleTrips	ST_TR	1.96	25.14
tblVehicleTrips	ST_TR	8.14	1.45
tblVehicleTrips	ST_TR	8.19	4.68

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	ST_TR	42.04	52.93
tblVehicleTrips	SU_TR	4.09	3.51
tblVehicleTrips	SU_TR	2.19	25.14
tblVehicleTrips	SU_TR	6.28	1.45
tblVehicleTrips	SU_TR	5.95	4.68
tblVehicleTrips	SU_TR	20.43	52.93
tblVehicleTrips	WD_TR	5.44	3.51
tblVehicleTrips	WD_TR	0.78	25.14
tblVehicleTrips	WD_TR	7.32	1.45
tblVehicleTrips	WD_TR	8.36	4.68
tblVehicleTrips	WD_TR	44.32	52.93
tblWoodstoves	NumberCatalytic	32.50	0.00
tblWoodstoves	NumberNoncatalytic	32.50	0.00

2.0 Emissions Summary

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2024	5.8769	72.1913	53.7170	0.1873	28.2729	2.4175	30.6904	6.8955	2.2373	9.1327	0.0000	19,233.9284	19,233.9284	3.5156	1.4589	19,756.5818
2025	4.5515	28.4077	56.4239	0.1479	9.4224	1.0228	10.4453	2.5217	0.9530	3.4748	0.0000	14,872.5331	14,872.5331	1.5761	0.5890	15,087.4570
2026	87.6858	28.2391	54.9274	0.1452	9.4225	1.0203	10.4428	2.5218	0.9507	3.4725	0.0000	14,600.8110	14,600.8110	1.5624	0.5724	14,810.4538
Maximum	**87.6858**	**72.1913**	**56.4239**	**0.1873**	**28.2729**	**2.4175**	**30.6904**	**6.8955**	**2.2373**	**9.1327**	**0.0000**	**19,233.9284**	**19,233.9284**	**3.5156**	**1.4589**	**19,756.5818**

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					
2024	5.8769	72.1913	53.7170	0.1873	28.2729	2.4175	30.6904	6.8955	2.2373	9.1327	0.0000	19,233.9284	19,233.9284	3.5156	1.4589	19,756.5818
2025	4.5515	28.4077	56.4239	0.1479	9.4224	1.0228	10.4453	2.5217	0.9530	3.4748	0.0000	14,872.5331	14,872.5331	1.5761	0.5890	15,087.4570
2026	87.6858	28.2391	54.9274	0.1452	9.4225	1.0203	10.4428	2.5218	0.9507	3.4725	0.0000	14,600.8110	14,600.8110	1.5624	0.5724	14,810.4538
Maximum	**87.6858**	**72.1913**	**56.4239**	**0.1873**	**28.2729**	**2.4175**	**30.6904**	**6.8955**	**2.2373**	**9.1327**	**0.0000**	**19,233.9284**	**19,233.9284**	**3.5156**	**1.4589**	**19,756.5818**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	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

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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										lb/day					
Area	29.7199	12.6901	97.7865	0.1726		6.0784	6.0784		6.0784	6.0784	708.1966	14,768.5541	15,476.7507	3.7012	0.2687	15,649.3414
Energy	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
Mobile	18.0136	16.1293	162.2189	0.3514	38.7427	0.2514	38.9940	10.3208	0.2334	10.5542		35,840.4024	35,840.4024	2.5112	1.5235	36,357.1877
Total	**48.1986**	**32.8798**	**262.3243**	**0.5494**	**38.7427**	**6.6511**	**45.3938**	**10.3208**	**6.6332**	**16.9539**	**708.1966**	**55,683.1400**	**56,391.3366**	**6.3096**	**1.8852**	**57,110.8660**

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										lb/day					
Area	26.4812	12.2103	68.3743	0.0766		1.2803	1.2803		1.2803	1.2803	0.0000	14,768.5541	14,768.5541	0.3905	0.2687	14,858.3779
Energy	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
Mobile	18.0136	16.1293	162.2189	0.3514	38.7427	0.2514	38.9940	10.3208	0.2334	10.5542		35,840.4024	35,840.4024	2.5112	1.5235	36,357.1877
Total	**44.9599**	**32.4000**	**232.9121**	**0.4534**	**38.7427**	**1.8531**	**40.5957**	**10.3208**	**1.8351**	**12.1558**	**0.0000**	**55,683.1400**	**55,683.1400**	**2.9990**	**1.8852**	**56,319.9025**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	CO2e
Percent Reduction	6.72	1.46	11.21	17.47	0.00	72.14	10.57	0.00	72.33	28.30	100.00	0.00	1.26	52.47	0.00	1.38

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	3/1/2024	8/15/2024	5	120	
2	Grading	Grading	8/15/2024	12/12/2024	5	86	
3	Building Construction	Building Construction	7/1/2025	1/30/2026	5	154	
4	Paving	Paving	6/1/2025	1/30/2026	5	175	
5	Architectural Coating	Architectural Coating	3/1/2026	6/30/2026	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 258

Acres of Paving: 0

Residential Indoor: 1,559,250; Residential Outdoor: 519,750; Non-Residential Indoor: 446,921; Non-Residential Outdoor: 148,974; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

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	6	15.00	0.00	8,957.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	5,983.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	738.00	157.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	148.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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					16.1538	0.0000	16.1538	2.4458	0.0000	2.4458			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**16.1538**	**0.9602**	**17.1139**	**2.4458**	**0.8922**	**3.3380**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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	0.1608	9.7650	2.6456	0.0430	1.3066	0.0619	1.3685	0.3582	0.0593	0.4175		4,728.9932	4,728.9932	0.2668	0.7512	4,959.5315
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	0.0447	0.0299	0.5037	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.2055**	**9.7949**	**3.1494**	**0.0444**	**1.4742**	**0.0629**	**1.5371**	**0.4027**	**0.0601**	**0.4628**		**4,874.7527**	**4,874.7527**	**0.2702**	**0.7545**	**5,106.3360**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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					16.1538	0.0000	16.1538	2.4458	0.0000	2.4458			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**16.1538**	**0.9602**	**17.1139**	**2.4458**	**0.8922**	**3.3380**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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	0.1608	9.7650	2.6456	0.0430	1.3066	0.0619	1.3685	0.3582	0.0593	0.4175		4,728.9932	4,728.9932	0.2668	0.7512	4,959.5315
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	0.0447	0.0299	0.5037	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.2055**	**9.7949**	**3.1494**	**0.0444**	**1.4742**	**0.0629**	**1.5371**	**0.4027**	**0.0601**	**0.4628**		**4,874.7527**	**4,874.7527**	**0.2702**	**0.7545**	**5,106.3360**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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	0.1499	9.1015	2.4659	0.0401	1.2178	0.0577	1.2755	0.3339	0.0552	0.3891		4,407.6583	4,407.6583	0.2487	0.7002	4,622.5315
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	0.0596	0.0398	0.6717	1.9200e-003	0.2236	1.2900e-003	0.2248	0.0593	1.1900e-003	0.0605		194.3460	194.3460	4.5600e-003	4.2900e-003	195.7393
Total	**0.2095**	**9.1413**	**3.1375**	**0.0420**	**1.4414**	**0.0590**	**1.5004**	**0.3932**	**0.0564**	**0.4496**		**4,602.0043**	**4,602.0043**	**0.2532**	**0.7045**	**4,818.2708**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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	0.1499	9.1015	2.4659	0.0401	1.2178	0.0577	1.2755	0.3339	0.0552	0.3891		4,407.6583	4,407.6583	0.2487	0.7002	4,622.5315
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	0.0596	0.0398	0.6717	1.9200e-003	0.2236	1.2900e-003	0.2248	0.0593	1.1900e-003	0.0605		194.3460	194.3460	4.5600e-003	4.2900e-003	195.7393
Total	**0.2095**	**9.1413**	**3.1375**	**0.0420**	**1.4414**	**0.0590**	**1.5004**	**0.3932**	**0.0564**	**0.4496**		**4,602.0043**	**4,602.0043**	**0.2532**	**0.7045**	**4,818.2708**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1703	6.0099	2.2429	0.0282	1.0057	0.0306	1.0363	0.2896	0.0293	0.3188		3,041.4493	3,041.4493	0.1065	0.4381	3,174.6506
Worker	2.0568	1.3197	23.0499	0.0685	8.2491	0.0452	8.2943	2.1877	0.0416	2.2293		6,927.0701	6,927.0701	0.1518	0.1480	6,974.9532
Total	**2.2272**	**7.3296**	**25.2928**	**0.0967**	**9.2548**	**0.0758**	**9.3306**	**2.4773**	**0.0709**	**2.5482**		**9,968.5195**	**9,968.5195**	**0.2583**	**0.5860**	**10,149.6038**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1703	6.0099	2.2429	0.0282	1.0057	0.0306	1.0363	0.2896	0.0293	0.3188		3,041.4493	3,041.4493	0.1065	0.4381	3,174.6506
Worker	2.0568	1.3197	23.0499	0.0685	8.2491	0.0452	8.2943	2.1877	0.0416	2.2293		6,927.0701	6,927.0701	0.1518	0.1480	6,974.9532
Total	**2.2272**	**7.3296**	**25.2928**	**0.0967**	**9.2548**	**0.0758**	**9.3306**	**2.4773**	**0.0709**	**2.5482**		**9,968.5195**	**9,968.5195**	**0.2583**	**0.5860**	**10,149.6038**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1660	5.9659	2.2110	0.0277	1.0057	0.0305	1.0362	0.2896	0.0292	0.3188		2,985.0006	2,985.0006	0.1072	0.4302	3,115.8671
Worker	1.9339	1.1976	21.6145	0.0664	8.2491	0.0429	8.2920	2.1877	0.0395	2.2272		6,716.0851	6,716.0851	0.1378	0.1394	6,761.0805
Total	**2.0999**	**7.1634**	**23.8255**	**0.0941**	**9.2548**	**0.0734**	**9.3282**	**2.4773**	**0.0686**	**2.5459**		**9,701.0857**	**9,701.0857**	**0.2450**	**0.5696**	**9,876.9476**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1660	5.9659	2.2110	0.0277	1.0057	0.0305	1.0362	0.2896	0.0292	0.3188		2,985.0006	2,985.0006	0.1072	0.4302	3,115.8671
Worker	1.9339	1.1976	21.6145	0.0664	8.2491	0.0429	8.2920	2.1877	0.0395	2.2272		6,716.0851	6,716.0851	0.1378	0.1394	6,761.0805
Total	**2.0999**	**7.1634**	**23.8255**	**0.0941**	**9.2548**	**0.0734**	**9.3282**	**2.4773**	**0.0686**	**2.5459**		**9,701.0857**	**9,701.0857**	**0.2450**	**0.5696**	**9,876.9476**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0418	0.0268	0.4685	1.3900e-003	0.1677	9.2000e-004	0.1686	0.0445	8.5000e-004	0.0453		140.7941	140.7941	3.0900e-003	3.0100e-003	141.7673
Total	**0.0418**	**0.0268**	**0.4685**	**1.3900e-003**	**0.1677**	**9.2000e-004**	**0.1686**	**0.0445**	**8.5000e-004**	**0.0453**		**140.7941**	**140.7941**	**3.0900e-003**	**3.0100e-003**	**141.7673**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0418	0.0268	0.4685	1.3900e-003	0.1677	9.2000e-004	0.1686	0.0445	8.5000e-004	0.0453		140.7941	140.7941	3.0900e-003	3.0100e-003	141.7673
Total	**0.0418**	**0.0268**	**0.4685**	**1.3900e-003**	**0.1677**	**9.2000e-004**	**0.1686**	**0.0445**	**8.5000e-004**	**0.0453**		**140.7941**	**140.7941**	**3.0900e-003**	**3.0100e-003**	**141.7673**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0393	0.0243	0.4393	1.3500e-003	0.1677	8.7000e-004	0.1685	0.0445	8.0000e-004	0.0453		136.5058	136.5058	2.8000e-003	2.8300e-003	137.4203
Total	**0.0393**	**0.0243**	**0.4393**	**1.3500e-003**	**0.1677**	**8.7000e-004**	**0.1685**	**0.0445**	**8.0000e-004**	**0.0453**		**136.5058**	**136.5058**	**2.8000e-003**	**2.8300e-003**	**137.4203**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0393	0.0243	0.4393	1.3500e-003	0.1677	8.7000e-004	0.1685	0.0445	8.0000e-004	0.0453		136.5058	136.5058	2.8000e-003	2.8300e-003	137.4203
Total	**0.0393**	**0.0243**	**0.4393**	**1.3500e-003**	**0.1677**	**8.7000e-004**	**0.1685**	**0.0445**	**8.0000e-004**	**0.0453**		**136.5058**	**136.5058**	**2.8000e-003**	**2.8300e-003**	**137.4203**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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					
Archit. Coating	87.1271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**87.2979**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	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	0.3878	0.2402	4.3346	0.0133	1.6543	8.6000e-003	1.6629	0.4387	7.9100e-003	0.4466		1,346.8572	1,346.8572	0.0276	0.0280	1,355.8807
Total	**0.3878**	**0.2402**	**4.3346**	**0.0133**	**1.6543**	**8.6000e-003**	**1.6629**	**0.4387**	**7.9100e-003**	**0.4466**		**1,346.8572**	**1,346.8572**	**0.0276**	**0.0280**	**1,355.8807**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	87.1271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**87.2979**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	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	0.3878	0.2402	4.3346	0.0133	1.6543	8.6000e-003	1.6629	0.4387	7.9100e-003	0.4466		1,346.8572	1,346.8572	0.0276	0.0280	1,355.8807
Total	**0.3878**	**0.2402**	**4.3346**	**0.0133**	**1.6543**	**8.6000e-003**	**1.6629**	**0.4387**	**7.9100e-003**	**0.4466**		**1,346.8572**	**1,346.8572**	**0.0276**	**0.0280**	**1,355.8807**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	18.0136	16.1293	162.2189	0.3514	38.7427	0.2514	38.9940	10.3208	0.2334	10.5542		35,840.4024	35,840.4024	2.5112	1.5235	36,357.1877
Unmitigated	18.0136	16.1293	162.2189	0.3514	38.7427	0.2514	38.9940	10.3208	0.2334	10.5542		35,840.4024	35,840.4024	2.5112	1.5235	36,357.1877

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,281.50	2,281.50	2281.50	7,796,232	7,796,232
City Park	91.01	91.01	91.01	261,876	261,876
Condo/Townhouse	174.00	174.00	174.00	594,584	594,584
Hotel	702.00	702.00	702.00	1,675,092	1,675,092
Strip Mall	4,242.34	4,242.34	4242.34	8,071,455	8,071,455
Total	7,490.85	7,490.85	7,490.85	18,399,239	18,399,239

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Hotel	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Strip Mall	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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					
NaturalGas Mitigated	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
NaturalGas Unmitigated	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368

5.2 Energy by Land Use - NaturalGas

Unmitigated

	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
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	23269.3	0.2509	2.1444	0.9125	0.0137		0.1734	0.1734		0.1734	0.1734		2,737.5612	2,737.5612	0.0525	0.0502	2,753.8291
City Park	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
Condo/Townhouse	5313.55	0.0573	0.4897	0.2084	3.1300e-003		0.0396	0.0396		0.0396	0.0396		625.1240	625.1240	0.0120	0.0115	628.8388
Hotel	14189.8	0.1530	1.3912	1.1686	8.3500e-003		0.1057	0.1057		0.1057	0.1057		1,669.3905	1,669.3905	0.0320	0.0306	1,679.3108
Strip Mall	357.917	3.8600e-003	0.0351	0.0295	2.1000e-004		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003		42.1079	42.1079	8.1000e-004	7.7000e-004	42.3581
Total		**0.4651**	**4.0604**	**2.3189**	**0.0254**		**0.3214**	**0.3214**		**0.3214**	**0.3214**		**5,074.1835**	**5,074.1835**	**0.0973**	**0.0930**	**5,104.3368**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	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
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	23.2693	0.2509	2.1444	0.9125	0.0137		0.1734	0.1734		0.1734	0.1734		2,737.5612	2,737.5612	0.0525	0.0502	2,753.8291
City Park	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
Condo/Townhouse	5.31355	0.0573	0.4897	0.2084	3.1300e-003		0.0396	0.0396		0.0396	0.0396		625.1240	625.1240	0.0120	0.0115	628.8388
Hotel	14.1898	0.1530	1.3912	1.1686	8.3500e-003		0.1057	0.1057		0.1057	0.1057		1,669.3905	1,669.3905	0.0320	0.0306	1,679.3108
Strip Mall	0.357917	3.8600e-003	0.0351	0.0295	2.1000e-004		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003		42.1079	42.1079	8.1000e-004	7.7000e-004	42.3581
Total		**0.4651**	**4.0604**	**2.3189**	**0.0254**		**0.3214**	**0.3214**		**0.3214**	**0.3214**		**5,074.1835**	**5,074.1835**	**0.0973**	**0.0930**	**5,104.3368**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	26.4812	12.2103	68.3743	0.0766		1.2803	1.2803		1.2803	1.2803	0.0000	14,768.5541	14,768.5541	0.3905	0.2687	14,858.3779
Unmitigated	29.7199	12.6901	97.7865	0.1726		6.0784	6.0784		6.0784	6.0784	708.1966	14,768.5541	15,476.7507	3.7012	0.2687	15,649.3414

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	2.0767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1535					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	4.5820	11.9589	34.2969	0.1692		5.7262	5.7262		5.7262	5.7262	708.1966	14,654.1177	15,362.3143	3.5916	0.2687	15,532.1632
Landscaping	1.9077	0.7313	63.4896	3.3600e-003		0.3522	0.3522		0.3522	0.3522		114.4364	114.4364	0.1097		117.1782
Total	**29.7199**	**12.6901**	**97.7865**	**0.1726**		**6.0784**	**6.0784**		**6.0784**	**6.0784**	**708.1966**	**14,768.5541**	**15,476.7507**	**3.7012**	**0.2687**	**15,649.3414**

Norwalk Transit Village - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.0767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1535					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.3433	11.4791	4.8847	0.0733		0.9281	0.9281		0.9281	0.9281	0.0000	14,654.1177	14,654.1177	0.2809	0.2687	14,741.1997
Landscaping	1.9077	0.7313	63.4896	3.3600e-003		0.3522	0.3522		0.3522	0.3522		114.4364	114.4364	0.1097		117.1782
Total	**26.4812**	**12.2103**	**68.3743**	**0.0766**		**1.2803**	**1.2803**		**1.2803**	**1.2803**	**0.0000**	**14,768.5541**	**14,768.5541**	**0.3905**	**0.2687**	**14,858.3779**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

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

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Norwalk Transit Village

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	3.62	Acre	3.62	157,687.20	0
Hotel	150.00	Room	5.00	217,800.00	0
Apartments Mid Rise	650.00	Dwelling Unit	17.11	650,000.00	1859
Condo/Townhouse	120.00	Dwelling Unit	7.50	120,000.00	343
Strip Mall	80.15	1000sqft	1.84	80,147.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - Consistent with the DEIR's model.

Construction Phase - Consistent with the DEIR's model.

Grading - Consistent with the DEIR's model.

Demolition - Consistent with the DEIR's model.

Architectural Coating - See SWAPE comment regarding architectural and area coating emission factors.

Vehicle Trips - Consistent with the DEIR's model.

Woodstoves - Consistent with the DEIR's model.

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Area Coating - See SWAPE comment regarding architectural and area coating emission factors.

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

Area Mitigation - See SWAPE comment regarding area-related mitigation.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	55.00	87.00
tblConstructionPhase	NumDays	740.00	154.00
tblConstructionPhase	NumDays	50.00	120.00
tblConstructionPhase	NumDays	75.00	86.00
tblConstructionPhase	NumDays	55.00	175.00
tblConstructionPhase	PhaseEndDate	1/6/2028	6/30/2026
tblConstructionPhase	PhaseEndDate	8/5/2027	1/30/2026
tblConstructionPhase	PhaseEndDate	5/9/2024	8/15/2024
tblConstructionPhase	PhaseEndDate	10/3/2024	12/12/2024
tblConstructionPhase	PhaseEndDate	10/21/2027	1/30/2026
tblConstructionPhase	PhaseStartDate	10/22/2027	3/1/2026
tblConstructionPhase	PhaseStartDate	10/4/2024	7/1/2025
tblConstructionPhase	PhaseStartDate	6/21/2024	8/15/2024
tblConstructionPhase	PhaseStartDate	8/6/2027	6/1/2025
tblFireplaces	NumberGas	552.50	585.00
tblFireplaces	NumberGas	102.00	107.00
tblFireplaces	NumberWood	32.50	0.00
tblFireplaces	NumberWood	6.00	0.00
tblGrading	MaterialImported	0.00	60,510.00
tblLandUse	LandUseSquareFeet	80,150.00	80,147.00
tblVehicleTrips	ST_TR	4.91	3.51
tblVehicleTrips	ST_TR	1.96	25.14
tblVehicleTrips	ST_TR	8.14	1.45
tblVehicleTrips	ST_TR	8.19	4.68

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	ST_TR	42.04	52.93
tblVehicleTrips	SU_TR	4.09	3.51
tblVehicleTrips	SU_TR	2.19	25.14
tblVehicleTrips	SU_TR	6.28	1.45
tblVehicleTrips	SU_TR	5.95	4.68
tblVehicleTrips	SU_TR	20.43	52.93
tblVehicleTrips	WD_TR	5.44	3.51
tblVehicleTrips	WD_TR	0.78	25.14
tblVehicleTrips	WD_TR	7.32	1.45
tblVehicleTrips	WD_TR	8.36	4.68
tblVehicleTrips	WD_TR	44.32	52.93
tblWoodstoves	NumberCatalytic	32.50	0.00
tblWoodstoves	NumberNoncatalytic	32.50	0.00

2.0 Emissions Summary

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2024	5.8649	73.0312	53.6913	0.1872	28.2729	2.4178	30.6907	6.8955	2.2376	9.1330	0.0000	19,225.7930	19,225.7930	3.5146	1.4610	19,749.0471
2025	4.7161	28.8307	54.6302	0.1443	9.4224	1.0230	10.4454	2.5217	0.9532	3.4749	0.0000	14,506.7198	14,506.7198	1.5781	0.6003	14,725.0693
2026	87.7189	28.6474	53.2608	0.1417	9.4225	1.0205	10.4429	2.5218	0.9509	3.4726	0.0000	14,246.8823	14,246.8823	1.5644	0.5831	14,459.7541
Maximum	**87.7189**	**73.0312**	**54.6302**	**0.1872**	**28.2729**	**2.4178**	**30.6907**	**6.8955**	**2.2376**	**9.1330**	**0.0000**	**19,225.7930**	**19,225.7930**	**3.5146**	**1.4610**	**19,749.0471**

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					
2024	5.8649	73.0312	53.6913	0.1872	28.2729	2.4178	30.6907	6.8955	2.2376	9.1330	0.0000	19,225.7930	19,225.7930	3.5146	1.4610	19,749.0471
2025	4.7161	28.8307	54.6302	0.1443	9.4224	1.0230	10.4454	2.5217	0.9532	3.4749	0.0000	14,506.7198	14,506.7198	1.5781	0.6003	14,725.0693
2026	87.7189	28.6474	53.2608	0.1417	9.4225	1.0205	10.4429	2.5218	0.9509	3.4726	0.0000	14,246.8823	14,246.8823	1.5644	0.5831	14,459.7541
Maximum	**87.7189**	**73.0312**	**54.6302**	**0.1872**	**28.2729**	**2.4178**	**30.6907**	**6.8955**	**2.2376**	**9.1330**	**0.0000**	**19,225.7930**	**19,225.7930**	**3.5146**	**1.4610**	**19,749.0471**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	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

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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										lb/day					
Area	29.7199	12.6901	97.7865	0.1726		6.0784	6.0784		6.0784	6.0784	708.1966	14,768.5541	15,476.7507	3.7012	0.2687	15,649.3414
Energy	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
Mobile	17.5953	17.4043	161.0454	0.3368	38.7427	0.2515	38.9942	10.3208	0.2335	10.5543		34,359.9028	34,359.9028	2.5986	1.5903	34,898.7719
Total	**47.7804**	**34.1548**	**261.1508**	**0.5347**	**38.7427**	**6.6513**	**45.3939**	**10.3208**	**6.6333**	**16.9541**	**708.1966**	**54,202.6404**	**54,910.8370**	**6.3971**	**1.9520**	**55,652.4502**

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										lb/day					
Area	26.4812	12.2103	68.3743	0.0766		1.2803	1.2803		1.2803	1.2803	0.0000	14,768.5541	14,768.5541	0.3905	0.2687	14,858.3779
Energy	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
Mobile	17.5953	17.4043	161.0454	0.3368	38.7427	0.2515	38.9942	10.3208	0.2335	10.5543		34,359.9028	34,359.9028	2.5986	1.5903	34,898.7719
Total	**44.5416**	**33.6750**	**231.7386**	**0.4388**	**38.7427**	**1.8532**	**40.5959**	**10.3208**	**1.8352**	**12.1560**	**0.0000**	**54,202.6404**	**54,202.6404**	**3.0864**	**1.9520**	**54,861.4867**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	N20	CO2e
Percent Reduction	6.78	1.40	11.26	17.95	0.00	72.14	10.57	0.00	72.33	28.30	100.00	0.00	1.29	51.75	0.00	1.42

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	3/1/2024	8/15/2024	5	120	
2	Grading	Grading	8/15/2024	12/12/2024	5	86	
3	Building Construction	Building Construction	7/1/2025	1/30/2026	5	154	
4	Paving	Paving	6/1/2025	1/30/2026	5	175	
5	Architectural Coating	Architectural Coating	3/1/2026	6/30/2026	5	87	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 258

Acres of Paving: 0

Residential Indoor: 1,559,250; Residential Outdoor: 519,750; Non-Residential Indoor: 446,921; Non-Residential Outdoor: 148,974; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

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	6	15.00	0.00	8,957.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	5,983.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	738.00	157.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	148.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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					16.1538	0.0000	16.1538	2.4458	0.0000	2.4458			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**16.1538**	**0.9602**	**17.1139**	**2.4458**	**0.8922**	**3.3380**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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	0.1504	10.1960	2.6810	0.0430	1.3066	0.0621	1.3687	0.3582	0.0594	0.4176		4,734.0468	4,734.0468	0.2662	0.7521	4,964.8159
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	0.0482	0.0330	0.4634	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.1986**	**10.2290**	**3.1444**	**0.0444**	**1.4742**	**0.0631**	**1.5373**	**0.4027**	**0.0603**	**0.4630**		**4,872.1352**	**4,872.1352**	**0.2697**	**0.7555**	**5,104.0156**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

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					16.1538	0.0000	16.1538	2.4458	0.0000	2.4458			0.0000			0.0000
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**	**16.1538**	**0.9602**	**17.1139**	**2.4458**	**0.8922**	**3.3380**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

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	0.1504	10.1960	2.6810	0.0430	1.3066	0.0621	1.3687	0.3582	0.0594	0.4176		4,734.0468	4,734.0468	0.2662	0.7521	4,964.8159
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	0.0482	0.0330	0.4634	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.1986**	**10.2290**	**3.1444**	**0.0444**	**1.4742**	**0.0631**	**1.5373**	**0.4027**	**0.0603**	**0.4630**		**4,872.1352**	**4,872.1352**	**0.2697**	**0.7555**	**5,104.0156**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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	0.1402	9.5032	2.4988	0.0401	1.2178	0.0579	1.2757	0.3339	0.0554	0.3893		4,412.3684	4,412.3684	0.2481	0.7010	4,627.4568
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	0.0643	0.0440	0.6179	1.8200e-003	0.2236	1.2900e-003	0.2248	0.0593	1.1900e-003	0.0605		184.1179	184.1179	4.6300e-003	4.5800e-003	185.5996
Total	**0.2044**	**9.5472**	**3.1167**	**0.0419**	**1.4414**	**0.0592**	**1.5005**	**0.3932**	**0.0566**	**0.4497**		**4,596.4863**	**4,596.4863**	**0.2528**	**0.7055**	**4,813.0564**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

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					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**9.2036**	**1.3354**	**10.5390**	**3.6538**	**1.2286**	**4.8823**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

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	0.1402	9.5032	2.4988	0.0401	1.2178	0.0579	1.2757	0.3339	0.0554	0.3893		4,412.3684	4,412.3684	0.2481	0.7010	4,627.4568
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	0.0643	0.0440	0.6179	1.8200e-003	0.2236	1.2900e-003	0.2248	0.0593	1.1900e-003	0.0605		184.1179	184.1179	4.6300e-003	4.5800e-003	185.5996
Total	**0.2044**	**9.5472**	**3.1167**	**0.0419**	**1.4414**	**0.0592**	**1.5005**	**0.3932**	**0.0566**	**0.4497**		**4,596.4863**	**4,596.4863**	**0.2528**	**0.7055**	**4,813.0564**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1636	6.2928	2.3147	0.0283	1.0057	0.0308	1.0364	0.2896	0.0294	0.3190		3,046.7810	3,046.7810	0.1060	0.4392	3,180.3104
Worker	2.2247	1.4570	21.2216	0.0649	8.2491	0.0452	8.2943	2.1877	0.0416	2.2293		6,563.3185	6,563.3185	0.1543	0.1579	6,614.2373
Total	**2.3883**	**7.7498**	**23.5363**	**0.0932**	**9.2548**	**0.0760**	**9.3308**	**2.4773**	**0.0710**	**2.5483**		**9,610.0995**	**9,610.0995**	**0.2603**	**0.5971**	**9,794.5477**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1636	6.2928	2.3147	0.0283	1.0057	0.0308	1.0364	0.2896	0.0294	0.3190		3,046.7810	3,046.7810	0.1060	0.4392	3,180.3104
Worker	2.2247	1.4570	21.2216	0.0649	8.2491	0.0452	8.2943	2.1877	0.0416	2.2293		6,563.3185	6,563.3185	0.1543	0.1579	6,614.2373
Total	**2.3883**	**7.7498**	**23.5363**	**0.0932**	**9.2548**	**0.0760**	**9.3308**	**2.4773**	**0.0710**	**2.5483**		**9,610.0995**	**9,610.0995**	**0.2603**	**0.5971**	**9,794.5477**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1591	6.2473	2.2819	0.0277	1.0057	0.0307	1.0364	0.2896	0.0293	0.3189		2,990.3169	2,990.3169	0.1067	0.4313	3,121.5034
Worker	2.0990	1.3219	19.9115	0.0630	8.2491	0.0429	8.2920	2.1877	0.0395	2.2272		6,363.9963	6,363.9963	0.1402	0.1488	6,411.8428
Total	**2.2581**	**7.5692**	**22.1934**	**0.0907**	**9.2548**	**0.0735**	**9.3283**	**2.4773**	**0.0688**	**2.5461**		**9,354.3132**	**9,354.3132**	**0.2469**	**0.5801**	**9,533.3462**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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	0.0000
Vendor	0.1591	6.2473	2.2819	0.0277	1.0057	0.0307	1.0364	0.2896	0.0293	0.3189		2,990.3169	2,990.3169	0.1067	0.4313	3,121.5034
Worker	2.0990	1.3219	19.9115	0.0630	8.2491	0.0429	8.2920	2.1877	0.0395	2.2272		6,363.9963	6,363.9963	0.1402	0.1488	6,411.8428
Total	**2.2581**	**7.5692**	**22.1934**	**0.0907**	**9.2548**	**0.0735**	**9.3283**	**2.4773**	**0.0688**	**2.5461**		**9,354.3132**	**9,354.3132**	**0.2469**	**0.5801**	**9,533.3462**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0452	0.0296	0.4313	1.3200e-003	0.1677	9.2000e-004	0.1686	0.0445	8.5000e-004	0.0453		133.4008	133.4008	3.1400e-003	3.2100e-003	134.4357
Total	**0.0452**	**0.0296**	**0.4313**	**1.3200e-003**	**0.1677**	**9.2000e-004**	**0.1686**	**0.0445**	**8.5000e-004**	**0.0453**		**133.4008**	**133.4008**	**3.1400e-003**	**3.2100e-003**	**134.4357**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0452	0.0296	0.4313	1.3200e-003	0.1677	9.2000e-004	0.1686	0.0445	8.5000e-004	0.0453		133.4008	133.4008	3.1400e-003	3.2100e-003	134.4357
Total	**0.0452**	**0.0296**	**0.4313**	**1.3200e-003**	**0.1677**	**9.2000e-004**	**0.1686**	**0.0445**	**8.5000e-004**	**0.0453**		**133.4008**	**133.4008**	**3.1400e-003**	**3.2100e-003**	**134.4357**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0427	0.0269	0.4047	1.2800e-003	0.1677	8.7000e-004	0.1685	0.0445	8.0000e-004	0.0453		129.3495	129.3495	2.8500e-003	3.0200e-003	130.3220
Total	**0.0427**	**0.0269**	**0.4047**	**1.2800e-003**	**0.1677**	**8.7000e-004**	**0.1685**	**0.0445**	**8.0000e-004**	**0.0453**		**129.3495**	**129.3495**	**2.8500e-003**	**3.0200e-003**	**130.3220**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

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	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	0.0427	0.0269	0.4047	1.2800e-003	0.1677	8.7000e-004	0.1685	0.0445	8.0000e-004	0.0453		129.3495	129.3495	2.8500e-003	3.0200e-003	130.3220
Total	**0.0427**	**0.0269**	**0.4047**	**1.2800e-003**	**0.1677**	**8.7000e-004**	**0.1685**	**0.0445**	**8.0000e-004**	**0.0453**		**129.3495**	**129.3495**	**2.8500e-003**	**3.0200e-003**	**130.3220**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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					
Archit. Coating	87.1271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**87.2979**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	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	0.4209	0.2651	3.9931	0.0126	1.6543	8.6000e-003	1.6629	0.4387	7.9100e-003	0.4466		1,276.2486	1,276.2486	0.0281	0.0298	1,285.8438
Total	**0.4209**	**0.2651**	**3.9931**	**0.0126**	**1.6543**	**8.6000e-003**	**1.6629**	**0.4387**	**7.9100e-003**	**0.4466**		**1,276.2486**	**1,276.2486**	**0.0281**	**0.0298**	**1,285.8438**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Architectural Coating - 2026

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	87.1271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**87.2979**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	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	0.4209	0.2651	3.9931	0.0126	1.6543	8.6000e-003	1.6629	0.4387	7.9100e-003	0.4466		1,276.2486	1,276.2486	0.0281	0.0298	1,285.8438
Total	**0.4209**	**0.2651**	**3.9931**	**0.0126**	**1.6543**	**8.6000e-003**	**1.6629**	**0.4387**	**7.9100e-003**	**0.4466**		**1,276.2486**	**1,276.2486**	**0.0281**	**0.0298**	**1,285.8438**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	17.5953	17.4043	161.0454	0.3368	38.7427	0.2515	38.9942	10.3208	0.2335	10.5543		34,359.9028	34,359.9028	2.5986	1.5903	34,898.7719
Unmitigated	17.5953	17.4043	161.0454	0.3368	38.7427	0.2515	38.9942	10.3208	0.2335	10.5543		34,359.9028	34,359.9028	2.5986	1.5903	34,898.7719

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,281.50	2,281.50	2281.50	7,796,232	7,796,232
City Park	91.01	91.01	91.01	261,876	261,876
Condo/Townhouse	174.00	174.00	174.00	594,584	594,584
Hotel	702.00	702.00	702.00	1,675,092	1,675,092
Strip Mall	4,242.34	4,242.34	4242.34	8,071,455	8,071,455
Total	7,490.85	7,490.85	7,490.85	18,399,239	18,399,239

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Hotel	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Strip Mall	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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					
NaturalGas Mitigated	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368
NaturalGas Unmitigated	0.4651	4.0604	2.3189	0.0254		0.3214	0.3214		0.3214	0.3214		5,074.1835	5,074.1835	0.0973	0.0930	5,104.3368

5.2 Energy by Land Use - NaturalGas

Unmitigated

	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
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	23269.3	0.2509	2.1444	0.9125	0.0137		0.1734	0.1734		0.1734	0.1734		2,737.5612	2,737.5612	0.0525	0.0502	2,753.8291
City Park	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
Condo/Townhouse	5313.55	0.0573	0.4897	0.2084	3.1300e-003		0.0396	0.0396		0.0396	0.0396		625.1240	625.1240	0.0120	0.0115	628.8388
Hotel	14189.8	0.1530	1.3912	1.1686	8.3500e-003		0.1057	0.1057		0.1057	0.1057		1,669.3905	1,669.3905	0.0320	0.0306	1,679.3108
Strip Mall	357.917	3.8600e-003	0.0351	0.0295	2.1000e-004		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003		42.1079	42.1079	8.1000e-004	7.7000e-004	42.3581
Total		**0.4651**	**4.0604**	**2.3189**	**0.0254**		**0.3214**	**0.3214**		**0.3214**	**0.3214**		**5,074.1835**	**5,074.1835**	**0.0973**	**0.0930**	**5,104.3368**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	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
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	23.2693	0.2509	2.1444	0.9125	0.0137		0.1734	0.1734		0.1734	0.1734		2,737.5612	2,737.5612	0.0525	0.0502	2,753.8291
City Park	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
Condo/Townhouse	5.31355	0.0573	0.4897	0.2084	3.1300e-003		0.0396	0.0396		0.0396	0.0396		625.1240	625.1240	0.0120	0.0115	628.8388
Hotel	14.1898	0.1530	1.3912	1.1686	8.3500e-003		0.1057	0.1057		0.1057	0.1057		1,669.3905	1,669.3905	0.0320	0.0306	1,679.3108
Strip Mall	0.357917	3.8600e-003	0.0351	0.0295	2.1000e-004		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003		42.1079	42.1079	8.1000e-004	7.7000e-004	42.3581
Total		**0.4651**	**4.0604**	**2.3189**	**0.0254**		**0.3214**	**0.3214**		**0.3214**	**0.3214**		**5,074.1835**	**5,074.1835**	**0.0973**	**0.0930**	**5,104.3368**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	26.4812	12.2103	68.3743	0.0766		1.2803	1.2803		1.2803	1.2803	0.0000	14,768.5541	14,768.5541	0.3905	0.2687	14,858.3779
Unmitigated	29.7199	12.6901	97.7865	0.1726		6.0784	6.0784		6.0784	6.0784	708.1966	14,768.5541	15,476.7507	3.7012	0.2687	15,649.3414

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	2.0767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1535					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	4.5820	11.9589	34.2969	0.1692		5.7262	5.7262		5.7262	5.7262	708.1966	14,654.1177	15,362.3143	3.5916	0.2687	15,532.1632
Landscaping	1.9077	0.7313	63.4896	3.3600e-003		0.3522	0.3522		0.3522	0.3522		114.4364	114.4364	0.1097		117.1782
Total	**29.7199**	**12.6901**	**97.7865**	**0.1726**		**6.0784**	**6.0784**		**6.0784**	**6.0784**	**708.1966**	**14,768.5541**	**15,476.7507**	**3.7012**	**0.2687**	**15,649.3414**

Norwalk Transit Village - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	2.0767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	21.1535					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.3433	11.4791	4.8847	0.0733		0.9281	0.9281		0.9281	0.9281	0.0000	14,654.1177	14,654.1177	0.2809	0.2687	14,741.1997
Landscaping	1.9077	0.7313	63.4896	3.3600e-003		0.3522	0.3522		0.3522	0.3522		114.4364	114.4364	0.1097		117.1782
Total	**26.4812**	**12.2103**	**68.3743**	**0.0766**		**1.2803**	**1.2803**		**1.2803**	**1.2803**	**0.0000**	**14,768.5541**	**14,768.5541**	**0.3905**	**0.2687**	**14,858.3779**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

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

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G, C.Hg.
(949) 887-9013
mhagemann@swape.com

Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

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 – 2104, 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, Coloradao.

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 repesentatives, 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., Fukanaga, 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.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE
2656 29th Street, Suite 201
Santa Monica, California 90405
Attn: Paul Rosenfeld, Ph.D.
Mobil: (310) 795-2335
Office: (310) 452-5555
Fax: (310) 452-5550
Email: prosenfeld@swape.com

Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

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. Focus on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years of 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 H_2O 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:

Rosenfeld P. E., Spaeth K., Hallman R., Bressler R., Smith, G., (2022) Cancer Risk and Diesel Exhaust Exposure Among Railroad Workers. *Water Air Soil Pollution.* **233,** 171.

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 Aermod 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., Sellew, 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). Perfluoroctanoic Acid (PFOA) and Perfluoroactane 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 Conferenc*e. 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 Superior Court of the State of California, County of San Bernardino
Billy Wildrick, Plaintiff vs. BNSF Railway Company
Case No. CIVDS1711810
Rosenfeld Deposition 10-17-2022

In the State Court of Bibb County, State of Georgia
Richard Hutcherson, Plaintiff vs Norfolk Southern Railway Company
Case No. 10-SCCV-092007
Rosenfeld Deposition 10-6-2022

In the Civil District Court of the Parish of Orleans, State of Louisiana
Millard Clark, Plaintiff vs. Dixie Carriers, Inc. et al.
Case No. 2020-03891
Rosenfeld Deposition 9-15-2022

In The Circuit Court of Livingston County, State of Missouri, Circuit Civil Division
Shirley Ralls, Plaintiff vs. Canadian Pacific Railway and Soo Line Railroad
Case No. 18-LV-CC0020
Rosenfeld Deposition 9-7-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jonny C. Daniels, Plaintiff vs. CSX Transportation Inc.
Case No. 20-CA-5502
Rosenfeld Deposition 9-1-2022

In The Circuit Court of St. Louis County, State of Missouri
Kieth Luke et. al. Plaintiff vs. Monsanto Company et. al.
Case No. 19SL-CC03191
Rosenfeld Deposition 8-25-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jeffery S. Lamotte, Plaintiff vs. CSX Transportation Inc.
Case No. NO. 20-CA-0049
Rosenfeld Deposition 8-22-2022

In State of Minnesota District Court, County of St. Louis Sixth Judicial District
Greg Bean, Plaintiff vs. Soo Line Railroad Company
Case No. 69-DU-CV-21-760
Rosenfeld Deposition 8-17-2022

In United States District Court Western District of Washington at Tacoma, Washington
John D. Fitzgerald Plaintiff vs. BNSF
Case No. 3:21-cv-05288-RJB
Rosenfeld Deposition 8-11-2022

In Circuit Court of the Sixth Judicial Circuit, Macon Illinois
Rocky Bennyhoff Plaintiff vs. Norfolk Southern
Case No. 20-L-56
Rosenfeld Deposition 8-3-2022

In Court of Common Pleas, Hamilton County Ohio
Joe Briggins Plaintiff vs. CSX
Case No. A2004464
Rosenfeld Deposition 6-17-2022

In the Superior Court of the State of California, County of Kern
George LaFazia vs. BNSF Railway Company.
Case No. BCV-19-103087
Rosenfeld Deposition 5-17-2022

In the Circuit Court of Cook County Illinois
Bobby Earles vs. Penn Central et. al.
Case No. 2020-L-000550
Rosenfeld Deposition 4-16-2022

In United States District Court Easter District of Florida
Albert Hartman Plaintiff vs. Illinois Central
Case No. 2:20-cv-1633
Rosenfeld Deposition 4-4-2022

In the Circuit Court of the 4th Judicial Circuit, in and For Duval County, Florida
Barbara Steele vs. CSX Transportation
Case No.16-219-Ca-008796
Rosenfeld Deposition 3-15-2022

In United States District Court Easter District of New York
Romano et al. vs. Northrup Grumman Corporation
Case No. 16-cv-5760
Rosenfeld Deposition 3-10-2022

In the Circuit Court of Cook County Illinois
Linda Benjamin vs. Illinois Central
Case No. No. 2019 L 007599
Rosenfeld Deposition 1-26-2022

In the Circuit Court of Cook County Illinois
Donald Smith vs. Illinois Central
Case No. No. 2019 L 003426
Rosenfeld Deposition 1-24-2022

In the Circuit Court of Cook County Illinois
Jan Holeman vs. BNSF
Case No. 2019 L 000675
Rosenfeld Deposition 1-18-2022

In the State Court of Bibb County State of Georgia
Dwayne B. Garrett vs. Norfolk Southern
Case No. 20-SCCV-091232
Rosenfeld Deposition 11-10-2021

In the Circuit Court of Cook County Illinois
Joseph Ruepke vs. BNSF
Case No. 2019 L 007730
Rosenfeld Deposition 11-5-2021

In the United States District Court For the District of Nebraska
Steven Gillett vs. BNSF
Case No. 4:20-cv-03120
Rosenfeld Deposition 10-28-2021

In the Montana Thirteenth District Court of Yellowstone County
James Eadus vs. Soo Line Railroad and BNSF
Case No. DV 19-1056
Rosenfeld Deposition 10-21-2021

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

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

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

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al. vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case No. 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 vs. CNA Insurance Company et al.
Case No. 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 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. 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. BC646857
Rosenfeld Deposition 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiffs 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 Agrosciences, 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., Plaintifs 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 No. 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. 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 No. 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 No. 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 No. 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 No. 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 No. 2:07CV1052
Rosenfeld Deposition July 2009

EXHIBIT B

IEE INDOOR ENVIRONMENTAL ENGINEERING IEE
1448 Pine Street, Suite 103 San Francisco, California 94109
Telephone: (415) 567-7700
E-mail: offermann@IEE-SF.com
http://www.iee-sf.com

Date: October 10, 2024

To: Victoria Yundt
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612

From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Norwalk Transit Village, Norwalk, CA.
(IEE File Reference: P-4817)

Pages: 19

Indoor Air Quality Impacts

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson,

2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 µg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 µg is 2 µg/m^3, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m^3, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 µg/m^3. The median indoor formaldehyde concentration was 36 µg/m^3, and ranged from 4.8 to 136 µg/m^3, which corresponds to a median exceedance of the 2 µg/m^3 NSRL concentration of 18 and a range of 2.3 to 68. 15 cont'd

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m^3, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the San Diego County Air Pollution Control District (SDAPCD, 2021).

Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels (RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 µg/m^3 to 28% for the Acute REL of 55 µg/m^3.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and

particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Singer et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of 22.4 $\mu g/m^3$ (18.2 ppb) as compared to a median of 36 $\mu g/m^3$ found in the 2007 CNHS. Unlike in the CNHS study where formaldehyde concentrations were measured with pumped DNPH samplers, the formaldehyde concentrations in the HENGH study were measured with passive samplers, which were estimated to under-measure the true indoor formaldehyde concentrations by approximately 7.5%. Applying this correction to the HENGH indoor formaldehyde concentrations results in a median indoor concentration of 24.1 $\mu g/m^3$, which is 33% lower than the 36 $\mu g/m^3$ found in the 2007 CNHS. 15 cont'd

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 33% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 120 per million for homes built with CARB compliant composite wood products. This median lifetime cancer risk is more than 12 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to the Norwalk Transit Village, Norwalk, CA, the buildings consist of residential and commercial spaces.

The residential occupants will potentially have continuous exposure (e.g. 24 hours per day, 52 weeks per year). These exposures are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in residential construction.

Because these residences will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor residential formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 24.1 $\mu g/m^3$ (Singer et. al., 2020)

Assuming that the residential occupants inhale 20 m^3 of air per day, the average 70-year lifetime formaldehyde daily dose is 482 µg/day for continuous exposure in the residences. This exposure represents a cancer risk of 120 per million, which is more than 12 times the CEQA cancer risk of 10 per million. For occupants that do not have continuous exposure, the cancer risk will be proportionally less but still substantially over the CEQA cancer risk of 10 per million (e.g. for 12/hour/day occupancy, more than 6 times the CEQA cancer risk of 10 per million).

15 cont'd

The employees of the commercial spaces are expected to experience significant indoor exposures (e.g., 40 hours per week, 50 weeks per year). These exposures for employees are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in offices, warehouses, residences and hotels.

Because the commercial spaces will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 24.1 $\mu g/m^3$ (Singer et. al., 2020)

Assuming that the employees of commercial spaces work 8 hours per day and inhale 20 m^3 of air per day, the formaldehyde dose per work-day at the offices is 161 µg/day.

Assuming that these employees work 5 days per week and 50 weeks per year for 45 years (start at age 20 and retire at age 65) the average 70-year lifetime formaldehyde daily dose is 70.9 µg/day.

This is 1.77 times the NSRL (OEHHA, 2017a) of 40 µg/day and represents a cancer risk of 17.7 per million, which exceeds the CEQA cancer risk of 10 per million. This impact should be analyzed in an environmental impact report ("EIR"), and the agency should impose all feasible mitigation measures to reduce this impact. Several feasible mitigation measures are discussed below and these and other measures should be analyzed in an EIR. 15 cont'd

In addition, we note that the average outdoor air concentration of formaldehyde in California is 3 ppb, or 3.7 µg/m^3, (California Air Resources Board, 2004), and thus represents an average pre-existing background airborne cancer risk of 1.85 per million. Thus, the indoor air formaldehyde exposures describe above exacerbate this pre-existing risk resulting from outdoor air formaldehyde exposures.

Additionally, the SCAQMD's Multiple Air Toxics Exposure Study ("MATES V") identifies an existing cancer risk at the Project site of 531 per million due to the site's elevated ambient air contaminant concentrations, which are due to the area's high levels of vehicle traffic. These impacts would further exacerbate the pre-existing cancer risk to the building occupants, which result from exposure to formaldehyde in both indoor and outdoor air.

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

The following describes a method that should be used, prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of specific building materials/furnishings selected exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

15 cont'd

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

This formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment allows the applicant (and the City) to determine, before the conclusion of the environmental review process and the building materials/furnishings are specified, purchased, and installed, if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1.) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m^2 of material/m^2 floor area, units of furnishings/m^2 floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).

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3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m^2-h) and the area (m^2) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., $\mu g/m^2$-h) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus, for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than 31 $\mu g/m^2$-h, but not the actual measured specific emission rate, which may be 3, 18, or 30 $\mu g/m^2$-h. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

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If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (https://berkeleyanalytical.com), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. µg/h) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration (µg/m^3) from Equation 1 by dividing the total formaldehyde emission rates (i.e. µg/h) as determined in Step 4, by the design minimum outdoor air ventilation rate (m^3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}} \quad \text{(Equation 1)}$$

where:

C_{in} = indoor formaldehyde concentration (µg/m^3)

E_{total} = total formaldehyde emission rate (µg/h) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

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The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 "Calculation of Estimated Building Concentrations" of the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the

health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

1.) reducing the amount materials and/or furnishings that emit formaldehyde
2.) substituting a different material with a lower area-specific emission rate of formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

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Further, we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers," (CDPH, 2017), and use the procedure described earlier above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Impact. Another important finding of the CNHS, was that the outdoor air ventilation rates in the homes were very low. Outdoor air ventilation is a very important factor influencing the indoor concentrations of air contaminants, as it is the primary removal mechanism of all indoor air generated contaminants. Lower outdoor air exchange rates cause indoor generated air contaminants to accumulate to higher indoor air concentrations. Many homeowners rarely open their windows or doors for ventilation as a

result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007). In the CNHS field study, 32% of the homes did not use their windows during the 24-hour Test Day, and 15% of the homes did not use their windows during the entire preceding week. Most of the homes with no window usage were homes in the winter field session. Thus, a substantial percentage of homeowners never open their windows, especially in the winter season. The median 24-hour measurement was 0.26 air changes per hour (ach), with a range of 0.09 ach to 5.3 ach. A total of 67% of the homes had outdoor air exchange rates below the minimum California Building Code (2001) requirement of 0.35 ach. Thus, the relatively tight envelope construction, combined with the fact that many people never open their windows for ventilation, results in homes with low outdoor air exchange rates and higher indoor air contaminant concentrations.

The Norwalk Transit Village, Norwalk, CA is close to roads with moderate to high traffic (e.g., Civic Center Drive, Hacienda Drive, Foster Road, Imperial Highway, etc.) as well as the Union Pacific Railroad tracks. Thus, the Project is located in a sound impacted area.

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According to the Initial Study – Norwalk Transit Village, Norwalk, CA (Michael Baker International, 2022), the ambient noise assessment consisted of just single short-term 10-minute measurements collected at five locations on December 1, 2022. In order to design the building for this Project such that interior noise levels are acceptable, an acoustic study with actual on-site measurements of the existing ambient noise levels and modeled future ambient noise levels needs to be conducted. The acoustic study of the existing ambient noise levels should be conducted over a minimum of a one-week period and report the dBA CNEL or Ldn. This study will allow for the selection of a building envelope and windows with a sufficient STC such that the indoor noise levels are acceptable. A mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors will also be required. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

$PM_{2.5}$ Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of $PM_{2.5}$. According to the Initial Study – Norwalk Transit Village, Norwalk, CA (Michael Baker International,

2022), the Project is located in the South Coast Air Basin, which is a State and Federal non-attainment area for $PM_{2.5}$.

Additionally, the SCAQMD's MATES V study cites an existing cancer risk of 531 per million at the Project site due to the site's high concentration of ambient air contaminants resulting from the area's high levels of motor vehicle traffic.

An air quality analyses should be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local $PM_{2.5}$ sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the California and National annual average $PM_{2.5}$ exceedence concentration of 12 $\mu g/m^3$, or the National 24-hour average exceedence concentration of 35 $\mu g/m^3$, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient removal efficiency, such that the indoor concentrations of outdoor $PM_{2.5}$ particles is less than the California and National $PM_{2.5}$ annual and 24-hour standards. 15 cont'd

It is my experience that based on the projected high traffic noise levels, the annual average concentration of $PM_{2.5}$ will exceed the California and National $PM_{2.5}$ annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. at least MERV 13, or possibly MERV 14 or 15 depending on the results of the Project ambient $PM_{2.5}$ concentrations) in all mechanically supplied outdoor air ventilation systems.

Indoor Air Quality Impact Mitigation Measures

The following are recommended mitigation measures to minimize the impacts upon indoor quality:

Indoor Formaldehyde Concentrations Mitigation. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish

systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.

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It is important to note that we are not asking that the builder "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft^2 of floor area. Following installation of the system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or

maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

$PM_{2.5}$ Outdoor Air Concentration Mitigation. Install air filtration with sufficient $PM_{2.5}$ removal efficiency (e.g. MERV 13 or higher) to filter the outdoor air entering the mechanical outdoor air supply systems, such that the indoor concentrations of outdoor $PM_{2.5}$ particles are less than the California and National $PM_{2.5}$ annual and 24-hour standards. Install the air filters in the system such that they are accessible for replacement by the occupants or maintenance personnel. Include in the mechanical outdoor air ventilation system manual instructions on how to replace the air filters and the estimated frequency of replacement.

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

With respect to formaldehyde emissions from composite wood products, the CARB ATCM regulations of formaldehyde emissions from composite wood products, do not assure healthful indoor air quality. The following is the stated purpose of the CARB ATCM regulation - *The purpose of this airborne toxic control measure is to "reduce formaldehyde emissions from composite wood products, and finished goods that contain composite wood products, that are sold, offered for sale, supplied, used, or manufactured for sale in California".* In other words, the CARB ATCM regulations do not "assure healthful indoor air quality", but rather "reduce formaldehyde emissions from composite wood products".

Just how much protection do the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products? Definitely some, but certainly the regulations do not "*assure healthful indoor air quality"* when CARB Phase 2 products are utilized. As shown in the Chan 2019 study of new California homes, the median indoor formaldehyde concentration was of 22.4 $\mu g/m^3$ (18.2 ppb), which corresponds to a cancer risk of 112 per million for occupants with continuous exposure, which is more than 11 times the CEQA cancer risk of 10 per million.

Another way of looking at how much protection the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products is to calculate the maximum number of square feet of composite wood product that can be in a residence without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy.

For this calculation I utilized the floor area (2,272 ft^2), the ceiling height (8.5 ft), and the number of bedrooms (4) as defined in Appendix B (New Single-Family Residence Scenario) of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, Version 1.1, 2017, California Department of Public Health,

Richmond, CA. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

For the outdoor air ventilation rate I used the 2019 Title 24 code required mechanical ventilation rate (ASHRAE 62.2) of 106 cfm (180 m^3/h) calculated for this model residence. For the composite wood formaldehyde emission rates I used the CARB ATCM Phase 2 rates.

The calculated maximum number of square feet of composite wood product that can be in a residence, without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 15 ft^2 (0.7% of the floor area), or
Particle Board – 30 ft^2 (1.3% of the floor area), or
Hardwood Plywood – 54 ft^2 (2.4% of the floor area), or
Thin MDF – 46 ft^2 (2.0 % of the floor area).

For offices and hotels the calculated maximum amount of composite wood product (% of floor area) that can be used without exceeding the CEQA cancer risk of 10 per million for occupants, assuming 8 hours/day occupancy, and the California Mechanical Code minimum outdoor air ventilation rates are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 13 % (offices) and 17% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in CEQA

cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

If CARB Phase 2 compliant or ULEF composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.