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**VIA EMAIL ONLY**

May 11, 2022

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**Re: Sutter Parking Garage Expansion and Medical Office Building 7  
Negative Declaration (File Nos. PL22-0024, PL22-0061)  
Planning Commission Agenda Item 6.2 (May 12, 2022)**

Dear Chair Jense, Vice Chair Martin, Honorable Planning Commissioners, and Ms. Mar,

I am writing on behalf of the Laborers International Union of North America, Local Union 185 and its members ("LIUNA") living in and around the City of Roseville ("City") regarding the Negative Declaration ("ND") prepared for the Sutter Parking Garage Expansion and Medical Office Building 7 Project ("Project") (File Nos. PL22-0024, PL22-0061) to be heard as Agenda Item 6.2 at the Planning Commission's May 12, 2022 meeting.

LIUNA's review of the ND was assisted by indoor air quality expert Francis Offermann, PE, CIH, noise expert Deborah Jue of Wildon Ihrig, and air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise ("SWAPE"). The written comments of Mr. Offermann, Ms. Jue, and SWAPE are attached hereto as Exhibit A, Exhibit B and Exhibit C, respectively. Based on their review, it appears that several of the MND's conclusions are not supported by substantial evidence and, moreover, there is a "fair argument" that the Project may have unmitigated adverse environmental impacts. As required by CEQA, LIUNA requests that the City prepare an environmental impact report ("EIR") rather than a ND prior to approving the Project.

## PROJECT DESCRIPTION

The Project consists of two components: (1) the expansion of an existing five-story parking garage with a six-story parking addition (“Garage Expansion”) and (2) a new medical office building (“MOB”). Both components are located within the existing 49-acre Sutter Roseville Medical Center campus, specifically on the northeastern area of the campus. The Garage Expansion is proposed to be located immediately to the east of the existing five-story parking garage and be connected to the future parking garage at each level. The MOB would be located along the east edge of the campus, north of the existing five-story parking garage and east of the existing MOB4.

The Garage Expansion site is approximately 0.94 acres in size and contains an existing surface parking lot with lighting and landscaping. The MOB site is approximately 1.64 acres in size and is developed with surface parking, lighting, and landscaping. The MOB site is surrounded by an existing private dental clinic to the south and an apartment complex to the east. The MOB is proposed to be constructed in two-phases: Phase 1 would consist of the four-story building and Phase 2 would consist of a two-story addition on the front of the building.

## LEGAL STANDARD FOR NEGATIVE DECLARATIONS

As the California Supreme Court held, “[i]f no EIR has been prepared for a nonexempt project, but substantial evidence in the record supports a fair argument that the project may result in significant adverse impacts, the proper remedy is to order preparation of an EIR.” (*Communities for a Better Env’t v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 319-20.) “Significant environmental effect” is defined very broadly as “a substantial or potentially substantial adverse change in the environment.” (Pub. Res. Code [“PRC”] § 21068; see also 14 CCR § 15382.) An effect on the environment need not be “momentous” to meet the CEQA test for significance; it is enough that the impacts are “not trivial.” (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 83.) “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 Env’t v. Cal. Res. Agency* (2002) 103 Cal.App.4th 98, 109.)

The EIR is the very heart of CEQA. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1214 (*Bakersfield Citizens*); *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 927.) The EIR is an “environmental ‘alarm bell’ whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return.” (*Bakersfield Citizens, supra*, 124 Cal.App.4th at 1220.) The EIR also functions as a “document of accountability,” intended to “demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action.” (*Laurel Heights Improvements Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392.) The EIR process “protects not only the environment but also informed self-government.” (*Pocket Protectors, supra*, 124 Cal.App.4th at 927.)

An EIR is required if “there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment.” (PRC § 21080(d); see also *Pocket Protectors*, *supra*, 124 Cal.App.4th at 927.) In very limited circumstances, an agency may avoid preparing an EIR by issuing a negative declaration unless there is a “fair argument” that the project will have a significant environmental effect. (PRC, §§ 21100, 21064.) Since “[t]he adoption of a negative declaration . . . has a terminal effect on the environmental review process,” by allowing the agency “to dispense with the duty [to prepare an EIR],” negative declarations are allowed only in cases where “the proposed project will not affect the environment at all.” (*Citizens of Lake Murray v. San Diego* (1989) 129 Cal.App.3d 436, 440.) A mitigated negative declaration is proper only if the project revisions would avoid or mitigate the potentially significant effects identified in the initial study “to a point where clearly no significant effect on the environment would occur, and . . . there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.” (*Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 331 [quoting PRC §§ 21064.5, 21080(c)(2)].) In that context, “may” means a reasonable possibility of a significant effect on the environment. (PRC §§ 21082.2(a), 21100, 21151(a); *Pocket Protectors*, *supra*, 124 Cal.App.4th at 927; *League for Protection of Oakland's etc. Historic Res. v. City of Oakland* (1997) 52 Cal.App.4th 896, 904-05.)

Under the “fair argument” standard, an EIR is required if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency’s decision. (14 CCR § 15064(f)(1); *Pocket Protectors*, *supra*, 124 Cal.App.4th at 931; *Stanislaus Audubon Society v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-51; *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1602.) The “fair argument” standard creates a “low threshold” favoring environmental review through an EIR rather than through issuance of negative declarations or notices of exemption from CEQA. (*Pocket Protectors*, *supra*, 124 Cal.App.4th at 928.)

The “fair argument” standard is virtually the opposite of the typical deferential standard accorded to agencies. As a leading CEQA treatise explains:

This ‘fair argument’ standard is very different from the standard normally followed by public agencies in making administrative determinations. Ordinarily, public agencies weigh the evidence in the record before them and reach a decision based on a preponderance of the evidence. [Citations]. The fair argument standard, by contrast, prevents the lead agency from weighing competing evidence to determine who has a better argument concerning the likelihood or extent of a potential environmental impact. The lead agency’s decision is thus largely legal rather than factual; it does not resolve conflicts in the evidence but determines only whether substantial evidence exists in the record to support the prescribed fair argument.

(Kostka & Zishcke, *Practice Under CEQA*, §6.29, pp. 273-74.) The Courts have explained that “it is a question of law, not fact, whether a fair argument exists, and the courts owe no deference

to the lead agency's determination. Review is de novo, with a preference for resolving doubts in favor of environmental review." (*Pocket Protectors, supra*, 124 Cal.App.4th at 928.)

## **DISCUSSION**

### **I. The proposed Conditions of Approval contain environmental mitigation measures that are not discussed or incorporated in the ND's analysis of the Project.**

According to Staff's proposed Conditions of Approval, "The project shall comply with all required environmental mitigation identified in Sutter Roseville MOB 6 and Parking Garage Mitigated Negative Declaration." (Staff Report, p. 8.) However, there is no mention of the Sutter Roseville MOB 6 and Parking Garage Mitigated Negative Declaration ("MOB 6 MND") or its mitigation measures in the ND. The ND lists three "environmental documents relied upon" for its analysis of the Project: (1) 2035 General Plan Update Final Environmental Impact Report; (2) Northeast Roseville Specific Plan Environmental Impact Report; and (3) Sutter Roseville Medical Center Master Plan Environmental Impact Report. The ND makes no mention of mitigation measures from those environmental documents or any other environmental document, including the MOB 6 MND.

Rather than discuss mitigation measures that may be applied to the Project from other EIRs and MNDs, the ND simply concluded that every single environmental impact of the Project would be less than significant without mitigation. (See, e.g., Initial Study, pp. 13 [Air Quality], 20 [Energy], 24 [Greenhouse gases], 26 [Hazards], 33 [Noise].) If the Project requires mitigation measures from the MOB 6 MND to ensure less-than-significant impacts, then those mitigation measures must be discussed and incorporated into the ND. Because the ND does not mention the MOB 6 MND at all, the ND's conclusions are not supported by substantial evidence and it should be revised prior to further consideration of the Project.

### **II. An EIR is required to disclose and the Project's significant indoor air quality impacts from emissions of formaldehyde.**

The ND fails to address the significant health risks posed by the Project from formaldehyde, a toxic air contaminant ("TAC"). Certified Industrial Hygienist, Francis Offermann, PE, CIH, has conducted a review of the Project, the ND, and relevant documents regarding the Project's indoor air emissions. 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 comments, the Project's emissions of formaldehyde to air in the MOB will result in very significant cancer risks to future employees. Mr. Offermann's expert opinion and calculation present a "fair argument" that the Project may have significant health risk impacts as a result of these indoor air pollution emissions, which were not discussed, disclosed, or analyzed in the ND. These impacts must be addressed in an EIR. Mr. Offermann's comment and CV are attached as Exhibit A.

Formaldehyde is a known human carcinogen and listed by the State as a TAC. The Placer County Air Pollution Control District (“PCAPCD”) has established a significance threshold of health risks for carcinogenic TACs of 10 in a million. (Ex. A, p. 2.) The ND 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.

Mr. Offermann explains that many composite wood products typically used 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. A, pp. 2-3.)

Mr. Offermann states that future employees of the MOB 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. (Ex. A, p. 4.) This exceeds PCAPCD’s CEQA significance thresholds for airborne cancer risk of 10 per million. (*Id.*) Mr. Offermann concludes that these significant environmental impacts must be analyzed in an EIR and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (*Id.* at pp. 4, 11-12.) He prescribes a methodology for estimating the Project’s formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id.* at pp. 5-9.) 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.* at pp. 11-12.) Mr. Offermann also suggests requiring air ventilation systems which would reduce formaldehyde levels. (*Id.* at p. 12.) Since the ND 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”]; *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”].) 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 NO<sub>x</sub> is 55 pounds per day, these estimates [of NO<sub>x</sub> 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 PCAPCD'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].) As a result, the City must prepare an EIR for the Project to address this impact and identify enforceable mitigation measures.

The failure of the ND 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, supra*, 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.)

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 working inside the MOB once it is built and begins emitting formaldehyde. Once built, the MOB 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, supra*, 62 Cal.4th at 800 [emphasis in original].) 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., §§ 21000, subds. (b), (c), (d), (g), 21001, subds. (b), (d).) It goes without saying that the thousands of future residents at the Project are human beings and the health and safety of those residents must be subjected to CEQA's safeguards.

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 office 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 PCAPCD’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 or the residences. As a result, the City must include an analysis and discussion in an EIR which discloses and analyzes the health risks that the Project’s formaldehyde emissions may have on future residents and identifies appropriate mitigation measures.

### **III. The ND inadequately analyzes and mitigates the Project’s noise impacts.**

Noise expert Deborah Jue of the consulting firm Wilson Ihrig reviewed the MND’s analysis of the Project’s noise impacts. Ms. Jue’s comment letter is attached as Exhibit B. As discussed below, Ms. Jue concluded that the MND failed to properly analyze and mitigate the Project’s noise impacts and, as a result, the Project may cause significant impacts.

#### **A. The ND fails to provide any context or analysis from the Sutter Roseville Medical Center Master Plan EIR.**

Although the ND claims to incorporate prior environmental documents, including the Sutter Roseville Medical Center Master Plan EIR (Initial Study, pp. 7-8), there is no discussion of the information potentially used from the prior EIRs to evaluate the Project’s impacts, such as significance thresholds, impacts, and mitigation measures. (Ex. B, p. 1.) Furthermore, the prior EIRs are not all available from CEQANet or the City’s website. (Id.) Without making the prior documentation available or discussing how the information contained in those EIRs applies to this Project, the ND lacks the context and analysis necessary to determine that the Project’s impacts would be less than significant.

#### **B. The ND fails to properly establish thresholds of significance for the Project’s noise impacts.**

The ND failed to establish and apply proper significance thresholds for the Project’s noise impacts. (Ex. B, pp. 1-2.) Although the ND claims that the City’s CEQA Implementing Procedures determined that compliance with the City’s Noise Ordinance would be sufficient to find that the Project’s noise impacts would be less than significant, Ms. Jue notes that the City’s CEQA Implementing Procedures “include[] no discussion about CEQA thresholds to use in CEQA analysis.” (Ex. B, p. 2.) As such, “there is no evidence to substantiate that the noise ordinance is sufficient to determine potential significance.” (Id.)

Ms. Jue suggests a number of possible significance thresholds that the City could apply to this Project’s noise impacts. (Ex. B, pp. 2-3.) These thresholds include sleep disturbance (Ex. B, pp. 2-3), speech disturbance (Ex. B, p. 3), noise and vibration thresholds for construction (Ex. B, p. 3), and actual compliance with the Noise Ordinance (Ex. B, p. 3). Because the ND did not

provide any quantitative analysis of the Project's noise impacts, there is no evidence that the Project's noise levels will not exceed these thresholds or any other thresholds the City may adopt.

C. The ND's analysis of the Project's noise impacts is incomplete.

Ms. Jue notes that the ND provided incomplete analyses of the noise impacts from mechanical equipment on the roof of the MOB and from construction noise. (Ex. B, p. 3-4.)

For the mechanical equipment, "[t]he ND provides no evidence that the rooftop equipment for the MOB would comply with the Municipal code, and provides no evidence that the addition of such equipment would be less than significant at the nearest residential structure, which is only 120 ft away.) (Ex. B, p. 3.) The ND's failure to provide any substantive information about the mechanical equipment obscures a potentially significant impact. If two commercial-use air handling cooling systems are in operation, "the resulting noise level at the nearest residence would be 49 to 65 dBA, exceeding the City's daytime and nighttime noise limits. (Id.) In addition to the potentially significant impact from cooling systems, the ND also fails to discuss emergency/backup generators, which would only add to the Project's significant noise levels. (Id.) By failing to fully analyze these impacts, the ND omits potentially significant impacts and fails to provide substantial evidence that the Project's noise impacts will be less than significant without mitigation.

D. An EIR is required due to a fair argument that the Project's construction noise may result in a significant impact.

Ms. Jue calculated sample noise levels for five pieces of construction equipment: hoe ram, excavator/dozer, crane, front end loader, and pneumatic tools. (Ex. B, Table 1, p. 4.) According to her calculations of noise levels during demolition and site preparation, "noise from a hoe ram, excavator, or dozer could generate noise as high as 72 to 86 dBA Lmax at the nearest residence, with on-going noise over several hours each day ranging from 68 to 79 dBA Leq." (Ex. B, p. 4.) For construction, "the noise from a crane, front end loader or pneumatic tools would range from 67 to 77 dBA Lmax, with on-going noise levels of 63 to 74 dBA Leq. (Id.) Her calculations assumed that the equipment was not being used at the same time. If equipment use of different types overlapped, the noise impact would be even greater. According to Ms. Jue, these exterior noise levels would all cause speech interference at interior locations based on guidance from the World Health Organization. Due to Ms. Jue's a fair argument that the Project may result in significant noise impacts, the ND is inappropriate and an EIR must be prepared.

E. The ND fails to adequately mitigate the Project's noise impacts.

As noted above, the Project's mechanical equipment and construction noise/vibrations could result in significant impacts to the nearby residences and offices. Ms. Jue suggests several mitigation measures to address these impacts, including (1) selection, siting and/or screening of the mechanical equipment, (2) sound barrier or blankets for construction noise, and (3) buffer



distances for noisy activities and stationary equipment. (Ex. B, p. 4.) The City should revise the ND to fully analyze the Project's noise impacts and apply the above mitigation measures (or others) as appropriate.

#### **IV. An EIR is Required to Disclose and Mitigate the Project's Significant Air Quality Impacts from Emissions of ROG's.**

A. The MND's analysis of the Project's air quality impacts is not supported by substantial evidence.

SWAPE found that the ND underestimated the Project's emissions and therefore cannot be relied upon to determine the significance of the Project's air quality impacts. (Ex. C, pp. 2-3.) The MND relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). (*Id.* at p. 2.) This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors (*Id.*) CEQA requires that any changes to the default values must be justified by substantial evidence.

SWAPE reviewed the Project's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the ND. (Ex. C, p. 2.) This results in an underestimation of the Project's emissions. (*Id.*) As a result, an EIR should be prepared that adequately evaluates the Project's air quality impacts. (*Id.* at pp. 2-3.)

Specifically, SWAPE found that the following values used in the MND's air quality analysis were either inconsistent with information provided in the MND or otherwise unjustified:

1. Underestimated Land Use Size (Ex. C, p. 3.)
2. Underestimated Land Use Size (Ex. C, pp. 3-4.)

As a result of these errors, the ND underestimates the Project's construction and operational emissions and cannot be relied upon to determine the significance of the Project's air quality impacts.

B. SWAPE's updated analysis of the Project's air quality impacts establishes a fair argument that the Project may result in significant emissions of ROG's.

In an effort to accurately determine the proposed Project's construction and operational emissions, SWAPE prepared an updated CalEEMod model that includes more site-specific information and correct input parameters. (Ex. C, p. 4.) SWAPE's updated analysis accounted for the entire 100,000 square feet of the MOB. (*Id.*) SWAPE's updated analysis found that the Project's construction-related ROG emissions exceed the of 82 pounds per day ("lbs/day") significance threshold set by PCAPCD, as shown below. (*Id.*)

SWAPE Criteria Air Pollutant Emissions	
Construction	ROG (lbs/day)
IS/ND	17
SWAPE	98
% Increase	476%
PCAPCD Threshold	82
Exceeds?	Yes

SWAPE's expert analysis of the Project's construction emissions establishes that the Project may result in significant ROG. Under CEQA, SWAPE's fair argument requires that the City prepare an EIR to disclose and mitigate this impact.

#### **VI. An EIR is required for the Project's potentially significant greenhouse gas impacts.**

The ND improperly concludes that the Project's greenhouse gas ("GHG") impacts would be less than significant. The ND relies on the City's General Plan Update ("GPU") EIR, which concluded that, even with mitigation, GHG impacts would be significant and unavoidable. The ND then jumps to the conclusion that the Project's GHG impacts would be less than significant because "[t]he project complies with General Plan policy related to GHG and the project does not result in any new GHG impacts not previously analyzed in the GPU EIR." (Initial Study, p. 26.) However, even if the project complies with the City's General Plan policies, it does not follow that the Project's impacts are necessarily less than significant. The GPU EIR concluded that GHG impacts would be significant and unavoidable, so compliance with the General Plan in no way indicates less-than-significant GHG impacts. Instead, the City needs to evaluate *this* Project's GHG impacts to see if they remain significant and unavoidable.

Although the City may tier the Project's GHG impacts from the GPU EIR, an ND is inappropriate where the Project will result in significant and unavoidable impacts. In the case *Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 122-25, the court of appeal held that when a "first tier" EIR admits a significant, unavoidable environmental impact, then the agency must prepare second tier EIRs for later projects to ensure that those unmitigated impacts are "mitigated or avoided." (*Id.*) The court reasoned that the unmitigated impacts were not "adequately addressed" in the first tier EIR since the impacts were not "mitigated or avoided." (*Id.*) Thus, significant effects disclosed in first tier EIRs will trigger second tier EIRs unless such effects have been "adequately addressed," in a way that ensures the effects will be "mitigated or avoided." (*Id.*) When a project tiers from a prior EIR but still results in significant and unavoidable impacts, a second tier is required as well as a new Statement of Overriding Considerations. The court explained, "The requirement of a statement of overriding considerations is central to CEQA's role as a public accountability statute; it requires public officials, in approving environmental detrimental projects, to justify their decisions based on

counterbalancing social, economic or other benefits, and to point to substantial evidence in support.” (*Id.* at pp. 124-25.)

Here, the ND made no attempt to determine whether the Project’s individual GHG impacts would actually be less than significant. In order to evaluate the Project’s GHG impacts, SWAPE quantified the Project’s GHG emissions and compared them to the PCAPCD’s De Minimis Level operational threshold of 1,100 metric tons of carbon dioxide equivalents per year (“MT CO<sub>2</sub>e/year”). (Ex. C, p. 6.) As shown below, the Project’s GHG emissions exceed the PCAPCD threshold:

SWAPE Annual Greenhouse Gas Emissions	
Project Phase	Proposed Project (MT CO <sub>2</sub> e/year)
Area	0.00
Energy	519.71
Mobile	1,837.00
Waste	543.13
Water	33.48
Total Annual Emissions	2,933.32
PCAPCD De Minimis Level	1,100
Exceeds?	Yes

SWAPE’s calculation establish a fair argument that the Project may result in significant GHG impacts. Unless the City can ensure that the GUP EIR reduces this impact to a less-than-significant level, an EIR and new Statement of Overriding Considerations is required under CEQA. SWAPE suggests numerous mitigation measures that could be applied to this Project to reduce the GHG impacts. (Ex. C, pp. 9-11.) The City should evaluate these feasible mitigation measures and incorporate them into a new EIR for the Project.

## **VII. The ND fails to consider renewable energy alternatives.**

When analyzing a project's energy use to determine if it creates significant effects, CEQA requires a discussion of whether any renewable energy features could be incorporated into the project. (*League to Save Lake Tahoe Mountain Area Preservation Foundation v. County of Placer* (2022) 75 Cal.App.5th 63, 167 (*League to Save Lake Tahoe*)). Compliance with state and local regulatory programs is not sufficient to determine that a project will not result in a wasteful or inefficient use of energy. (*Id.* at p. 165.)

Although the ND discusses the Project’s consistency with the Northeast Roseville Specific Plan EIR (ND, pp. 21-22), there is no discussion of “whether any renewable energy features could be incorporated into the project as part of determining whether the project's impacts on energy resources were significant.” (See *League to Save Lake Tahoe, supra*, 75 Cal.App.5th at p. 168.) An updated energy analysis should be conducted and circulated in a revised ND or EIR in order to comply with CEQA.

## CONCLUSION

LIUNA's experts have established a fair argument that the Project may have significant impacts on related to formaldehyde, ROGs, GHGs, and noise. Furthermore, the ND's analyses of these impacts as well as energy impacts, are not supported by substantial evidence. Therefore, LIUNA respectfully requests that the City prepare and circulate an EIR prior to further consideration of the Project.

Sincerely,



Brian B. Flynn  
Lozeau Drury LLP

# **EXHIBIT A**



## INDOOR ENVIRONMENTAL ENGINEERING



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Date: May 11, 2022

To: Brian Flynn  
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From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Sutter Parking Garage and Medical Office Building 7  
Project, Roseville, CA. (IEE File Reference: P-4575)

Pages: 18

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### **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<sup>3</sup>, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m<sup>3</sup>, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 µg/m<sup>3</sup>. The median indoor formaldehyde concentration was 36 µg/m<sup>3</sup>, and ranged from 4.8 to 136 µg/m<sup>3</sup>, which corresponds to a median exceedance of the 2 µg/m<sup>3</sup> NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m<sup>3</sup>, 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 Placer County Air Pollution Control District (PCAPCD, 2017).

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<sup>3</sup> to 28% for the Acute REL of 55 µg/m<sup>3</sup>.

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 concentration of  $22.4 \mu\text{g}/\text{m}^3$  (18.2 ppb) as compared to a median of  $36 \mu\text{g}/\text{m}^3$  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  $24.1 \mu\text{g}/\text{m}^3$ , which is 33% lower than the  $36 \mu\text{g}/\text{m}^3$  found in the 2007 CNHS.

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 Sutter Parking Garage and Medical Office Building 7 Project, Roseville, CA, the buildings consist of a parking garage and a medical office building.

The employees of the medical office building 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 medical office building spaces will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be 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  $\mu\text{g}/\text{m}^3$  (Singer et. al., 2020)

Assuming that the medical office building employees work 8 hours per day and inhale 20  $\text{m}^3$  of air per day, the formaldehyde dose per work-day is 161  $\mu\text{g}/\text{day}$ .

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  $\mu\text{g}/\text{day}$ .

This is 1.77 times the NSRL (OEHHA, 2017a) of 40  $\mu\text{g}/\text{day}$  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.

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 ensure that the indoor air will have concentrations of formaldehyde 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 ensure 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.

#### 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<sup>2</sup> of material/m<sup>2</sup> floor area, units of furnishings/m<sup>2</sup> 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).

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<sup>2</sup>-h) and the area (m<sup>2</sup>) 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.,  $\mu\text{g}/\text{m}^2\text{-h}$ ) 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  $31 \mu\text{g}/\text{m}^2\text{-h}$ , but not the actual measured specific emission rate, which may be 3, 18, or  $30 \mu\text{g}/\text{m}^2\text{-h}$ . 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.

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.  $\mu\text{g}/\text{h}$ ) 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 ( $\mu\text{g}/\text{m}^3$ ) from Equation 1 by dividing the total formaldehyde emission rates (i.e.  $\mu\text{g}/\text{h}$ ) as determined in Step 4, by the design minimum outdoor air ventilation rate ( $\text{m}^3/\text{h}$ ) for the IAQ Zone.

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

where:

$C_{in}$  = indoor formaldehyde concentration ( $\mu\text{g}/\text{m}^3$ )

$E_{total}$  = total formaldehyde emission rate ( $\mu\text{g}/\text{h}$ ) into the IAQ Zone.

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

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.

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 ensure 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 new homes without mechanical outdoor air ventilation 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 Sutter Parking Garage and Medical Office Building 7 Project is close to roads with moderate to high traffic (e.g., I-80, CA-65, Secret Ravine Parkway, East Roseville Parkway, Medical Plaza Drive, etc.).

The Project noise assessment in the Negative Declaration and Initial Study (City of Roseville, 2022), contains no current or future assessment of the ambient noise levels resulting from the nearby roadway traffic. In my professional opinion the ambient noise levels resulting from the nearby roadway traffic will be significant and require specific mitigation measures. An acoustic assessment of the current or future ambient noise levels resulting from the nearby roadway traffic should be conducted.

As a result of the anticipated high outdoor noise levels, the Project will likely require a mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors. 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<sub>10</sub> and PM<sub>2.5</sub> Outdoor Concentrations Impact.** According to the Negative Declaration and Initial Study (City of Roseville, 2022), the Project is located in the Sacramento Valley Air Basin, which is a State non-attainment area for PM<sub>10</sub> and a Federal non-attainment area for PM<sub>2.5</sub>.

An air quality analyses should be conducted to determine the concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> 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 sources upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the State PM<sub>10</sub> and Federal PM<sub>2.5</sub> concentrations, then the buildings will 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<sub>10</sub> and PM<sub>2.5</sub> are less than the State and Federal requirements.

Thus the Project will likely require installation of high efficiency air filters (i.e. MERV 13 or higher) 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 OEHHHA 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.

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<sup>2</sup> 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.

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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  $\mu\text{g}/\text{m}^3$  (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  $\text{ft}^2$ ), 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,

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<sup>3</sup>/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<sup>2</sup> (0.7% of the floor area), or  
Particle Board – 30 ft<sup>2</sup> (1.3% of the floor area), or  
Hardwood Plywood – 54 ft<sup>2</sup> (2.4% of the floor area), or  
Thin MDF – 46 ft<sup>2</sup> (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 that 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.

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## Expert Witness Services

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ACGIH, AIHA, ASHRAE, CSI, ASTM, ISIAQ, PARMA, and USGBC

### Work Experience

Mr. Offermann PE, CIH, has 36 years experience as an IAQ researcher, technical author, and workshop instructor. He is president of Indoor Environmental Engineering, a San Francisco based IAQ R&D consulting firm. As president of Indoor Environmental Engineering, Mr. Offermann directs an interdisciplinary team of environmental scientists, chemists, and mechanical engineers in indoor air quality building investigations. Under Mr. Offermann's supervision, IEE has developed both pro-active and reactive IAQ measurement methods and diagnostic protocols. He has supervised over 2,000 IAQ investigations in commercial, residential, and institutional buildings and conducted numerous forensic investigations related to IAQ.

### Litigation Experience

Mr. Offermann has been qualified numerous times in court as an expert in the field of indoor air quality and ventilation for both plaintiffs and defendants. He has been deposed over 150 times in cases involving indoor air quality/ventilation issues in commercial, residential, and institutional buildings involving construction defects, and/or operation and maintenance problems. Examples of indoor air quality cases he has worked on are alleged personal injury and/or property damages from mold and bacterial contamination/moisture intrusion, building renovation activities, insufficient outdoor air ventilation, off gassing of volatile organic compounds from building materials and coatings, malfunctioning gas heaters and carbon monoxide poisoning, and applications of pesticides. Mr. Offermann has testified with respect to the scientific admissibility of expert testimony regarding indoor air quality issues via Daubert and Kelly-Frye motions.



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CLICKY ANALYTICS CLICKY ANALYTICS



# **EXHIBIT B**



WI #22-004.12

May 10, 2022

Mr. Brian Flynn  
Lozeau | Drury LLP  
1939 Harrison Street, Suite 150  
Oakland, California 94612

**SUBJECT: Sutter Parking Garage Expansion and Medical Office Building Negative Declaration, Comments on the Noise Analysis**

Dear Mr. Flynn,

Per your request, I have reviewed the subject matter document for the Sutter Parking Garage Expansion and Medical Office Building Negative Declaration (ND) in Roseville, California. The proposed Project would include expansion of an existing 5-story parking garage with a 6-story addition and a new medical office building (MOB) that would be constructed in two phases: initial 4-story structure, and a 2-story addition to be added later. The MOB would house a new Graduate Medical Education (GME) program.

**Context and Analysis from the prior EIR are Omitted**

The ND references the Sutter Roseville Medical Center Master Plan EIR<sup>1</sup> (EIR) as documents relied upon for the preparation of the ND. These documents were not available online via CEQANet nor under the City's Planning Department website. The ND omits any mention of key information it may have used in the noise analysis, such as significance thresholds, impacts, and mitigation measures. Thus, it is difficult to determine whether the components of the project fall within the prior environmental analysis.

**Thresholds of Significance are Not Properly Developed**

Lacking access to the prior EIR, the ND lacks any discussion of the thresholds used to determine significance. Per CEQA<sup>2</sup>, the ND must clearly identify and mitigate eliminate **potentially** significant effects, as shown in Figure 1.

<sup>1</sup> SCH #90020142 and #93092081

<sup>2</sup> <https://govt.westlaw.com/calregs/Document/IA1DEFD80D48811DEBC02831C6D6C108E?>

§ 15070. Decision to Prepare a Negative or Mitigated Negative Declaration.

A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

**Figure 1 CEQA Section 15070 (a) and (b)**

The Roseville *CEQA Implementing Procedures* (Procedures) are referenced throughout the ND, and the ND states that Findings from these Procedures was that the City's noise ordinance would be sufficient to determine significance of noise impacts. These Procedures<sup>3</sup> available online do not appear to be the right document, as there are no "Findings", and this Procedures document includes no discussion about CEQA thresholds to use in CEQA analysis. Thus, there is no evidence to substantiate that the noise ordinance is sufficient to determine potential significance.

The project includes a new private outdoor area. The ND does not appear to show where this outdoor area would be located, nor how it would be used. The hours of operation of this private outdoor area have not been provided, and if large gatherings (social or meetings) would be held, with amplified voice or music, this would be a new usage and potentially significant.

Thus, thresholds that could be considered to evaluate potentially significant noise impacts include:

**Sleep disturbance and annoyance**

The ND lacks any assessment of potentially significant noise impacts caused by activities in the private outdoor area. Although the health effects of noise are not taken as seriously in the United States as they are in other countries, they are real and, in many parts of the country, pervasive<sup>4</sup>. Noise can disturb sleep by making it more difficult to fall asleep, by waking someone after they are asleep, or by altering their sleep stage, e.g., reducing the amount of rapid eye movement (REM) sleep. Noise exposure for people who are sleeping has also been linked to increased blood pressure, increased heart rate, increase in body movements, and other physiological effects. Not surprisingly, people whose sleep is disturbed by noise often experience secondary effects such as increased fatigue, depressed mood, and decreased work performance.

Thus, excessive noise from amplified speech or music in the private outdoor area occurring between 10 PM and 7 AM could cause sleep disturbance and would be potentially significant. The World Health Organization<sup>5</sup> (WHO) identifies a guidance of 45 dBA Leq (outdoors) to avoid sleep disturbance from

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<sup>3</sup> [https://roseville.ca.us/government/departments/development\\_services/planning/citywide\\_planning\\_documents](https://roseville.ca.us/government/departments/development_services/planning/citywide_planning_documents)

<sup>4</sup> More information on these and other adverse effects of noise may be found in *Guidelines for Community Noise*, eds B Berglund, T Lindvall, and D Schwela, World Health Organization, Geneva, Switzerland, 1999.  
<https://www.who.int/docstore/peh/noise/Comnoise-1.pdf>

<sup>5</sup> Ibid.

a continuous source, and a limit of 60 dBA Lmax for intermittent sources<sup>6</sup>. However, it has been our experience that low frequency bass notes, commonly found in music played at social events, can be problematic even when the A-weighted level complies with applicable code. This is partly because the low frequencies pass through the exterior walls and closed windows with little reduction.

For annoyance, WHO identifies a guidance of 50 dBA Leq (outdoors) to avoid moderate annoyance during daytime and evening hours (7 AM to 10 PM).

### Speech Interference

For intelligibility of speech, which could be substantially impacted for people in nearby offices or working from home, WHO identifies a guidance of 35 dBA Leq (indoors), which equates to 50 dBA Leq outdoors for building with open windows. If the windows can be shut (e.g., if sufficient ventilation is provided), then the outdoor noise limit would be 60 dBA Leq.

### Construction Noise and Vibration

Similarly, the effect of construction noise and vibration has been minimized in the ND discussion. The ND characterizes construction as “temporary” and appears to rely on this fact to avoid evaluation of the construction noise and vibration. The ND provides no metrics to evaluate the significance of construction noise and vibration. Daytime construction could interfere with daytime activities, such as interfering with speech during conversations and phone calls.

Caltrans provides guidance to evaluate the effects of vibration from construction sources<sup>7</sup>. Construction activities which generate vibration on the order of 0.04 in/sec PPV for continuous or frequent intermittent sources such as vibratory compaction and 0.25 in/sec PPV for transient sources such as trucks are “distinctly perceptible” and could be potentially significant.

### Noise Ordinance Compliance

Table 1 of the Roseville Noise Regulation (Chapter 9/24)<sup>8</sup> identifies a noise limits of 50 dBA during the daytime (7 AM to 10 PM) and 45 dBA during the nighttime (10 PM to 7 AM) from non-transportation or fixed sound sources. This information is lacking in the ND.

## **Impact Analyses are Incomplete**

### Mechanical equipment

The ND provides no evidence that the rooftop equipment for the MOB would comply with the Municipal code, and provides no evidence that the addition of such equipment would be less than significant at the nearest residential structure, which is only 120 ft away. Depending on the cooling needs, commercial-use air handling cooling systems can generate 78 to 94 dBA at 3 ft<sup>9</sup>. With two of these units in operation the resulting noise level at the nearest residence would be 49 to 65 dBA. This would be a potentially significant impact. If this equipment would operate into the nighttime hours,

<sup>6</sup> These outdoor levels assume that the residence reduces noise by 15 dBA with windows open, which is typical for conventional construction.

<sup>7</sup> <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>

<sup>8</sup> [https://library.gcode.us/lib/roseville\\_ca/pub/municipal\\_code/item/title\\_9-chapter\\_9\\_24](https://library.gcode.us/lib/roseville_ca/pub/municipal_code/item/title_9-chapter_9_24)

<sup>9</sup> Carrier N series generates 76 dBA at 25 ft distance, or about 94 dBA at 3 ft.

it would exceed the 45 dBA noise limit; during daytime hours, the largest of the potential equipment would also exceed the 50 dBA noise limit.

Emergency/standby generators are commonly used for essential buildings, and the ND appears to lack any discussion of such equipment in the noise analysis.

### Construction Noise

Information from Caltrans<sup>10</sup> and other sources can be used to estimate noise from construction. Demolition of existing buildings, excavation, foundations, concrete and building erection will all require several months of activity. Even if this work would only be conducted during daytime hours, the interference on daytime activities such as talking on the phone, conducting meetings, etc. at nearby offices and residences could be potentially significant. The ND provides no evidence that the on-going construction noise and vibration would be less than significant. Table 1 provides sample calculations from five different types of construction equipment, some of which could combine. Thus, during demolition and site preparation, noise from a hoe ram, excavator, or dozer could generate noise as high as 72 to 86 dBA Lmax at the nearest residence, with on-going noise over several hours each day ranging from 68 to 79 dBA Leq. If several activities and/or equipment would be operating at the same time, the noise would be even higher. During building construction, the noise from a crane, front end loader or pneumatic tools would range from 67 to 77 dBA Lmax, with on-going noise levels of 63 to 74 dBA Leq. Based on the WHO guidance, these exterior noise levels would all cause speech interference at interior locations. This would be potentially significant at nearby noise sensitive receptors.

**Table 1 Sample Calculations from Construction Noise**

Equipment	Reference Level at 50 ft (dBA)	Usage Factor (%)	Distance to Nearest Residence			Intermittent Level (dBA Lmax)			On-going Level (dBA Leq)		
			Near distance	Building edge	Center distance	Near distance	Building edge	Center distance	Near distance	Building edge	Center distance
Mounted Impact Hammer Hoe Ram	90	20	75	120	230	86	82	77	79	75	70
Excavator or Dozer	85	40	75	120	230	81	77	72	77	73	68
Crane	85	16	75	120	230	N/A	77	72	N/A	69	64
Front end loader	80	40	75	120	230	76	72	67	72	68	63
Pneumatic Tools	85	50	75	120	230	N/A	77	72	N/A	74	69

### **Noise Mitigations are Lacking**

As noted above, the rooftop equipment on the MOB would potentially exceed the noise limits. Mitigations include selection, siting and/or screening of the mechanical equipment to ensure that the combined mechanical equipment noise would be properly controlled to meet 50 dBA during the daytime and 45 dBA at nighttime.

<sup>10</sup> <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf>

To mitigate construction noise, mitigation measures should include the following, and the ND should include evidence that these measures would be sufficient to eliminate the (potentially) significant impacts below the thresholds of significance:

- Sound barrier or blankets that block line of sight from the noisiest construction equipment and activities to the noise sensitive neighbors.
- Buffer distances to keep noisy activities and stationary equipment away from noise sensitive neighbors.
- Notification is useful community outreach, but has no bearing on reducing noise.

## Conclusions

The ND lacks evidence to support its conclusions regarding construction noise and vibration and operational noise. Thresholds of significance have been omitted from the document. The mechanical noise, generator noise and construction noise analyses in the ISMND also are not complete, and based on the analysis discussed above, mitigations are required.

Please feel free to contact me with any questions on this information.

Very truly yours,

WILSON IHRIG

*Deborah A. Jue*

Deborah A. Jue, INCE-USA  
Principal

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# **EXHIBIT C**



Technical Consultation, Data Analysis and  
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May 11, 2022

Brian Flynn  
Lozeau | Drury LLP  
1939 Harrison Street, Suite 150  
Oakland, CA 94618

**Subject: Comments on the Sutter Parking Garage Expansion Project (SCH No. 2022040255)**

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Dear Mr. Flynn,

We have reviewed the April 2022 Initial Study / Negative Declaration ("IS/ND") for the Sutter Parking Garage Expansion & Sutter MOB Project ("Project") located in the City of Roseville ("City"). The Project proposes to expand the existing 5-story parking structure with the addition of a 6-story parking structure on a 0.94-acre site, as well as construct of a 100,000-square-foot ("SF") medical office building on a 1.64-acre site.

Our review concludes that the IS/ND fails to adequately evaluate the Project's air quality and greenhouse gas impacts. As a result, emissions associated with construction of the proposed Project are underestimated and inadequately addressed. An 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 surrounding environment.

## **Air Quality**

### **Failure to Adequately Evaluate Operational Criteria Air Pollutant Emissions**

The IS/ND fails to quantify the Project's operational criteria air pollutant emissions. Specifically, the IS/ND states:

"The PCAPCD maintains screening thresholds to determine when modeling is required to evaluate impacts resulting from project operation. The screening thresholds indicates a General Office project must involve more than 648,000 square feet of building area before the PCAPCD significance thresholds for criteria pollutants are likely to be exceed. The proposed MOB includes 100,000 square feet of building area, and the parking garage expansion includes



approximately 200,000 square feet of building area, which is well below the screening thresholds; therefore, the project will not result in operational emissions which exceed established thresholds” (p. 14).

Review of the Placer County Air Pollution Control District (“PCAPCD”) demonstrates that the air district includes screening thresholds (see excerpt below):<sup>1</sup>

**Table 2-2: Corresponding Size of a Project for 55 lbs/day of NO<sub>x</sub> Emissions**

Residential (# of units)			Commercial/Industrial (sf)		
Single Family	Condo	Apartment	General Commercial	General Office	General Industrial
617	868	911	249,099	648,661	894,262

As demonstrated above, the screening thresholds are associated with NO<sub>x</sub> emissions. Furthermore, the PCAPCD states that the above-mentioned thresholds are a “preliminary screening methodology and it does not include ROG operational emissions.”<sup>2</sup> Thus, while the IS/ND is correct in concluding that the size of the proposed Project is below the “General Office” threshold of 648,661-SF, the IS/ND fails to acknowledge that the threshold is only applicable to operational NO<sub>x</sub> emissions. As such, the IS/ND fails to quantify the Project’s operational ROG emissions, which is incorrect per PCAPCD guidance. The Project should not be approved until an EIR is prepared to evaluate the ROG emissions associated with Project operation.

### Unsubstantiated Input Parameters Used to Estimate Project Emissions

The air quality analysis provided in the IS/ND relies on emissions calculated with the California Emissions Estimator Model (“CalEEMod”) Version 2020.4.0 (p. 14).<sup>3</sup> CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act (“CEQA”) requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project’s construction and operational emissions are calculated, and “output files” are generated. These output files disclose to the reader what parameters are utilized in calculating the Project’s air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project’s CalEEMod output files, provided in Attachment 3 to the IS/ND, we found that several model inputs are not consistent with information disclosed in the IS/ND. As a result, the Project’s construction-related emissions are underestimated. An EIR should be prepared to include an

<sup>1</sup> “Chapter 2: Thresholds of Significance.” PCAPCD, *available at*:

<https://www.placerair.org/DocumentCenter/View/2047/Chapter-2-Thresholds-of-Significance-PDF>, p. 21, Table 2-2.

<sup>2</sup> “Chapter 2: Thresholds of Significance.” PCAPCD, *available at*:

<https://www.placerair.org/DocumentCenter/View/2047/Chapter-2-Thresholds-of-Significance-PDF>, p. 21.

<sup>3</sup> “CalEEMod Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <http://www.aqmd.gov/caleemod/download-model>.

updated air quality analysis that adequately evaluates the impacts that construction of the Project will have on local and regional air quality.

### *Underestimated Land Use Size*

According to the IS/ND:

“The second DRP is for the construction of a 100,000 square foot medical office building constructed in two phases; Phase 1 totaling 85,000 square feet would be constructed immediately after City approval and Phase 2 totaling 15,000 square feet in size would be constructed at a later date” (p. 1).

As such, the model should have included 100,000-SF of medical office space. However, review of the CalEEMod output files demonstrates that the “Sutter Parking Garage Expansion & MOB 10” model includes only 100-SF of medical office space (see excerpt below) (Attachment 3, pp. 68, 98, 124).

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area
Medical Office Building	1.00	1000sqft	1.64	100.00
Enclosed Parking with Elevator	1.00		0.94	191,957.00

As demonstrated in the excerpt above, the proposed medical office space is underestimated by 99,900-SF.<sup>4</sup> This underestimation presents an issue, as the land use size feature is used throughout CalEEMod to determine default variable and emission factors that go into the model’s calculations. The square footage of a land use is used for certain calculations, such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings).<sup>5</sup> As such, by underestimating the size of the proposed medical office land use, the model underestimates the Project’s construction-related emissions and should not be relied upon to determine Project significance.

### *Underestimated Parking Land Use Size*

Review of the CalEEMod output files demonstrates that the “Sutter Parking Garage Expansion & MOB 10” model includes 191,957-SF of parking land use space (see excerpt below) (Attachment 3, pp. 68, 98, 124).

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area
Medical Office Building	1.00	1000sqft	1.64	100.00
Enclosed Parking with Elevator	1.00		0.94	191,957.00

However, regarding the size of the proposed parking structure, the IS/ND simply states:

“The proposed expansion will consist of six-levels tied into the existing five-level parking garage” (p. 1).

<sup>4</sup> Calculated: (100,000-SF proposed warehouse space) – (100-SF modeled warehouse space) = 99,900-SF underestimated warehouse space.

<sup>5</sup> “CalEEMod User’s Guide Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 28.

As such, the IS/ND fails to substantiate the exact square-footage or the number of spaces to be provided by the proposed parking structure. This is incorrect, as according to the CalEEMod User's Guide:

"CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA." <sup>6</sup>

Here, as the IS/ND and associated documents fail to provide substantial evidence to support the land use size of the proposed parking structure, we cannot verify that the model is accurate.

This presents an issue, as the square footage of parking land uses is used for certain calculations, such as determining the area to be painted and stripped (i.e., VOC emissions from architectural coatings).<sup>7</sup> Thus, by potentially underestimating the proposed parking land use size, the model may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

### Updated Analysis Indicates a Potentially Significant Air Quality Impact

In an effort to more accurately estimate the Project's construction-related emissions, we prepared an updated CalEEMod model, using the Project-specific information provided by the IS/ND. In our updated model, we accounted for the entire 100,000-SF medical office building.<sup>8</sup>

Our updated analysis estimates that the Project's construction-related ROG emissions would exceed the applicable PCAPCD threshold of 82 pounds per day ("lbs/day"), as referenced by the IS/ND (p. 14) (see table below).<sup>9</sup>

SWAPE Criteria Air Pollutant Emissions	
Construction	ROG (lbs/day)
IS/ND	17
SWAPE	98
% Increase	476%
PCAPCD Threshold	<b>82</b>
Exceeds?	<b>Yes</b>

As you can see in the table above, the Project's construction-related ROG emissions, as estimated by SWAPE, increase by approximately 476% and exceed the PCAPCD significance threshold. Thus, our

<sup>6</sup> "CalEEMod User's Guide Version 2020.4.0." California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 13-14.

<sup>7</sup> "CalEEMod User's Guide Version 2020.4.0." California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 29.

<sup>8</sup> See Attachment A for updated air modeling.

<sup>9</sup> "Chapter 2: Thresholds of Significance." PCAPCD, available at: <https://www.placerair.org/DocumentCenter/View/2047/Chapter-2-Thresholds-of-Significance-PDF>, p. 21, Table 2-1.

updated model demonstrates that the Project would result in a potentially significant air quality impact that was not previously identified or addressed in the IS/ND. As a result, an EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on environment.

## Greenhouse Gas

### Failure to Adequately Evaluate Greenhouse Gas Impacts

Regarding the Project's potential greenhouse gas ("GHG") impact, the IS/ND states:

"The City's General Plan Update (GPU) EIR included an analysis of GHG emissions, which would result from buildout of the City's General Plan. The EIR concluded that General Plan build out would exceed the City's threshold of 2.25 MT CO<sub>2</sub>e per service population and that the affect was cumulatively considerable. Although mitigation measures were adopted as part of the General Plan, those measures would not reduce impacts to less-than-significant levels and impacts were considered significant and unavoidable. The proposed project is consistent with the land use assumptions in the GPU EIR and does not require further analysis per the tiering provisions of CEQA. The project includes reasonable and feasible design measures to reduce emissions, including implementation of the latest Cal-Green and energy efficiency code requirements. The medical office building will incorporate several alternative transportation measures like bike racks immediately in front of the medical office building. The project complies with General Plan policy related to GHG and the project does not result in any new GHG impacts not previously analyzed in the GPU EIR; therefore, impacts are less than significant" (p. 25-26).

However, the IS/ND fails to make any effort to quantify or evaluate the Project's GHG emissions. As a result, the IS/ND's analysis of the Project's potential GHG impact, as well as the subsequent less-than-significant impact conclusion, is incorrect for two reasons.

- (1) The IS/ND fails to quantify the Project's potential GHG emissions; and
- (2) The IS/ND fails to indicate a potentially significant impact.

#### *1) Failure to Quantify GHG Emissions*

As previously stated, the IS/ND concludes that the Project would result in a significant-and-unavoidable GHG impact (p. 25-26). However, the IS/ND fails to estimate the Project's net annual GHG emissions whatsoever. By failing to evaluate or quantify the Project's potential GHG emissions, the Project is inconsistent with CEQA. Specifically, according to CEQA Guidelines § 15064.4(a):

"A lead agency shall make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." <sup>10</sup>

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<sup>10</sup> "Final Adopted Text for Revisions to the CEQA Guidelines." Governor's Office of Planning and Research ("OPR"), available at: <https://opr.ca.gov/ceqa/updates/guidelines/>, p. 13.

As you can see in the excerpt above, CEQA Guidelines require a Project to “describe, calculate, or estimate” the GHG emissions that would be generated by the Project. Here, by failing to evaluate or quantify the Project’s GHG emissions, the IS/ND is inconsistent with CEQA Guidelines and lacks evidence to support its conclusion that the Project emissions would be less-than-significant.

## 2) Updated Analysis Indicates a Potentially Significant Impact

In an effort to quantitatively evaluate the Project’s GHG emissions, we compared the Project’s GHG emissions, as estimated by SWAPE, to the PCAPCD De Minimis Level operational threshold of 1,100 metric tons of carbon dioxide equivalents per year (“MT CO<sub>2</sub>e/year”).<sup>11</sup> When applying this threshold, SWAPE’s updated air model indicates a potentially significant GHG impact.

The updated CalEEMod output files indicate that the Project would generate approximately 2,933.32 MT CO<sub>2</sub>e/year of net annual GHG operational emissions (sum of area-, energy-, mobile-, waste-, and water-related emissions) (see table below).

<b>SWAPE Annual Greenhouse Gas Emissions</b>	
<b>Project Phase</b>	<b>Proposed Project (MT CO<sub>2</sub>e/year)</b>
<i>Area</i>	<i>0.00</i>
<i>Energy</i>	<i>519.71</i>
<i>Mobile</i>	<i>1,837.00</i>
<i>Waste</i>	<i>543.13</i>
<i>Water</i>	<i>33.48</i>
<b>Total Annual Emissions</b>	<b>2,933.32</b>
<b>PCAPCD De Minimis Level</b>	<b>1,100</b>
<i>Exceeds?</i>	<b>Yes</b>

As demonstrated above, the Project’s net annual operational GHG emissions, as estimated by SWAPE, exceed the PCAPCD’s De Minimis Level threshold of 1,100 MT CO<sub>2</sub>e/year. According to PCAPCD guidance:

“Projects with GHG emissions which exceed the De Minimis Level of 1,100 MT CO<sub>2</sub>e/yr, but less than 10,000 MT CO<sub>2</sub>e/yr can still be found less than cumulatively considerable when the result of project related efficiency analysis would meet one of conditions in the efficiency matrix for the applicable land use setting and land use type provided.”<sup>12</sup>

<sup>11</sup> “California Environmental Quality Act Thresholds of Significance.” Placer County Air Pollution Control District (“PCAPCD”), October 2016, available at: <https://www.placer.ca.gov/DocumentCenter/View/2061/Threshold-Justification-Report-PDF>, p. E-2.

<sup>12</sup> “California Environmental Quality Act Thresholds of Significance.” Placer County Air Pollution Control District (“PCAPCD”), October 2016, available at: <https://www.placer.ca.gov/DocumentCenter/View/2061/Threshold-Justification-Report-PDF>, p. E-2.

As demonstrated above, for projects that exceed 1,100 MT CO<sub>2</sub>e/year, the PCAPCD requires additional GHG analysis to determine a less-than-significant impact. As such, the Project may result in a potentially significant GHG impact not previously identified or addressed by the IS/ND. An EIR should be prepared to include an updated GHG analysis per PCAPCD guidance and adequately mitigate potential GHG impacts, if necessary.

### Feasible Mitigation Measures Available to Reduce Emissions

Our analysis demonstrates that the Project would result in potentially significant air quality and GHG impacts that should be mitigated further. As such, in an effort to reduce the Project's emissions, we identified several mitigation measures that are applicable to the proposed Project. Therefore, to reduce the Project's emissions, we recommend consideration of SCAG's 2020 RTP/SCS PEIR's Air Quality Project Level Mitigation Measures ("PMM-AQ-1") and Greenhouse Gas Project Level Mitigation Measures ("PMM-GHG-1"), as described below:<sup>13</sup>

SCAG RTP/SCS 2020-2045	
<p align="center"><b>Air Quality Project Level Mitigation Measures – PMM-AQ-1:</b></p> <p align="center">In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the <i>State CEQA Guidelines</i>, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:</p>	
a) Minimize land disturbance.	
b) Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.	
c) Cover trucks when hauling dirt.	
d) Stabilize the surface of dirt piles if not removed immediately.	
e) Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.	
f) Minimize unnecessary vehicular and machinery activities.	
g) Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.	
h) Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.	
j) Require contractors to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.	
k) Ensure that all construction equipment is properly tuned and maintained.	

<sup>13</sup> "4.0 Mitigation Measures." Connect SoCal Program Environmental Impact Report Addendum #1, September 2020, available at: [https://scag.ca.gov/sites/main/files/file-attachments/fpeir\\_connectsocial\\_addendum\\_4\\_mitigationmeasures.pdf?1606004420](https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocial_addendum_4_mitigationmeasures.pdf?1606004420), p. 4.0-2 – 4.0-10; 4.0-19 – 4.0-23; See also: "Certified Final Connect SoCal Program Environmental Impact Report." Southern California Association of Governments (SCAG), May 2020, available at: <https://scag.ca.gov/peir>.

l) Minimize idling time to 5 minutes—saves fuel and reduces emissions.
m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
p) As appropriate require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.
q) Require projects within 500 feet of residences, hospitals, or schools to use Tier 4 equipment for all engines above 50 horsepower (hp) unless the individual project can demonstrate that Tier 4 engines would not be required to mitigate emissions below significance thresholds.
s) Projects located within AB 617 communities should review the applicable Community Emissions Reduction Plan (CERP) for additional mitigation that can be applied to individual projects.
t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.
u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).
z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.
aa) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities.
bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible: <ul style="list-style-type: none"> <li>- Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%</li> <li>- Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.</li> <li>- Nonroad diesel engines on site shall be Tier 2 or higher.</li> <li>- Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp.</li> <li>- Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer.</li> <li>- Diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 ppm or less.</li> <li>- The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following: <ul style="list-style-type: none"> <li>i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.</li> <li>ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.</li> <li>- The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.</li> <li>- The contractor shall maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes: <ul style="list-style-type: none"> <li>i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.</li> <li>ii. Any problems with the equipment or emission controls.</li> <li>iii. Certified copies of fuel deliveries for the time period that identify: <ul style="list-style-type: none"> <li>1. Source of supply</li> <li>2. Quantity of fuel</li> <li>3. Quantity of fuel, including sulfur content (percent by weight)</li> </ul> </li> </ul> </li> </ul>
<p>cc) Project should exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code). The following measures can be used to increase energy efficiency:</p> <ul style="list-style-type: none"> <li>- Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers.</li> <li>- Provide traffic calming measures, such as: <ul style="list-style-type: none"> <li>i. Marked crosswalks</li> <li>ii. Count-down signal timers</li> <li>iii. Curb extensions</li> <li>iv. Speed tables</li> <li>v. Raised crosswalks</li> <li>vi. Raised intersections</li> <li>vii. Median islands</li> <li>viii. Tight corner radii</li> <li>ix. Roundabouts or mini-circles</li> <li>x. On-street parking</li> <li>x. Chicanes/chokers</li> </ul> </li> <li>- Create urban non-motorized zones</li> <li>- Provide bike parking in non-residential and multi-unit residential projects</li> <li>- Dedicate land for bike trails</li> <li>- Limit parking supply through: <ul style="list-style-type: none"> <li>i. Elimination (or reduction) of minimum parking requirements</li> <li>ii. Creation of maximum parking requirements</li> <li>iii. Provision of shared parking</li> </ul> </li> <li>- Require residential area parking permit.</li> <li>- Provide ride-sharing programs <ul style="list-style-type: none"> <li>i. Designate a certain percentage of parking spacing for ride sharing vehicles</li> <li>ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles</li> <li>iii. Providing a web site or messaging board for coordinating rides</li> <li>iv. Permanent transportation management association membership and finding requirement.</li> </ul> </li> </ul>
<p style="text-align: center;"><b>Greenhouse Gas Project Level Mitigation Measures – PMM-GHG-1</b></p>



<p>In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the <i>State CEQA Guidelines</i>, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:</p>
<p>b) Reduce emissions resulting from projects through implementation of project features, project design, or other measures, such as those described in Appendix F of the State CEQA Guidelines.</p>
<p>c) Include off-site measures to mitigate a project's emissions.</p>
<p>d) Measures that consider incorporation of Best Available Control Technology (BACT) during design, construction and operation of projects to minimize GHG emissions, including but not limited to:</p> <ul style="list-style-type: none"> <li>i. Use energy and fuel-efficient vehicles and equipment;</li> <li>ii. Deployment of zero- and/or near zero emission technologies;</li> <li>iii. Use lighting systems that are energy efficient, such as LED technology;</li> <li>iv. Use the minimum feasible amount of GHG-emitting construction materials;</li> <li>v. Use cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production;</li> <li>vi. Incorporate design measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse;</li> <li>vii. Incorporate design measures to reduce energy consumption and increase use of renewable energy;</li> <li>viii. Incorporate design measures to reduce water consumption;</li> <li>ix. Use lighter-colored pavement where feasible;</li> <li>x. Recycle construction debris to maximum extent feasible;</li> <li>xi. Plant shade trees in or near construction projects where feasible; and</li> <li>xii. Solicit bids that include concepts listed above.</li> </ul>
<p>e) Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following:</p> <ul style="list-style-type: none"> <li>i. Promote transit-active transportation coordinated strategies;</li> <li>ii. Increase bicycle carrying capacity on transit and rail vehicles;</li> <li>iii. Improve or increase access to transit;</li> <li>iv. Increase access to common goods and services, such as groceries, schools, and day care;</li> <li>v. Incorporate affordable housing into the project;</li> <li>vi. Incorporate the neighborhood electric vehicle network;</li> <li>vii. Orient the project toward transit, bicycle and pedestrian facilities;</li> <li>viii. Improve pedestrian or bicycle networks, or transit service;</li> <li>ix. Provide traffic calming measures;</li> <li>x. Provide bicycle parking;</li> <li>xi. Limit or eliminate park supply;</li> <li>xii. Unbundle parking costs;</li> <li>xiii. Provide parking cash-out programs;</li> <li>xiv. Implement or provide access to commute reduction program;</li> </ul>
<p>f) Incorporate bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network;</p>
<p>g) Improving transit access to rail and bus routes by incentives for construction and transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and</p>

<p>h) Adopting employer trip reduction measures to reduce employee trips such as vanpool and carpool programs, providing end-of-trip facilities, and telecommuting programs including but not limited to measures that:</p> <ul style="list-style-type: none"> <li>i. Provide car-sharing, bike sharing, and ride-sharing programs;</li> <li>ii. Provide transit passes;</li> <li>iii. Shift single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services;</li> <li>iv. Provide incentives or subsidies that increase that use of modes other than single-occupancy vehicle;</li> <li>v. Provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms;</li> <li>vi. Provide employee transportation coordinators at employment sites;</li> <li>vii. Provide a guaranteed ride home service to users of non-auto modes.</li> </ul>
<p>i) Designate a percentage of parking spaces for ride-sharing vehicles or high-occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;</p>
<p>j) Land use siting and design measures that reduce GHG emissions, including:</p> <ul style="list-style-type: none"> <li>i. Developing on infill and brownfields sites;</li> <li>ii. Building compact and mixed-use developments near transit;</li> <li>iii. Retaining on-site mature trees and vegetation, and planting new canopy trees;</li> <li>iv. Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging stations or neighborhood electric vehicle networks, or charging for electric bicycles; and</li> <li>v. Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.</li> </ul>
<p>k) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities. The measures provided above are also intended to be applied in low income and minority communities as applicable and feasible.</p>
<p>l) Require at least five percent of all vehicle parking spaces include electric vehicle charging stations, or at a minimum, require the appropriate infrastructure to facilitate sufficient electric charging for passenger vehicles and trucks to plug-in.</p>
<p>m) Encourage telecommuting and alternative work schedules, such as:</p> <ul style="list-style-type: none"> <li>i. Staggered starting times</li> <li>ii. Flexible schedules</li> <li>iii. Compressed work weeks</li> </ul>
<p>n) Implement commute trip reduction marketing, such as:</p> <ul style="list-style-type: none"> <li>i. New employee orientation of trip reduction and alternative mode options</li> <li>ii. Event promotions</li> <li>iii. Publications</li> </ul>
<p>o) Implement preferential parking permit program</p>
<p>p) Implement school pool and bus programs</p>
<p>q) Price workplace parking, such as:</p> <ul style="list-style-type: none"> <li>i. Explicitly charging for parking for its employees;</li> <li>ii. Implementing above market rate pricing;</li> <li>iii. Validating parking only for invited guests;</li> <li>iv. Not providing employee parking and transportation allowances; and</li> <li>v. Educating employees about available alternatives.</li> </ul>

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. An EIR should be prepared to include all feasible mitigation measures, as well as include updated air quality, health risk, and GHG analyses to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's significant emissions are reduced to the maximum extent possible.

### Disclaimer

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

Sincerely,



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



Paul E. Rosenfeld, Ph.D.

Attachment A: CalEEMod Output Files

Attachment B: Matt Hagemann CV

Attachment C: Paul E. Rosenfeld CV

Sutter Parking Garage Expansion & MOB 10 - Placer-Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Sutter Parking Garage Expansion & MOB 10  
Placer-Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	100.00	1000sqft	1.64	100,000.00	0
Enclosed Parking with Elevator	1.00	1000sqft	0.94	191,957.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2			Operational Year	2024
Utility Company	Roseville Electric				
CO2 Intensity (lb/MW hr)	471.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/ND's model.

Land Use - See SWAPE comment on "Underestimated Land Use Size"

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	1,000.00	191,957.00
tblLandUse	LotAcreage	2.30	1.64
tblLandUse	LotAcreage	0.02	0.94

2.0 Emissions Summary

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
2022	0.2206	1.7553	1.7427	4.0800e-003	0.1295	0.0751	0.2045	0.0393	0.0716	0.1109	0.0000	358.0225	358.0225	0.0454	0.0145	363.4872
2023	0.5434	0.4187	0.4740	1.0900e-003	0.0291	0.0171	0.0462	7.9200e-003	0.0163	0.0242	0.0000	95.5395	95.5395	0.0121	3.7200e-003	96.9507
<b>Maximum</b>	<b>0.5434</b>	<b>1.7553</b>	<b>1.7427</b>	<b>4.0800e-003</b>	<b>0.1295</b>	<b>0.0751</b>	<b>0.2045</b>	<b>0.0393</b>	<b>0.0716</b>	<b>0.1109</b>	<b>0.0000</b>	<b>358.0225</b>	<b>358.0225</b>	<b>0.0454</b>	<b>0.0145</b>	<b>363.4872</b>

**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					
2022	0.2206	1.7553	1.7427	4.0800e-003	0.1295	0.0751	0.2045	0.0393	0.0716	0.1109	0.0000	358.0223	358.0223	0.0454	0.0145	363.4870
2023	0.5434	0.4187	0.4740	1.0900e-003	0.0291	0.0171	0.0462	7.9200e-003	0.0163	0.0242	0.0000	95.5394	95.5394	0.0121	3.7200e-003	96.9507
<b>Maximum</b>	<b>0.5434</b>	<b>1.7553</b>	<b>1.7427</b>	<b>4.0800e-003</b>	<b>0.1295</b>	<b>0.0751</b>	<b>0.2045</b>	<b>0.0393</b>	<b>0.0716</b>	<b>0.1109</b>	<b>0.0000</b>	<b>358.0223</b>	<b>358.0223</b>	<b>0.0454</b>	<b>0.0145</b>	<b>363.4870</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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
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	3-23-2022	6-22-2022	0.6247	0.6247
2	6-23-2022	9-22-2022	0.6427	0.6427
3	9-23-2022	12-22-2022	0.6415	0.6415
4	12-23-2022	3-22-2023	0.6046	0.6046
5	3-23-2023	6-22-2023	0.4270	0.4270
		Highest	0.6427	0.6427

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4521	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003
Energy	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	517.3496	517.3496	0.0318	5.2400e-003	519.7057
Mobile	1.2146	1.6056	10.3109	0.0192	1.8926	0.0176	1.9102	0.5070	0.0165	0.5235	0.0000	1,803.0820	1,803.0820	0.1297	0.1030	1,837.0035
Waste						0.0000	0.0000		0.0000	0.0000	219.2302	0.0000	219.2302	12.9561	0.0000	543.1336
Water						0.0000	0.0000		0.0000	0.0000	3.9809	16.3269	20.3078	0.4100	9.7900e-003	33.4766
<b>Total</b>	<b>1.6754</b>	<b>1.6855</b>	<b>10.3790</b>	<b>0.0197</b>	<b>1.8926</b>	<b>0.0237</b>	<b>1.9162</b>	<b>0.5070</b>	<b>0.0226</b>	<b>0.5296</b>	<b>223.2112</b>	<b>2,336.7603</b>	<b>2,559.9714</b>	<b>13.5277</b>	<b>0.1180</b>	<b>2,933.3213</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	0.4521	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003
Energy	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	517.3496	517.3496	0.0318	5.2400e-003	519.7057
Mobile	1.2146	1.6056	10.3109	0.0192	1.8926	0.0176	1.9102	0.5070	0.0165	0.5235	0.0000	1,803.0820	1,803.0820	0.1297	0.1030	1,837.0035
Waste						0.0000	0.0000		0.0000	0.0000	219.2302	0.0000	219.2302	12.9561	0.0000	543.1336
Water						0.0000	0.0000		0.0000	0.0000	3.9809	16.3269	20.3078	0.4100	9.7900e-003	33.4766
<b>Total</b>	<b>1.6754</b>	<b>1.6855</b>	<b>10.3790</b>	<b>0.0197</b>	<b>1.8926</b>	<b>0.0237</b>	<b>1.9162</b>	<b>0.5070</b>	<b>0.0226</b>	<b>0.5296</b>	<b>223.2112</b>	<b>2,336.7603</b>	<b>2,559.9714</b>	<b>13.5277</b>	<b>0.1180</b>	<b>2,933.3213</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 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	3/23/2022	4/19/2022	5	20	
2	Site Preparation	Site Preparation	4/20/2022	4/22/2022	5	3	
3	Grading	Grading	4/23/2022	5/2/2022	5	6	

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

4	Building Construction	Building Construction	5/3/2022	3/6/2023	5	220
5	Paving	Paving	3/7/2023	3/20/2023	5	10
6	Architectural Coating	Architectural Coating	3/21/2023	4/3/2023	5	10

**Acres of Grading (Site Preparation Phase): 4.5****Acres of Grading (Grading Phase): 6****Acres of Paving: 0.94****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 11,517 (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
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37



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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Welders	3	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	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	113.00	48.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****3.2 Demolition - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0169	0.1662	0.1396	2.4000e-004		8.3800e-003	8.3800e-003		7.8300e-003	7.8300e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2120
<b>Total</b>	<b>0.0169</b>	<b>0.1662</b>	<b>0.1396</b>	<b>2.4000e-004</b>		<b>8.3800e-003</b>	<b>8.3800e-003</b>		<b>7.8300e-003</b>	<b>7.8300e-003</b>	<b>0.0000</b>	<b>21.0777</b>	<b>21.0777</b>	<b>5.3700e-003</b>	<b>0.0000</b>	<b>21.2120</b>

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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	3.1800e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	0.0000	2.8000e-004	0.0000	0.8276	0.8276	3.0000e-005	2.0000e-005	0.8354
<b>Total</b>	<b>3.6000e-004</b>	<b>2.5000e-004</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>	<b>1.0200e-003</b>	<b>1.0000e-005</b>	<b>1.0300e-003</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>0.0000</b>	<b>0.8276</b>	<b>0.8276</b>	<b>3.0000e-005</b>	<b>2.0000e-005</b>	<b>0.8354</b>

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	0.0169	0.1662	0.1396	2.4000e-004		8.3800e-003	8.3800e-003		7.8300e-003	7.8300e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2119
<b>Total</b>	<b>0.0169</b>	<b>0.1662</b>	<b>0.1396</b>	<b>2.4000e-004</b>		<b>8.3800e-003</b>	<b>8.3800e-003</b>		<b>7.8300e-003</b>	<b>7.8300e-003</b>	<b>0.0000</b>	<b>21.0777</b>	<b>21.0777</b>	<b>5.3700e-003</b>	<b>0.0000</b>	<b>21.2119</b>

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## 3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	3.6000e-004	2.5000e-004	3.1800e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	0.0000	2.8000e-004	0.0000	0.8276	0.8276	3.0000e-005	2.0000e-005	0.8354
<b>Total</b>	<b>3.6000e-004</b>	<b>2.5000e-004</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>	<b>1.0200e-003</b>	<b>1.0000e-005</b>	<b>1.0300e-003</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>0.0000</b>	<b>0.8276</b>	<b>0.8276</b>	<b>3.0000e-005</b>	<b>2.0000e-005</b>	<b>0.8354</b>

## 3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0700e-003	0.0235	0.0151	4.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582
<b>Total</b>	<b>2.0700e-003</b>	<b>0.0235</b>	<b>0.0151</b>	<b>4.0000e-005</b>	<b>2.3900e-003</b>	<b>8.9000e-004</b>	<b>3.2800e-003</b>	<b>2.6000e-004</b>	<b>8.2000e-004</b>	<b>1.0800e-003</b>	<b>0.0000</b>	<b>3.2321</b>	<b>3.2321</b>	<b>1.0500e-003</b>	<b>0.0000</b>	<b>3.2582</b>

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## 3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.9000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0764	0.0764	0.0000	0.0000	0.0771
<b>Total</b>	<b>3.0000e-005</b>	<b>2.0000e-005</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0764</b>	<b>0.0764</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0771</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0700e-003	0.0235	0.0151	4.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582
<b>Total</b>	<b>2.0700e-003</b>	<b>0.0235</b>	<b>0.0151</b>	<b>4.0000e-005</b>	<b>2.3900e-003</b>	<b>8.9000e-004</b>	<b>3.2800e-003</b>	<b>2.6000e-004</b>	<b>8.2000e-004</b>	<b>1.0800e-003</b>	<b>0.0000</b>	<b>3.2321</b>	<b>3.2321</b>	<b>1.0500e-003</b>	<b>0.0000</b>	<b>3.2582</b>

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## 3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	3.0000e-005	2.0000e-005	2.9000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0764	0.0764	0.0000	0.0000	0.0771
<b>Total</b>	<b>3.0000e-005</b>	<b>2.0000e-005</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0764</b>	<b>0.0764</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0771</b>

## 3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0213	0.0000	0.0213	0.0103	0.0000	0.0103	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0510	0.0277	6.0000e-005		2.2300e-003	2.2300e-003		2.0500e-003	2.0500e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
<b>Total</b>	<b>4.6200e-003</b>	<b>0.0510</b>	<b>0.0277</b>	<b>6.0000e-005</b>	<b>0.0213</b>	<b>2.2300e-003</b>	<b>0.0235</b>	<b>0.0103</b>	<b>2.0500e-003</b>	<b>0.0123</b>	<b>0.0000</b>	<b>5.4308</b>	<b>5.4308</b>	<b>1.7600e-003</b>	<b>0.0000</b>	<b>5.4747</b>

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## 3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1910	0.1910	1.0000e-005	1.0000e-005	0.1928
<b>Total</b>	<b>8.0000e-005</b>	<b>6.0000e-005</b>	<b>7.3000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.1910</b>	<b>0.1910</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.1928</b>

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					0.0213	0.0000	0.0213	0.0103	0.0000	0.0103	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0510	0.0277	6.0000e-005		2.2300e-003	2.2300e-003		2.0500e-003	2.0500e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
<b>Total</b>	<b>4.6200e-003</b>	<b>0.0510</b>	<b>0.0277</b>	<b>6.0000e-005</b>	<b>0.0213</b>	<b>2.2300e-003</b>	<b>0.0235</b>	<b>0.0103</b>	<b>2.0500e-003</b>	<b>0.0123</b>	<b>0.0000</b>	<b>5.4308</b>	<b>5.4308</b>	<b>1.7600e-003</b>	<b>0.0000</b>	<b>5.4747</b>

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## 3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	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	8.0000e-005	6.0000e-005	7.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1910	0.1910	1.0000e-005	1.0000e-005	0.1928
<b>Total</b>	<b>8.0000e-005</b>	<b>6.0000e-005</b>	<b>7.3000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.1910</b>	<b>0.1910</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.1928</b>

## 3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1614	1.2706	1.2487	2.1800e-003		0.0611	0.0611		0.0586	0.0586	0.0000	180.6817	180.6817	0.0349	0.0000	181.5532
<b>Total</b>	<b>0.1614</b>	<b>1.2706</b>	<b>1.2487</b>	<b>2.1800e-003</b>		<b>0.0611</b>	<b>0.0611</b>		<b>0.0586</b>	<b>0.0586</b>	<b>0.0000</b>	<b>180.6817</b>	<b>180.6817</b>	<b>0.0349</b>	<b>0.0000</b>	<b>181.5532</b>

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2022****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2246	0.0669	8.8000e-004	0.0273	2.0600e-003	0.0293	7.9000e-003	1.9700e-003	9.8600e-003	0.0000	83.9194	83.9194	3.6000e-004	0.0127	87.7117
Worker	0.0273	0.0192	0.2404	6.8000e-004	0.0772	4.1000e-004	0.0776	0.0206	3.8000e-004	0.0209	0.0000	62.5858	62.5858	1.9600e-003	1.8000e-003	63.1723
<b>Total</b>	<b>0.0351</b>	<b>0.2438</b>	<b>0.3074</b>	<b>1.5600e-003</b>	<b>0.1045</b>	<b>2.4700e-003</b>	<b>0.1069</b>	<b>0.0285</b>	<b>2.3500e-003</b>	<b>0.0308</b>	<b>0.0000</b>	<b>146.5053</b>	<b>146.5053</b>	<b>2.3200e-003</b>	<b>0.0145</b>	<b>150.8839</b>

**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	0.1614	1.2706	1.2487	2.1800e-003		0.0611	0.0611		0.0586	0.0586	0.0000	180.6815	180.6815	0.0349	0.0000	181.5529
<b>Total</b>	<b>0.1614</b>	<b>1.2706</b>	<b>1.2487</b>	<b>2.1800e-003</b>		<b>0.0611</b>	<b>0.0611</b>		<b>0.0586</b>	<b>0.0586</b>	<b>0.0000</b>	<b>180.6815</b>	<b>180.6815</b>	<b>0.0349</b>	<b>0.0000</b>	<b>181.5529</b>



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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2246	0.0669	8.8000e-004	0.0273	2.0600e-003	0.0293	7.9000e-003	1.9700e-003	9.8600e-003	0.0000	83.9194	83.9194	3.6000e-004	0.0127	87.7117
Worker	0.0273	0.0192	0.2404	6.8000e-004	0.0772	4.1000e-004	0.0776	0.0206	3.8000e-004	0.0209	0.0000	62.5858	62.5858	1.9600e-003	1.8000e-003	63.1723
<b>Total</b>	<b>0.0351</b>	<b>0.2438</b>	<b>0.3074</b>	<b>1.5600e-003</b>	<b>0.1045</b>	<b>2.4700e-003</b>	<b>0.1069</b>	<b>0.0285</b>	<b>2.3500e-003</b>	<b>0.0308</b>	<b>0.0000</b>	<b>146.5053</b>	<b>146.5053</b>	<b>2.3200e-003</b>	<b>0.0145</b>	<b>150.8839</b>

## 3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0394	0.3134	0.3269	5.8000e-004		0.0141	0.0141		0.0135	0.0135	0.0000	47.7715	47.7715	9.0300e-003	0.0000	47.9973
<b>Total</b>	<b>0.0394</b>	<b>0.3134</b>	<b>0.3269</b>	<b>5.8000e-004</b>		<b>0.0141</b>	<b>0.0141</b>		<b>0.0135</b>	<b>0.0135</b>	<b>0.0000</b>	<b>47.7715</b>	<b>47.7715</b>	<b>9.0300e-003</b>	<b>0.0000</b>	<b>47.9973</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2023****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	1.2700e-003	0.0510	0.0162	2.2000e-004	7.2100e-003	3.1000e-004	7.5200e-003	2.0900e-003	2.9000e-004	2.3800e-003	0.0000	21.4399	21.4399	6.0000e-005	3.2400e-003	22.4075
Worker	6.7100e-003	4.5000e-003	0.0591	1.7000e-004	0.0204	1.0000e-004	0.0205	5.4300e-003	9.0000e-005	5.5300e-003	0.0000	16.1169	16.1169	4.7000e-004	4.4000e-004	16.2608
<b>Total</b>	<b>7.9800e-003</b>	<b>0.0555</b>	<b>0.0753</b>	<b>3.9000e-004</b>	<b>0.0276</b>	<b>4.1000e-004</b>	<b>0.0280</b>	<b>7.5200e-003</b>	<b>3.8000e-004</b>	<b>7.9100e-003</b>	<b>0.0000</b>	<b>37.5568</b>	<b>37.5568</b>	<b>5.3000e-004</b>	<b>3.6800e-003</b>	<b>38.6683</b>

**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	0.0394	0.3134	0.3269	5.8000e-004		0.0141	0.0141		0.0135	0.0135	0.0000	47.7714	47.7714	9.0300e-003	0.0000	47.9973
<b>Total</b>	<b>0.0394</b>	<b>0.3134</b>	<b>0.3269</b>	<b>5.8000e-004</b>		<b>0.0141</b>	<b>0.0141</b>		<b>0.0135</b>	<b>0.0135</b>	<b>0.0000</b>	<b>47.7714</b>	<b>47.7714</b>	<b>9.0300e-003</b>	<b>0.0000</b>	<b>47.9973</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2023****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	1.2700e-003	0.0510	0.0162	2.2000e-004	7.2100e-003	3.1000e-004	7.5200e-003	2.0900e-003	2.9000e-004	2.3800e-003	0.0000	21.4399	21.4399	6.0000e-005	3.2400e-003	22.4075
Worker	6.7100e-003	4.5000e-003	0.0591	1.7000e-004	0.0204	1.0000e-004	0.0205	5.4300e-003	9.0000e-005	5.5300e-003	0.0000	16.1169	16.1169	4.7000e-004	4.4000e-004	16.2608
<b>Total</b>	<b>7.9800e-003</b>	<b>0.0555</b>	<b>0.0753</b>	<b>3.9000e-004</b>	<b>0.0276</b>	<b>4.1000e-004</b>	<b>0.0280</b>	<b>7.5200e-003</b>	<b>3.8000e-004</b>	<b>7.9100e-003</b>	<b>0.0000</b>	<b>37.5568</b>	<b>37.5568</b>	<b>5.3000e-004</b>	<b>3.6800e-003</b>	<b>38.6683</b>

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8179
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>4.4000e-003</b>	<b>0.0431</b>	<b>0.0584</b>	<b>9.0000e-005</b>		<b>2.1700e-003</b>	<b>2.1700e-003</b>		<b>2.0000e-003</b>	<b>2.0000e-003</b>	<b>0.0000</b>	<b>7.7564</b>	<b>7.7564</b>	<b>2.4600e-003</b>	<b>0.0000</b>	<b>7.8179</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.3000e-004	1.7100e-003	1.0000e-005	5.9000e-004	0.0000	5.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4651	0.4651	1.0000e-005	1.0000e-005	0.4692
<b>Total</b>	<b>1.9000e-004</b>	<b>1.3000e-004</b>	<b>1.7100e-003</b>	<b>1.0000e-005</b>	<b>5.9000e-004</b>	<b>0.0000</b>	<b>5.9000e-004</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>0.4651</b>	<b>0.4651</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.4692</b>

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	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8178
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>4.4000e-003</b>	<b>0.0431</b>	<b>0.0584</b>	<b>9.0000e-005</b>		<b>2.1700e-003</b>	<b>2.1700e-003</b>		<b>2.0000e-003</b>	<b>2.0000e-003</b>	<b>0.0000</b>	<b>7.7564</b>	<b>7.7564</b>	<b>2.4600e-003</b>	<b>0.0000</b>	<b>7.8178</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.3000e-004	1.7100e-003	1.0000e-005	5.9000e-004	0.0000	5.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4651	0.4651	1.0000e-005	1.0000e-005	0.4692
<b>Total</b>	<b>1.9000e-004</b>	<b>1.3000e-004</b>	<b>1.7100e-003</b>	<b>1.0000e-005</b>	<b>5.9000e-004</b>	<b>0.0000</b>	<b>5.9000e-004</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>1.6000e-004</b>	<b>0.0000</b>	<b>0.4651</b>	<b>0.4651</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.4692</b>

## 3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4902					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
<b>Total</b>	<b>0.4912</b>	<b>6.5100e-003</b>	<b>9.0600e-003</b>	<b>1.0000e-005</b>		<b>3.5000e-004</b>	<b>3.5000e-004</b>		<b>3.5000e-004</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>1.2766</b>	<b>1.2766</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.2785</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.0000e-004	2.6200e-003	1.0000e-005	9.0000e-004	0.0000	9.1000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.7131	0.7131	2.0000e-005	2.0000e-005	0.7195
<b>Total</b>	<b>3.0000e-004</b>	<b>2.0000e-004</b>	<b>2.6200e-003</b>	<b>1.0000e-005</b>	<b>9.0000e-004</b>	<b>0.0000</b>	<b>9.1000e-004</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>0.7131</b>	<b>0.7131</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.7195</b>

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4902					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
<b>Total</b>	<b>0.4912</b>	<b>6.5100e-003</b>	<b>9.0600e-003</b>	<b>1.0000e-005</b>		<b>3.5000e-004</b>	<b>3.5000e-004</b>		<b>3.5000e-004</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>1.2766</b>	<b>1.2766</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>1.2785</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.7 Architectural Coating - 2023****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.0000e-004	2.6200e-003	1.0000e-005	9.0000e-004	0.0000	9.1000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.7131	0.7131	2.0000e-005	2.0000e-005	0.7195
<b>Total</b>	<b>3.0000e-004</b>	<b>2.0000e-004</b>	<b>2.6200e-003</b>	<b>1.0000e-005</b>	<b>9.0000e-004</b>	<b>0.0000</b>	<b>9.1000e-004</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>2.4000e-004</b>	<b>0.0000</b>	<b>0.7131</b>	<b>0.7131</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.7195</b>

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

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	1.2146	1.6056	10.3109	0.0192	1.8926	0.0176	1.9102	0.5070	0.0165	0.5235	0.0000	1,803.0820	1,803.0820	0.1297	0.1030	1,837.0035
Unmitigated	1.2146	1.6056	10.3109	0.0192	1.8926	0.0176	1.9102	0.5070	0.0165	0.5235	0.0000	1,803.0820	1,803.0820	0.1297	0.1030	1,837.0035

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Medical Office Building	3,480.00	857.00	142.00	5,144,491	5,144,491
Total	3,480.00	857.00	142.00	5,144,491	5,144,491

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450
Medical Office Building	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450

## 5.0 Energy Detail



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

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	430.3666	430.3666	0.0301	3.6500e-003	432.2058
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	430.3666	430.3666	0.0301	3.6500e-003	432.2058
NaturalGas Mitigated	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	86.9830	86.9830	1.6700e-003	1.5900e-003	87.4999
NaturalGas Unmitigated	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	86.9830	86.9830	1.6700e-003	1.5900e-003	87.4999

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	1.63e+006	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	86.9830	86.9830	1.6700e-003	1.5900e-003	87.4999
<b>Total</b>		<b>8.7900e-003</b>	<b>0.0799</b>	<b>0.0671</b>	<b>4.8000e-004</b>		<b>6.0700e-003</b>	<b>6.0700e-003</b>		<b>6.0700e-003</b>	<b>6.0700e-003</b>	<b>0.0000</b>	<b>86.9830</b>	<b>86.9830</b>	<b>1.6700e-003</b>	<b>1.5900e-003</b>	<b>87.4999</b>

**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					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	1.63e+006	8.7900e-003	0.0799	0.0671	4.8000e-004		6.0700e-003	6.0700e-003		6.0700e-003	6.0700e-003	0.0000	86.9830	86.9830	1.6700e-003	1.5900e-003	87.4999
<b>Total</b>		<b>8.7900e-003</b>	<b>0.0799</b>	<b>0.0671</b>	<b>4.8000e-004</b>		<b>6.0700e-003</b>	<b>6.0700e-003</b>		<b>6.0700e-003</b>	<b>6.0700e-003</b>	<b>0.0000</b>	<b>86.9830</b>	<b>86.9830</b>	<b>1.6700e-003</b>	<b>1.5900e-003</b>	<b>87.4999</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	1.04425e+006	223.5590	0.0156	1.8900e-003	224.5144
Medical Office Building	966000	206.8076	0.0145	1.7500e-003	207.6914
<b>Total</b>		<b>430.3666</b>	<b>0.0301</b>	<b>3.6400e-003</b>	<b>432.2058</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	1.04425e+006	223.5590	0.0156	1.8900e-003	224.5144
Medical Office Building	966000	206.8076	0.0145	1.7500e-003	207.6914
<b>Total</b>		<b>430.3666</b>	<b>0.0301</b>	<b>3.6400e-003</b>	<b>432.2058</b>

**6.0 Area Detail**

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4521	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003
Unmitigated	0.4521	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003

## 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	0.0490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4030					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003
<b>Total</b>	<b>0.4521</b>	<b>1.0000e-005</b>	<b>9.3000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.8000e-003</b>	<b>1.8000e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.9200e-003</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	0.0490					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4030					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-003	1.8000e-003	0.0000	0.0000	1.9200e-003
<b>Total</b>	<b>0.4521</b>	<b>1.0000e-005</b>	<b>9.3000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.8000e-003</b>	<b>1.8000e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.9200e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.3078	0.4100	9.7900e-003	33.4766
Unmitigated	20.3078	0.4100	9.7900e-003	33.4766

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	12.5481 / 2.39011	20.3078	0.4100	9.7900e-003	33.4766
<b>Total</b>		<b>20.3078</b>	<b>0.4100</b>	<b>9.7900e-003</b>	<b>33.4766</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	12.5481 / 2.39011	20.3078	0.4100	9.7900e-003	33.4766
<b>Total</b>		<b>20.3078</b>	<b>0.4100</b>	<b>9.7900e-003</b>	<b>33.4766</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	219.2302	12.9561	0.0000	543.1336
Unmitigated	219.2302	12.9561	0.0000	543.1336

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	1080	219.2302	12.9561	0.0000	543.1336
<b>Total</b>		<b>219.2302</b>	<b>12.9561</b>	<b>0.0000</b>	<b>543.1336</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Medical Office Building	1080	219.2302	12.9561	0.0000	543.1336
<b>Total</b>		<b>219.2302</b>	<b>12.9561</b>	<b>0.0000</b>	<b>543.1336</b>

**9.0 Operational Offroad**



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

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

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**Fire Pumps and Emergency Generators**

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

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

Equipment Type	Number
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**11.0 Vegetation**

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Sutter Parking Garage Expansion & MOB 10 - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Sutter Parking Garage Expansion & MOB 10  
Placer-Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	100.00	1000sqft	1.64	100,000.00	0
Enclosed Parking with Elevator	1.00	1000sqft	0.94	191,957.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2			Operational Year	2024
Utility Company	Roseville Electric				
CO2 Intensity (lb/MWhr)	471.98	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 IS/ND's model.

Land Use - See SWAPE comment on "Underestimated Land Use Size"

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	1,000.00	191,957.00
tblLandUse	LotAcreage	2.30	1.64
tblLandUse	LotAcreage	0.02	0.94

2.0 Emissions Summary

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
2022	2.3035	17.2564	18.2093	0.0435	7.1647	0.8384	7.9074	3.4465	0.7834	4.1298	0.0000	4,213.123 9	4,213.123 9	0.7698	0.1818	4,279.032 2
2023	98.2973	15.9070	17.7852	0.0429	1.2535	0.6314	1.8849	0.3399	0.6049	0.9447	0.0000	4,154.700 7	4,154.700 7	0.5447	0.1748	4,218.208 8
<b>Maximum</b>	<b>98.2973</b>	<b>17.2564</b>	<b>18.2093</b>	<b>0.0435</b>	<b>7.1647</b>	<b>0.8384</b>	<b>7.9074</b>	<b>3.4465</b>	<b>0.7834</b>	<b>4.1298</b>	<b>0.0000</b>	<b>4,213.123 9</b>	<b>4,213.123 9</b>	<b>0.7698</b>	<b>0.1818</b>	<b>4,279.032 2</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.3035	17.2564	18.2093	0.0435	7.1647	0.8384	7.9074	3.4465	0.7834	4.1298	0.0000	4,213.123 9	4,213.123 9	0.7698	0.1818	4,279.032 2
2023	98.2973	15.9070	17.7852	0.0429	1.2535	0.6314	1.8849	0.3399	0.6049	0.9447	0.0000	4,154.700 7	4,154.700 7	0.5447	0.1748	4,218.208 8
<b>Maximum</b>	<b>98.2973</b>	<b>17.2564</b>	<b>18.2093</b>	<b>0.0435</b>	<b>7.1647</b>	<b>0.8384</b>	<b>7.9074</b>	<b>3.4465</b>	<b>0.7834</b>	<b>4.1298</b>	<b>0.0000</b>	<b>4,213.123 9</b>	<b>4,213.123 9</b>	<b>0.7698</b>	<b>0.1818</b>	<b>4,279.032 2</b>

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

[illegible]

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Energy	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
Mobile	10.6656	10.7165	75.3683	0.1484	14.3949	0.1280	14.5229	3.8422	0.1201	3.9623		15,337.5469	15,337.5469	0.9500	0.7871	15,595.8454
<b>Total</b>	<b>13.1913</b>	<b>11.1544</b>	<b>75.7464</b>	<b>0.1510</b>	<b>14.3949</b>	<b>0.1613</b>	<b>14.5562</b>	<b>3.8422</b>	<b>0.1534</b>	<b>3.9956</b>		<b>15,862.9518</b>	<b>15,862.9518</b>	<b>0.9601</b>	<b>0.7967</b>	<b>16,124.3738</b>

**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	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Energy	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
Mobile	10.6656	10.7165	75.3683	0.1484	14.3949	0.1280	14.5229	3.8422	0.1201	3.9623		15,337.5469	15,337.5469	0.9500	0.7871	15,595.8454
<b>Total</b>	<b>13.1913</b>	<b>11.1544</b>	<b>75.7464</b>	<b>0.1510</b>	<b>14.3949</b>	<b>0.1613</b>	<b>14.5562</b>	<b>3.8422</b>	<b>0.1534</b>	<b>3.9956</b>		<b>15,862.9518</b>	<b>15,862.9518</b>	<b>0.9601</b>	<b>0.7967</b>	<b>16,124.3738</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/23/2022	4/19/2022	5	20	
2	Site Preparation	Site Preparation	4/20/2022	4/22/2022	5	3	
3	Grading	Grading	4/23/2022	5/2/2022	5	6	
4	Building Construction	Building Construction	5/3/2022	3/6/2023	5	220	
5	Paving	Paving	3/7/2023	3/20/2023	5	10	
6	Architectural Coating	Architectural Coating	3/21/2023	4/3/2023	5	10	

**Acres of Grading (Site Preparation Phase): 4.5****Acres of Grading (Grading Phase): 6****Acres of Paving: 0.94****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 11,517 (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
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Welders	3	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	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	113.00	48.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829		2,323.4168	2,323.4168	0.5921		2,338.2191
<b>Total</b>	<b>1.6889</b>	<b>16.6217</b>	<b>13.9605</b>	<b>0.0241</b>		<b>0.8379</b>	<b>0.8379</b>		<b>0.7829</b>	<b>0.7829</b>		<b>2,323.4168</b>	<b>2,323.4168</b>	<b>0.5921</b>		<b>2,338.2191</b>

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	0.0411	0.0224	0.3567	9.7000e-004	0.1068	5.4000e-004	0.1073	0.0283	5.0000e-004	0.0288		99.0622	99.0622	2.6400e-003	2.4300e-003	99.8520
<b>Total</b>	<b>0.0411</b>	<b>0.0224</b>	<b>0.3567</b>	<b>9.7000e-004</b>	<b>0.1068</b>	<b>5.4000e-004</b>	<b>0.1073</b>	<b>0.0283</b>	<b>5.0000e-004</b>	<b>0.0288</b>		<b>99.0622</b>	<b>99.0622</b>	<b>2.6400e-003</b>	<b>2.4300e-003</b>	<b>99.8520</b>



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.2 Demolition - 2022****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	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191
<b>Total</b>	<b>1.6889</b>	<b>16.6217</b>	<b>13.9605</b>	<b>0.0241</b>		<b>0.8379</b>	<b>0.8379</b>		<b>0.7829</b>	<b>0.7829</b>	<b>0.0000</b>	<b>2,323.4168</b>	<b>2,323.4168</b>	<b>0.5921</b>		<b>2,338.2191</b>

**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	0.0411	0.0224	0.3567	9.7000e-004	0.1068	5.4000e-004	0.1073	0.0283	5.0000e-004	0.0288		99.0622	99.0622	2.6400e-003	2.4300e-003	99.8520
<b>Total</b>	<b>0.0411</b>	<b>0.0224</b>	<b>0.3567</b>	<b>9.7000e-004</b>	<b>0.1068</b>	<b>5.4000e-004</b>	<b>0.1073</b>	<b>0.0283</b>	<b>5.0000e-004</b>	<b>0.0288</b>		<b>99.0622</b>	<b>99.0622</b>	<b>2.6400e-003</b>	<b>2.4300e-003</b>	<b>99.8520</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.3 Site Preparation - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476		2,375.1569	2,375.1569	0.7682		2,394.3613
<b>Total</b>	<b>1.3784</b>	<b>15.6673</b>	<b>10.0558</b>	<b>0.0245</b>	<b>1.5908</b>	<b>0.5952</b>	<b>2.1859</b>	<b>0.1718</b>	<b>0.5476</b>	<b>0.7193</b>		<b>2,375.1569</b>	<b>2,375.1569</b>	<b>0.7682</b>		<b>2,394.3613</b>

**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	0.0253	0.0138	0.2195	6.0000e-004	0.0657	3.3000e-004	0.0661	0.0174	3.1000e-004	0.0177		60.9614	60.9614	1.6200e-003	1.4900e-003	61.4474
<b>Total</b>	<b>0.0253</b>	<b>0.0138</b>	<b>0.2195</b>	<b>6.0000e-004</b>	<b>0.0657</b>	<b>3.3000e-004</b>	<b>0.0661</b>	<b>0.0174</b>	<b>3.1000e-004</b>	<b>0.0177</b>		<b>60.9614</b>	<b>60.9614</b>	<b>1.6200e-003</b>	<b>1.4900e-003</b>	<b>61.4474</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Site Preparation - 2022

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					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476	0.0000	2,375.156 9	2,375.156 9	0.7682		2,394.361 3
<b>Total</b>	<b>1.3784</b>	<b>15.6673</b>	<b>10.0558</b>	<b>0.0245</b>	<b>1.5908</b>	<b>0.5952</b>	<b>2.1859</b>	<b>0.1718</b>	<b>0.5476</b>	<b>0.7193</b>	<b>0.0000</b>	<b>2,375.156 9</b>	<b>2,375.156 9</b>	<b>0.7682</b>		<b>2,394.361 3</b>

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	0.0253	0.0138	0.2195	6.0000e-004	0.0657	3.3000e-004	0.0661	0.0174	3.1000e-004	0.0177		60.9614	60.9614	1.6200e-003	1.4900e-003	61.4474
<b>Total</b>	<b>0.0253</b>	<b>0.0138</b>	<b>0.2195</b>	<b>6.0000e-004</b>	<b>0.0657</b>	<b>3.3000e-004</b>	<b>0.0661</b>	<b>0.0174</b>	<b>3.1000e-004</b>	<b>0.0177</b>		<b>60.9614</b>	<b>60.9614</b>	<b>1.6200e-003</b>	<b>1.4900e-003</b>	<b>61.4474</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829		1,995.4825	1,995.4825	0.6454		2,011.6169
<b>Total</b>	<b>1.5403</b>	<b>16.9836</b>	<b>9.2202</b>	<b>0.0206</b>	<b>7.0826</b>	<b>0.7423</b>	<b>7.8249</b>	<b>3.4247</b>	<b>0.6829</b>	<b>4.1076</b>		<b>1,995.4825</b>	<b>1,995.4825</b>	<b>0.6454</b>		<b>2,011.6169</b>

**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	0.0316	0.0173	0.2744	7.5000e-004	0.0822	4.2000e-004	0.0826	0.0218	3.8000e-004	0.0222		76.2017	76.2017	2.0300e-003	1.8700e-003	76.8092
<b>Total</b>	<b>0.0316</b>	<b>0.0173</b>	<b>0.2744</b>	<b>7.5000e-004</b>	<b>0.0822</b>	<b>4.2000e-004</b>	<b>0.0826</b>	<b>0.0218</b>	<b>3.8000e-004</b>	<b>0.0222</b>		<b>76.2017</b>	<b>76.2017</b>	<b>2.0300e-003</b>	<b>1.8700e-003</b>	<b>76.8092</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Grading - 2022****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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829	0.0000	1,995.4825	1,995.4825	0.6454		2,011.6169
<b>Total</b>	<b>1.5403</b>	<b>16.9836</b>	<b>9.2202</b>	<b>0.0206</b>	<b>7.0826</b>	<b>0.7423</b>	<b>7.8249</b>	<b>3.4247</b>	<b>0.6829</b>	<b>4.1076</b>	<b>0.0000</b>	<b>1,995.4825</b>	<b>1,995.4825</b>	<b>0.6454</b>		<b>2,011.6169</b>

**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	0.0316	0.0173	0.2744	7.5000e-004	0.0822	4.2000e-004	0.0826	0.0218	3.8000e-004	0.0222		76.2017	76.2017	2.0300e-003	1.8700e-003	76.8092
<b>Total</b>	<b>0.0316</b>	<b>0.0173</b>	<b>0.2744</b>	<b>7.5000e-004</b>	<b>0.0822</b>	<b>4.2000e-004</b>	<b>0.0826</b>	<b>0.0218</b>	<b>3.8000e-004</b>	<b>0.0222</b>		<b>76.2017</b>	<b>76.2017</b>	<b>2.0300e-003</b>	<b>1.8700e-003</b>	<b>76.8092</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731		2,289.2813	2,289.2813	0.4417		2,300.3230
<b>Total</b>	<b>1.8555</b>	<b>14.6040</b>	<b>14.3533</b>	<b>0.0250</b>		<b>0.7022</b>	<b>0.7022</b>		<b>0.6731</b>	<b>0.6731</b>		<b>2,289.2813</b>	<b>2,289.2813</b>	<b>0.4417</b>		<b>2,300.3230</b>

**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	0.0912	2.4574	0.7559	0.0101	0.3253	0.0236	0.3489	0.0937	0.0226	0.1162		1,062.7634	1,062.7634	4.6300e-003	0.1607	1,110.7651
Worker	0.3568	0.1950	3.1002	8.4600e-003	0.9283	4.6900e-003	0.9330	0.2462	4.3200e-003	0.2505		861.0793	861.0793	0.0229	0.0211	867.9441
<b>Total</b>	<b>0.4480</b>	<b>2.6524</b>	<b>3.8560</b>	<b>0.0185</b>	<b>1.2535</b>	<b>0.0283</b>	<b>1.2818</b>	<b>0.3399</b>	<b>0.0269</b>	<b>0.3668</b>		<b>1,923.8426</b>	<b>1,923.8426</b>	<b>0.0276</b>	<b>0.1818</b>	<b>1,978.7092</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2022

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	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731	0.0000	2,289.2813	2,289.2813	0.4417		2,300.3230
<b>Total</b>	<b>1.8555</b>	<b>14.6040</b>	<b>14.3533</b>	<b>0.0250</b>		<b>0.7022</b>	<b>0.7022</b>		<b>0.6731</b>	<b>0.6731</b>	<b>0.0000</b>	<b>2,289.2813</b>	<b>2,289.2813</b>	<b>0.4417</b>		<b>2,300.3230</b>

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	0.0912	2.4574	0.7559	0.0101	0.3253	0.0236	0.3489	0.0937	0.0226	0.1162		1,062.7634	1,062.7634	4.6300e-003	0.1607	1,110.7651
Worker	0.3568	0.1950	3.1002	8.4600e-003	0.9283	4.6900e-003	0.9330	0.2462	4.3200e-003	0.2505		861.0793	861.0793	0.0229	0.0211	867.9441
<b>Total</b>	<b>0.4480</b>	<b>2.6524</b>	<b>3.8560</b>	<b>0.0185</b>	<b>1.2535</b>	<b>0.0283</b>	<b>1.2818</b>	<b>0.3399</b>	<b>0.0269</b>	<b>0.3668</b>		<b>1,923.8426</b>	<b>1,923.8426</b>	<b>0.0276</b>	<b>0.1818</b>	<b>1,978.7092</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880		2,289.523 3	2,289.523 3	0.4330		2,300.347 9
<b>Total</b>	<b>1.7136</b>	<b>13.6239</b>	<b>14.2145</b>	<b>0.0250</b>		<b>0.6136</b>	<b>0.6136</b>		<b>0.5880</b>	<b>0.5880</b>		<b>2,289.523 3</b>	<b>2,289.523 3</b>	<b>0.4330</b>		<b>2,300.347 9</b>

**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	0.0571	2.1098	0.6915	9.7200e-003	0.3253	0.0133	0.3386	0.0937	0.0127	0.1064		1,026.589 4	1,026.589 4	3.0100e-003	0.1552	1,072.899 7
Worker	0.3316	0.1733	2.8792	8.1900e-003	0.9283	4.4500e-003	0.9327	0.2462	4.1000e-003	0.2503		838.5880	838.5880	0.0208	0.0197	844.9612
<b>Total</b>	<b>0.3887</b>	<b>2.2830</b>	<b>3.5707</b>	<b>0.0179</b>	<b>1.2535</b>	<b>0.0178</b>	<b>1.2713</b>	<b>0.3399</b>	<b>0.0168</b>	<b>0.3567</b>		<b>1,865.177 4</b>	<b>1,865.177 4</b>	<b>0.0238</b>	<b>0.1748</b>	<b>1,917.860 9</b>



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.5 Building Construction - 2023****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	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880	0.0000	2,289.523 3	2,289.523 3	0.4330		2,300.347 9
<b>Total</b>	<b>1.7136</b>	<b>13.6239</b>	<b>14.2145</b>	<b>0.0250</b>		<b>0.6136</b>	<b>0.6136</b>		<b>0.5880</b>	<b>0.5880</b>	<b>0.0000</b>	<b>2,289.523 3</b>	<b>2,289.523 3</b>	<b>0.4330</b>		<b>2,300.347 9</b>

**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	0.0571	2.1098	0.6915	9.7200e-003	0.3253	0.0133	0.3386	0.0937	0.0127	0.1064		1,026.589 4	1,026.589 4	3.0100e-003	0.1552	1,072.899 7
Worker	0.3316	0.1733	2.8792	8.1900e-003	0.9283	4.4500e-003	0.9327	0.2462	4.1000e-003	0.2503		838.5880	838.5880	0.0208	0.0197	844.9612
<b>Total</b>	<b>0.3887</b>	<b>2.2830</b>	<b>3.5707</b>	<b>0.0179</b>	<b>1.2535</b>	<b>0.0178</b>	<b>1.2713</b>	<b>0.3399</b>	<b>0.0168</b>	<b>0.3567</b>		<b>1,865.177 4</b>	<b>1,865.177 4</b>	<b>0.0238</b>	<b>0.1748</b>	<b>1,917.860 9</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Paving - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003		1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8802</b>	<b>8.6098</b>	<b>11.6840</b>	<b>0.0179</b>		<b>0.4338</b>	<b>0.4338</b>		<b>0.4003</b>	<b>0.4003</b>		<b>1,709.9926</b>	<b>1,709.9926</b>	<b>0.5420</b>		<b>1,723.5414</b>

**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	0.0440	0.0230	0.3822	1.0900e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		111.3170	111.3170	2.7500e-003	2.6100e-003	112.1630
<b>Total</b>	<b>0.0440</b>	<b>0.0230</b>	<b>0.3822</b>	<b>1.0900e-003</b>	<b>0.1232</b>	<b>5.9000e-004</b>	<b>0.1238</b>	<b>0.0327</b>	<b>5.4000e-004</b>	<b>0.0332</b>		<b>111.3170</b>	<b>111.3170</b>	<b>2.7500e-003</b>	<b>2.6100e-003</b>	<b>112.1630</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.6 Paving - 2023

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	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003	0.0000	1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8802</b>	<b>8.6098</b>	<b>11.6840</b>	<b>0.0179</b>		<b>0.4338</b>	<b>0.4338</b>		<b>0.4003</b>	<b>0.4003</b>	<b>0.0000</b>	<b>1,709.9926</b>	<b>1,709.9926</b>	<b>0.5420</b>		<b>1,723.5414</b>

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	0.0440	0.0230	0.3822	1.0900e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		111.3170	111.3170	2.7500e-003	2.6100e-003	112.1630
<b>Total</b>	<b>0.0440</b>	<b>0.0230</b>	<b>0.3822</b>	<b>1.0900e-003</b>	<b>0.1232</b>	<b>5.9000e-004</b>	<b>0.1238</b>	<b>0.0327</b>	<b>5.4000e-004</b>	<b>0.0332</b>		<b>111.3170</b>	<b>111.3170</b>	<b>2.7500e-003</b>	<b>2.6100e-003</b>	<b>112.1630</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.7 Architectural Coating - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	98.0381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
<b>Total</b>	<b>98.2298</b>	<b>1.3030</b>	<b>1.8111</b>	<b>2.9700e-003</b>		<b>0.0708</b>	<b>0.0708</b>		<b>0.0708</b>	<b>0.0708</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0168</b>		<b>281.8690</b>

**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	0.0675	0.0353	0.5860	1.6700e-003	0.1889	9.1000e-004	0.1899	0.0501	8.3000e-004	0.0510		170.6861	170.6861	4.2200e-003	4.0000e-003	171.9833
<b>Total</b>	<b>0.0675</b>	<b>0.0353</b>	<b>0.5860</b>	<b>1.6700e-003</b>	<b>0.1889</b>	<b>9.1000e-004</b>	<b>0.1899</b>	<b>0.0501</b>	<b>8.3000e-004</b>	<b>0.0510</b>		<b>170.6861</b>	<b>170.6861</b>	<b>4.2200e-003</b>	<b>4.0000e-003</b>	<b>171.9833</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.7 Architectural Coating - 2023****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	98.0381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
<b>Total</b>	<b>98.2298</b>	<b>1.3030</b>	<b>1.8111</b>	<b>2.9700e-003</b>		<b>0.0708</b>	<b>0.0708</b>		<b>0.0708</b>	<b>0.0708</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0168</b>		<b>281.8690</b>

**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	0.0675	0.0353	0.5860	1.6700e-003	0.1889	9.1000e-004	0.1899	0.0501	8.3000e-004	0.0510		170.6861	170.6861	4.2200e-003	4.0000e-003	171.9833
<b>Total</b>	<b>0.0675</b>	<b>0.0353</b>	<b>0.5860</b>	<b>1.6700e-003</b>	<b>0.1889</b>	<b>9.1000e-004</b>	<b>0.1899</b>	<b>0.0501</b>	<b>8.3000e-004</b>	<b>0.0510</b>		<b>170.6861</b>	<b>170.6861</b>	<b>4.2200e-003</b>	<b>4.0000e-003</b>	<b>171.9833</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	10.6656	10.7165	75.3683	0.1484	14.3949	0.1280	14.5229	3.8422	0.1201	3.9623		15,337.54 69	15,337.54 69	0.9500	0.7871	15,595.84 54
Unmitigated	10.6656	10.7165	75.3683	0.1484	14.3949	0.1280	14.5229	3.8422	0.1201	3.9623		15,337.54 69	15,337.54 69	0.9500	0.7871	15,595.84 54

## 4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Medical Office Building	3,480.00	857.00	142.00	5,144,491	5,144,491
Total	3,480.00	857.00	142.00	5,144,491	5,144,491

## 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
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10

## 4.4 Fleet Mix

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450
Medical Office Building	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
NaturalGas Unmitigated	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	lb/day										lb/day					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	4465.75	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
<b>Total</b>		<b>0.0482</b>	<b>0.4378</b>	<b>0.3678</b>	<b>2.6300e-003</b>		<b>0.0333</b>	<b>0.0333</b>		<b>0.0333</b>	<b>0.0333</b>		<b>525.3828</b>	<b>525.3828</b>	<b>0.0101</b>	<b>9.6300e-003</b>	<b>528.5048</b>

**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					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	4.46575	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
<b>Total</b>		<b>0.0482</b>	<b>0.4378</b>	<b>0.3678</b>	<b>2.6300e-003</b>		<b>0.0333</b>	<b>0.0333</b>		<b>0.0333</b>	<b>0.0333</b>		<b>525.3828</b>	<b>525.3828</b>	<b>0.0101</b>	<b>9.6300e-003</b>	<b>528.5048</b>

**6.0 Area Detail**



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Unmitigated	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2080					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
<b>Total</b>	<b>2.4775</b>	<b>9.0000e-005</b>	<b>0.0103</b>	<b>0.0000</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>0.0221</b>	<b>0.0221</b>	<b>6.0000e-005</b>		<b>0.0236</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2080					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
<b>Total</b>	<b>2.4775</b>	<b>9.0000e-005</b>	<b>0.0103</b>	<b>0.0000</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>0.0221</b>	<b>0.0221</b>	<b>6.0000e-005</b>		<b>0.0236</b>

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

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

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**Fire Pumps and Emergency Generators**

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

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

Equipment Type	Number
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**11.0 Vegetation**

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Sutter Parking Garage Expansion & MOB 10 - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Sutter Parking Garage Expansion & MOB 10  
Placer-Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	100.00	1000sqft	1.64	100,000.00	0
Enclosed Parking with Elevator	1.00	1000sqft	0.94	191,957.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2			Operational Year	2024
Utility Company	Roseville Electric				
CO2 Intensity (lb/MW hr)	471.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the IS/ND's model.

Land Use - See SWAPE comment on "Underestimated Land Use Size"

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	1,000.00	191,957.00
tblLandUse	LotAcreage	2.30	1.64
tblLandUse	LotAcreage	0.02	0.94

2.0 Emissions Summary

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
2022	2.2748	17.4815	17.9573	0.0427	7.1647	0.8384	7.9074	3.4465	0.7834	4.1298	0.0000	4,129.128 <sub>9</sub>	4,129.128 <sub>9</sub>	0.7701	0.1855	4,196.224 <sub>3</sub>
2023	98.2926	16.1083	17.5568	0.0422	1.2535	0.6314	1.8850	0.3399	0.6049	0.9448	0.0000	4,074.159 <sub>1</sub>	4,074.159 <sub>1</sub>	0.5452	0.1784	4,138.816 <sub>1</sub>
<b>Maximum</b>	<b>98.2926</b>	<b>17.4815</b>	<b>17.9573</b>	<b>0.0427</b>	<b>7.1647</b>	<b>0.8384</b>	<b>7.9074</b>	<b>3.4465</b>	<b>0.7834</b>	<b>4.1298</b>	<b>0.0000</b>	<b>4,129.128<sub>9</sub></b>	<b>4,129.128<sub>9</sub></b>	<b>0.7701</b>	<b>0.1855</b>	<b>4,196.224<sub>3</sub></b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	2.2748	17.4815	17.9573	0.0427	7.1647	0.8384	7.9074	3.4465	0.7834	4.1298	0.0000	4,129.128 <sub>9</sub>	4,129.128 <sub>9</sub>	0.7701	0.1855	4,196.224 <sub>3</sub>
2023	98.2926	16.1083	17.5568	0.0422	1.2535	0.6314	1.8850	0.3399	0.6049	0.9448	0.0000	4,074.159 <sub>1</sub>	4,074.159 <sub>1</sub>	0.5452	0.1784	4,138.816 <sub>1</sub>
<b>Maximum</b>	<b>98.2926</b>	<b>17.4815</b>	<b>17.9573</b>	<b>0.0427</b>	<b>7.1647</b>	<b>0.8384</b>	<b>7.9074</b>	<b>3.4465</b>	<b>0.7834</b>	<b>4.1298</b>	<b>0.0000</b>	<b>4,129.128<sub>9</sub></b>	<b>4,129.128<sub>9</sub></b>	<b>0.7701</b>	<b>0.1855</b>	<b>4,196.224<sub>3</sub></b>

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

[illegible]

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Energy	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
Mobile	8.6062	12.3269	80.7797	0.1380	14.3949	0.1281	14.5230	3.8422	0.1202	3.9624		14,268.4204	14,268.4204	1.1285	0.8600	14,552.8974
<b>Total</b>	<b>11.1319</b>	<b>12.7648</b>	<b>81.1578</b>	<b>0.1407</b>	<b>14.3949</b>	<b>0.1614</b>	<b>14.5563</b>	<b>3.8422</b>	<b>0.1535</b>	<b>3.9957</b>		<b>14,793.8253</b>	<b>14,793.8253</b>	<b>1.1386</b>	<b>0.8696</b>	<b>15,081.4258</b>

**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	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Energy	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
Mobile	8.6062	12.3269	80.7797	0.1380	14.3949	0.1281	14.5230	3.8422	0.1202	3.9624		14,268.4204	14,268.4204	1.1285	0.8600	14,552.8974
<b>Total</b>	<b>11.1319</b>	<b>12.7648</b>	<b>81.1578</b>	<b>0.1407</b>	<b>14.3949</b>	<b>0.1614</b>	<b>14.5563</b>	<b>3.8422</b>	<b>0.1535</b>	<b>3.9957</b>		<b>14,793.8253</b>	<b>14,793.8253</b>	<b>1.1386</b>	<b>0.8696</b>	<b>15,081.4258</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/23/2022	4/19/2022	5	20	
2	Site Preparation	Site Preparation	4/20/2022	4/22/2022	5	3	
3	Grading	Grading	4/23/2022	5/2/2022	5	6	
4	Building Construction	Building Construction	5/3/2022	3/6/2023	5	220	
5	Paving	Paving	3/7/2023	3/20/2023	5	10	
6	Architectural Coating	Architectural Coating	3/21/2023	4/3/2023	5	10	

**Acres of Grading (Site Preparation Phase): 4.5****Acres of Grading (Grading Phase): 6****Acres of Paving: 0.94****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 11,517 (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
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Welders	3	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	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	113.00	48.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829		2,323.4168	2,323.4168	0.5921		2,338.2191
<b>Total</b>	<b>1.6889</b>	<b>16.6217</b>	<b>13.9605</b>	<b>0.0241</b>		<b>0.8379</b>	<b>0.8379</b>		<b>0.7829</b>	<b>0.7829</b>		<b>2,323.4168</b>	<b>2,323.4168</b>	<b>0.5921</b>		<b>2,338.2191</b>

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	0.0381	0.0280	0.3242	8.8000e-004	0.1068	5.4000e-004	0.1073	0.0283	5.0000e-004	0.0288		89.2573	89.2573	3.0900e-003	2.8100e-003	90.1730
<b>Total</b>	<b>0.0381</b>	<b>0.0280</b>	<b>0.3242</b>	<b>8.8000e-004</b>	<b>0.1068</b>	<b>5.4000e-004</b>	<b>0.1073</b>	<b>0.0283</b>	<b>5.0000e-004</b>	<b>0.0288</b>		<b>89.2573</b>	<b>89.2573</b>	<b>3.0900e-003</b>	<b>2.8100e-003</b>	<b>90.1730</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.2 Demolition - 2022****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	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191
<b>Total</b>	<b>1.6889</b>	<b>16.6217</b>	<b>13.9605</b>	<b>0.0241</b>		<b>0.8379</b>	<b>0.8379</b>		<b>0.7829</b>	<b>0.7829</b>	<b>0.0000</b>	<b>2,323.4168</b>	<b>2,323.4168</b>	<b>0.5921</b>		<b>2,338.2191</b>

**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	0.0381	0.0280	0.3242	8.8000e-004	0.1068	5.4000e-004	0.1073	0.0283	5.0000e-004	0.0288		89.2573	89.2573	3.0900e-003	2.8100e-003	90.1730
<b>Total</b>	<b>0.0381</b>	<b>0.0280</b>	<b>0.3242</b>	<b>8.8000e-004</b>	<b>0.1068</b>	<b>5.4000e-004</b>	<b>0.1073</b>	<b>0.0283</b>	<b>5.0000e-004</b>	<b>0.0288</b>		<b>89.2573</b>	<b>89.2573</b>	<b>3.0900e-003</b>	<b>2.8100e-003</b>	<b>90.1730</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476		2,375.1569	2,375.1569	0.7682		2,394.3613
<b>Total</b>	<b>1.3784</b>	<b>15.6673</b>	<b>10.0558</b>	<b>0.0245</b>	<b>1.5908</b>	<b>0.5952</b>	<b>2.1859</b>	<b>0.1718</b>	<b>0.5476</b>	<b>0.7193</b>		<b>2,375.1569</b>	<b>2,375.1569</b>	<b>0.7682</b>		<b>2,394.3613</b>

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	0.0235	0.0172	0.1995	5.4000e-004	0.0657	3.3000e-004	0.0661	0.0174	3.1000e-004	0.0177		54.9275	54.9275	1.9000e-003	1.7300e-003	55.4911
<b>Total</b>	<b>0.0235</b>	<b>0.0172</b>	<b>0.1995</b>	<b>5.4000e-004</b>	<b>0.0657</b>	<b>3.3000e-004</b>	<b>0.0661</b>	<b>0.0174</b>	<b>3.1000e-004</b>	<b>0.0177</b>		<b>54.9275</b>	<b>54.9275</b>	<b>1.9000e-003</b>	<b>1.7300e-003</b>	<b>55.4911</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.3 Site Preparation - 2022

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					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476	0.0000	2,375.1569	2,375.1569	0.7682		2,394.3613
<b>Total</b>	<b>1.3784</b>	<b>15.6673</b>	<b>10.0558</b>	<b>0.0245</b>	<b>1.5908</b>	<b>0.5952</b>	<b>2.1859</b>	<b>0.1718</b>	<b>0.5476</b>	<b>0.7193</b>	<b>0.0000</b>	<b>2,375.1569</b>	<b>2,375.1569</b>	<b>0.7682</b>		<b>2,394.3613</b>

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	0.0235	0.0172	0.1995	5.4000e-004	0.0657	3.3000e-004	0.0661	0.0174	3.1000e-004	0.0177		54.9275	54.9275	1.9000e-003	1.7300e-003	55.4911
<b>Total</b>	<b>0.0235</b>	<b>0.0172</b>	<b>0.1995</b>	<b>5.4000e-004</b>	<b>0.0657</b>	<b>3.3000e-004</b>	<b>0.0661</b>	<b>0.0174</b>	<b>3.1000e-004</b>	<b>0.0177</b>		<b>54.9275</b>	<b>54.9275</b>	<b>1.9000e-003</b>	<b>1.7300e-003</b>	<b>55.4911</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829		1,995.4825	1,995.4825	0.6454		2,011.6169
<b>Total</b>	<b>1.5403</b>	<b>16.9836</b>	<b>9.2202</b>	<b>0.0206</b>	<b>7.0826</b>	<b>0.7423</b>	<b>7.8249</b>	<b>3.4247</b>	<b>0.6829</b>	<b>4.1076</b>		<b>1,995.4825</b>	<b>1,995.4825</b>	<b>0.6454</b>		<b>2,011.6169</b>

**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	0.0293	0.0215	0.2494	6.7000e-004	0.0822	4.2000e-004	0.0826	0.0218	3.8000e-004	0.0222		68.6594	68.6594	2.3800e-003	2.1600e-003	69.3639
<b>Total</b>	<b>0.0293</b>	<b>0.0215</b>	<b>0.2494</b>	<b>6.7000e-004</b>	<b>0.0822</b>	<b>4.2000e-004</b>	<b>0.0826</b>	<b>0.0218</b>	<b>3.8000e-004</b>	<b>0.0222</b>		<b>68.6594</b>	<b>68.6594</b>	<b>2.3800e-003</b>	<b>2.1600e-003</b>	<b>69.3639</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.4 Grading - 2022****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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829	0.0000	1,995.4825	1,995.4825	0.6454		2,011.6169
<b>Total</b>	<b>1.5403</b>	<b>16.9836</b>	<b>9.2202</b>	<b>0.0206</b>	<b>7.0826</b>	<b>0.7423</b>	<b>7.8249</b>	<b>3.4247</b>	<b>0.6829</b>	<b>4.1076</b>	<b>0.0000</b>	<b>1,995.4825</b>	<b>1,995.4825</b>	<b>0.6454</b>		<b>2,011.6169</b>

**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	0.0293	0.0215	0.2494	6.7000e-004	0.0822	4.2000e-004	0.0826	0.0218	3.8000e-004	0.0222		68.6594	68.6594	2.3800e-003	2.1600e-003	69.3639
<b>Total</b>	<b>0.0293</b>	<b>0.0215</b>	<b>0.2494</b>	<b>6.7000e-004</b>	<b>0.0822</b>	<b>4.2000e-004</b>	<b>0.0826</b>	<b>0.0218</b>	<b>3.8000e-004</b>	<b>0.0222</b>		<b>68.6594</b>	<b>68.6594</b>	<b>2.3800e-003</b>	<b>2.1600e-003</b>	<b>69.3639</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731		2,289.2813	2,289.2813	0.4417		2,300.3230
<b>Total</b>	<b>1.8555</b>	<b>14.6040</b>	<b>14.3533</b>	<b>0.0250</b>		<b>0.7022</b>	<b>0.7022</b>		<b>0.6731</b>	<b>0.6731</b>		<b>2,289.2813</b>	<b>2,289.2813</b>	<b>0.4417</b>		<b>2,300.3230</b>

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	0.0878	2.6341	0.7860	0.0101	0.3253	0.0237	0.3490	0.0937	0.0227	0.1163		1,063.9961	1,063.9961	4.4800e-003	0.1610	1,112.0899
Worker	0.3315	0.2434	2.8181	7.6300e-003	0.9283	4.6900e-003	0.9330	0.2462	4.3200e-003	0.2505		775.8515	775.8515	0.0269	0.0245	783.8115
<b>Total</b>	<b>0.4193</b>	<b>2.8775</b>	<b>3.6041</b>	<b>0.0177</b>	<b>1.2535</b>	<b>0.0284</b>	<b>1.2819</b>	<b>0.3399</b>	<b>0.0270</b>	<b>0.3669</b>		<b>1,839.8477</b>	<b>1,839.8477</b>	<b>0.0313</b>	<b>0.1855</b>	<b>1,895.9014</b>



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2022

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	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731	0.0000	2,289.2813	2,289.2813	0.4417		2,300.3230
<b>Total</b>	<b>1.8555</b>	<b>14.6040</b>	<b>14.3533</b>	<b>0.0250</b>		<b>0.7022</b>	<b>0.7022</b>		<b>0.6731</b>	<b>0.6731</b>	<b>0.0000</b>	<b>2,289.2813</b>	<b>2,289.2813</b>	<b>0.4417</b>		<b>2,300.3230</b>

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	0.0878	2.6341	0.7860	0.0101	0.3253	0.0237	0.3490	0.0937	0.0227	0.1163		1,063.9961	1,063.9961	4.4800e-003	0.1610	1,112.0899
Worker	0.3315	0.2434	2.8181	7.6300e-003	0.9283	4.6900e-003	0.9330	0.2462	4.3200e-003	0.2505		775.8515	775.8515	0.0269	0.0245	783.8115
<b>Total</b>	<b>0.4193</b>	<b>2.8775</b>	<b>3.6041</b>	<b>0.0177</b>	<b>1.2535</b>	<b>0.0284</b>	<b>1.2819</b>	<b>0.3399</b>	<b>0.0270</b>	<b>0.3669</b>		<b>1,839.8477</b>	<b>1,839.8477</b>	<b>0.0313</b>	<b>0.1855</b>	<b>1,895.9014</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880		2,289.523 3	2,289.523 3	0.4330		2,300.347 9
<b>Total</b>	<b>1.7136</b>	<b>13.6239</b>	<b>14.2145</b>	<b>0.0250</b>		<b>0.6136</b>	<b>0.6136</b>		<b>0.5880</b>	<b>0.5880</b>		<b>2,289.523 3</b>	<b>2,289.523 3</b>	<b>0.4330</b>		<b>2,300.347 9</b>

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	0.0531	2.2683	0.7168	9.7400e-003	0.3253	0.0134	0.3386	0.0937	0.0128	0.1064		1,028.852 6	1,028.852 6	2.8200e-003	0.1556	1,075.298 2
Worker	0.3085	0.2161	2.6255	7.3800e-003	0.9283	4.4500e-003	0.9327	0.2462	4.1000e-003	0.2503		755.7832	755.7832	0.0244	0.0227	763.1700
<b>Total</b>	<b>0.3616</b>	<b>2.4844</b>	<b>3.3423</b>	<b>0.0171</b>	<b>1.2535</b>	<b>0.0178</b>	<b>1.2713</b>	<b>0.3399</b>	<b>0.0169</b>	<b>0.3568</b>		<b>1,784.635 8</b>	<b>1,784.635 8</b>	<b>0.0272</b>	<b>0.1784</b>	<b>1,838.468 3</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.5 Building Construction - 2023

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	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880	0.0000	2,289.523 3	2,289.523 3	0.4330		2,300.347 9
<b>Total</b>	<b>1.7136</b>	<b>13.6239</b>	<b>14.2145</b>	<b>0.0250</b>		<b>0.6136</b>	<b>0.6136</b>		<b>0.5880</b>	<b>0.5880</b>	<b>0.0000</b>	<b>2,289.523 3</b>	<b>2,289.523 3</b>	<b>0.4330</b>		<b>2,300.347 9</b>

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	0.0531	2.2683	0.7168	9.7400e-003	0.3253	0.0134	0.3386	0.0937	0.0128	0.1064		1,028.852 6	1,028.852 6	2.8200e-003	0.1556	1,075.298 2
Worker	0.3085	0.2161	2.6255	7.3800e-003	0.9283	4.4500e-003	0.9327	0.2462	4.1000e-003	0.2503		755.7832	755.7832	0.0244	0.0227	763.1700
<b>Total</b>	<b>0.3616</b>	<b>2.4844</b>	<b>3.3423</b>	<b>0.0171</b>	<b>1.2535</b>	<b>0.0178</b>	<b>1.2713</b>	<b>0.3399</b>	<b>0.0169</b>	<b>0.3568</b>		<b>1,784.635 8</b>	<b>1,784.635 8</b>	<b>0.0272</b>	<b>0.1784</b>	<b>1,838.468 3</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

## 3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003		1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8802</b>	<b>8.6098</b>	<b>11.6840</b>	<b>0.0179</b>		<b>0.4338</b>	<b>0.4338</b>		<b>0.4003</b>	<b>0.4003</b>		<b>1,709.9926</b>	<b>1,709.9926</b>	<b>0.5420</b>		<b>1,723.5414</b>

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	0.0410	0.0287	0.3485	9.8000e-004	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		100.3252	100.3252	3.2400e-003	3.0200e-003	101.3058
<b>Total</b>	<b>0.0410</b>	<b>0.0287</b>	<b>0.3485</b>	<b>9.8000e-004</b>	<b>0.1232</b>	<b>5.9000e-004</b>	<b>0.1238</b>	<b>0.0327</b>	<b>5.4000e-004</b>	<b>0.0332</b>		<b>100.3252</b>	<b>100.3252</b>	<b>3.2400e-003</b>	<b>3.0200e-003</b>	<b>101.3058</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.6 Paving - 2023****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	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003	0.0000	1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8802</b>	<b>8.6098</b>	<b>11.6840</b>	<b>0.0179</b>		<b>0.4338</b>	<b>0.4338</b>		<b>0.4003</b>	<b>0.4003</b>	<b>0.0000</b>	<b>1,709.9926</b>	<b>1,709.9926</b>	<b>0.5420</b>		<b>1,723.5414</b>

**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	0.0410	0.0287	0.3485	9.8000e-004	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		100.3252	100.3252	3.2400e-003	3.0200e-003	101.3058
<b>Total</b>	<b>0.0410</b>	<b>0.0287</b>	<b>0.3485</b>	<b>9.8000e-004</b>	<b>0.1232</b>	<b>5.9000e-004</b>	<b>0.1238</b>	<b>0.0327</b>	<b>5.4000e-004</b>	<b>0.0332</b>		<b>100.3252</b>	<b>100.3252</b>	<b>3.2400e-003</b>	<b>3.0200e-003</b>	<b>101.3058</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.7 Architectural Coating - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	98.0381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
<b>Total</b>	<b>98.2298</b>	<b>1.3030</b>	<b>1.8111</b>	<b>2.9700e-003</b>		<b>0.0708</b>	<b>0.0708</b>		<b>0.0708</b>	<b>0.0708</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0168</b>		<b>281.8690</b>

**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	0.0628	0.0440	0.5344	1.5000e-003	0.1889	9.1000e-004	0.1899	0.0501	8.3000e-004	0.0510		153.8320	153.8320	4.9700e-003	4.6300e-003	155.3355
<b>Total</b>	<b>0.0628</b>	<b>0.0440</b>	<b>0.5344</b>	<b>1.5000e-003</b>	<b>0.1889</b>	<b>9.1000e-004</b>	<b>0.1899</b>	<b>0.0501</b>	<b>8.3000e-004</b>	<b>0.0510</b>		<b>153.8320</b>	<b>153.8320</b>	<b>4.9700e-003</b>	<b>4.6300e-003</b>	<b>155.3355</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****3.7 Architectural Coating - 2023****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	98.0381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
<b>Total</b>	<b>98.2298</b>	<b>1.3030</b>	<b>1.8111</b>	<b>2.9700e-003</b>		<b>0.0708</b>	<b>0.0708</b>		<b>0.0708</b>	<b>0.0708</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0168</b>		<b>281.8690</b>

**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	0.0628	0.0440	0.5344	1.5000e-003	0.1889	9.1000e-004	0.1899	0.0501	8.3000e-004	0.0510		153.8320	153.8320	4.9700e-003	4.6300e-003	155.3355
<b>Total</b>	<b>0.0628</b>	<b>0.0440</b>	<b>0.5344</b>	<b>1.5000e-003</b>	<b>0.1889</b>	<b>9.1000e-004</b>	<b>0.1899</b>	<b>0.0501</b>	<b>8.3000e-004</b>	<b>0.0510</b>		<b>153.8320</b>	<b>153.8320</b>	<b>4.9700e-003</b>	<b>4.6300e-003</b>	<b>155.3355</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	8.6062	12.3269	80.7797	0.1380	14.3949	0.1281	14.5230	3.8422	0.1202	3.9624		14,268.4204	14,268.4204	1.1285	0.8600	14,552.8974
Unmitigated	8.6062	12.3269	80.7797	0.1380	14.3949	0.1281	14.5230	3.8422	0.1202	3.9624		14,268.4204	14,268.4204	1.1285	0.8600	14,552.8974

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Medical Office Building	3,480.00	857.00	142.00	5,144,491	5,144,491
Total	3,480.00	857.00	142.00	5,144,491	5,144,491

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10

## 4.4 Fleet Mix



## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450
Medical Office Building	0.466187	0.061512	0.210180	0.153350	0.034639	0.008391	0.014417	0.011935	0.000556	0.000412	0.031993	0.000977	0.005450

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
NaturalGas Unmitigated	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	lb/day										lb/day					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	4465.75	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
<b>Total</b>		<b>0.0482</b>	<b>0.4378</b>	<b>0.3678</b>	<b>2.6300e-003</b>		<b>0.0333</b>	<b>0.0333</b>		<b>0.0333</b>	<b>0.0333</b>		<b>525.3828</b>	<b>525.3828</b>	<b>0.0101</b>	<b>9.6300e-003</b>	<b>528.5048</b>

**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					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Medical Office Building	4.46575	0.0482	0.4378	0.3678	2.6300e-003		0.0333	0.0333		0.0333	0.0333		525.3828	525.3828	0.0101	9.6300e-003	528.5048
<b>Total</b>		<b>0.0482</b>	<b>0.4378</b>	<b>0.3678</b>	<b>2.6300e-003</b>		<b>0.0333</b>	<b>0.0333</b>		<b>0.0333</b>	<b>0.0333</b>		<b>525.3828</b>	<b>525.3828</b>	<b>0.0101</b>	<b>9.6300e-003</b>	<b>528.5048</b>

**6.0 Area Detail**

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
Unmitigated	2.4775	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2080					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
<b>Total</b>	<b>2.4775</b>	<b>9.0000e-005</b>	<b>0.0103</b>	<b>0.0000</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>0.0221</b>	<b>0.0221</b>	<b>6.0000e-005</b>		<b>0.0236</b>

## Sutter Parking Garage Expansion &amp; MOB 10 - Placer-Sacramento County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	0.2686					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.2080					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0103	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0221	0.0221	6.0000e-005		0.0236
<b>Total</b>	<b>2.4775</b>	<b>9.0000e-005</b>	<b>0.0103</b>	<b>0.0000</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>4.0000e-005</b>	<b>4.0000e-005</b>		<b>0.0221</b>	<b>0.0221</b>	<b>6.0000e-005</b>		<b>0.0236</b>

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

Sutter Parking Garage Expansion & MOB 10 - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

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8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

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Technical Consultation, Data Analysis and  
Litigation Support for the Environment

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**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 – 2014, 2017;
- Senior Environmental Analyst, Komex H<sub>2</sub>O Science, Inc. (2000 -- 2003);

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

**Senior Regulatory and Litigation Support Analyst:**

With SWAPE, Matt’s responsibilities have included:

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

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

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

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

#### **Executive Director:**

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

#### **Hydrogeology:**

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

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

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

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

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



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

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

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

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

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

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

### **Policy:**

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

Activities included the following:

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

principles into the policy-making process.

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

### **Geology:**

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

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

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

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

### **Teaching:**

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

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

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

### **Invited Testimony, Reports, Papers and Presentations:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Other Experience:**

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



Technical Consultation, Data Analysis and  
Litigation Support for the Environment

#### SOIL WATER AIR PROTECTION ENTERPRISE

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## ***Paul Rosenfeld, Ph.D.***

*Principal Environmental Chemist*

**Chemical Fate and Transport & Air Dispersion Modeling**

**Risk Assessment & Remediation Specialist**

### **Education**

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

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

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

### **Professional Experience**

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

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

## **Professional History:**

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner  
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)  
UCLA School of Public Health; 2003 to 2006; Adjunct Professor  
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator  
UCLA Institute of the Environment, 2001-2002; Research Associate  
Komex H<sub>2</sub>O Science, 2001 to 2003; Senior Remediation Scientist  
National Groundwater Association, 2002-2004; Lecturer  
San Diego State University, 1999-2001; Adjunct Professor  
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager  
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager  
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor  
King County, Seattle, 1996 – 1999; Scientist  
James River Corp., Washington, 1995-96; Scientist  
Big Creek Lumber, Davenport, California, 1995; Scientist  
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist  
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

## **Publications:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

## **Presentations:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **Teaching Experience:**

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

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

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

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

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

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

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

## **Academic Grants Awarded:**

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

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

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

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

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

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

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

## **Deposition and/or Trial Testimony:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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