ATTACHMENT NO. 3

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October 27, 2025

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Re: Appeal Comment for the California Environmental Quality Act Class 32 Categorical Exemption for Master Case No. 23-0101 (CUP No. 24-0022; DR No. 23-0024)

Dear Mayor Warren, Honorable Members of the Fontana City Council, Mr. Quintanilla, and Ms. Key:

This comment is submitted on behalf of Supporters Alliance for Environmental Responsibility ("SAFER") and its members living or working in the City of Fontana ("City"), in support of SAFER's appeal of the California Environmental Quality Act ("CEQA") Class 32 Categorical Exemption, or Infill Exemption ("Exemption"), for the Master Case No. 23-0101 Project (Conditional Use Permit No. 24-0022; Design Review No. 23-0024) ("Project"). The Project involves the construction of a new, five-story, mixed-use residential and commercial building with 163 dwelling units and 5,000 square feet of retail space, located at the southeast corner of Foothill Boulevard and Sultana Avenue in the City of Fontana, California. The Project is scheduled to be heard at the Fontana City Council hearing on October 28, 2025. The Fontana Planning Commission approved the Project based on an Infill Exemption at its hearing on August 19, 2025.

After careful review of Project documents, SAFER maintains that the Project does not qualify for the Infill Exemption because, as discussed below, substantial evidence shows that the Project will have significant adverse impacts related to biological resources and air quality. The

City therefore cannot rely on the Exemption because (1) the Exemption does not apply on its face, and (2) the Unusual Circumstances Exception to the Exemption applies.

SAFER's review of the Project has been assisted by expert wildlife ecologist Shawn Smallwood, Ph.D.; air quality experts Paul Rosenfeld, Ph.D., and Matt Hagemann, P.G., C.Hg., from the environmental consulting firm Soil/Water/Air Protection Enterprise ("SWAPE"); and indoor air quality expert Francis Offermann, P.E., C.I.H. Dr. Smallwood's comment and CV are attached as Exhibit A and are incorporated herein by reference in their entirety. SWAPE's comment and CV are attached as Exhibit B and are incorporated herein by reference in their entirety. Mr. Offermann's comment and CV are attached as Exhibit C and are incorporated herein by reference in their entirety.

For the reasons discussed below, the Project does not qualify for the Infill Exemption and instead requires an initial study to determine the appropriate level of CEQA review before approval, whether a mitigated negative declaration ("MND") or an environmental impact report ("EIR"). SAFER thus respectfully requests that the City Council grant SAFER's appeal and find that the Project does not qualify for the Exemption under CEQA.

PROJECT DESCRIPTION

The Project involves the construction of a new, five-story, mixed-use residential and commercial building with 163 dwelling units and 41 accessory dwelling units, as well as 5,000 square feet of commercial retail space and 277 parking spaces on the first floor. The Project site, currently undeveloped and vacant, totals 3.5 acres. The site is located on the southeast corner of Foothill Boulevard and Sultana Avenue, in the City of Fontana. The site is bounded by Foothill Boulevard to the south, Sultana Avenue to the west, the Pacific Electric Trail to the north, and vacant land to the east. The site is surrounded by single-family residences to the north and east, vacant land to the east and west, and commercial uses to the south. The site is zoned Multiple-Family High Density Residential (R-5) and has a General Plan land use designation of Multi Family High Residential (R-MFH).

LEGAL STANDARD

CEQA mandates that "the long-term protection of the environment . . . shall be the guiding criterion in public decisions" throughout California. (Pub. Res. Code § 21001(d) ["PRC"].) A "project" is "the whole of an action" directly undertaken, supported, or authorized by a public agency "which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." (PRC § 21065; 14 Cal. Code Regs. § 15378(a) ["CCR"].) CEQA requires environmental factors to be considered at the "earliest possible stage . . . before [the project] gains irreversible momentum," (*Bozung v. Loc. Agency Formation Com*. (1975) 13 Cal. 3d 263, 284), "at a point in the planning process where genuine flexibility remains." *(Sundstrom v. Mendocino County* (1988) 202 Cal.App.3d 296, 307.)

To achieve its objectives of environmental protection, CEQA has a three-tiered

structure. (14 CCR § 15002(k); *Committee to Save the Hollywoodland Specific Plan v. City of Los Angeles* (2008) 161 Cal.App.4th 1168, 1185-86 ["*Hollywoodland*"].) First, if a project falls into an exempt category, or if it can be seen with certainty that the activity in question will not have a significant effect on the environment, no further evaluation is required under CEQA. (14 CCR § 15002(k)(1).) Second, if the project is not exempt, and there is a possibility the project will have a significant environmental effect, then the agency must perform an initial threshold study. (14 CCR § 15002(k)(2).) Third, if the initial study indicates that there is no substantial evidence that the project may have a significant environmental effect (*id*.), then a MND is required, but if the initial study shows that the project may have a significant environmental effect, then an EIR is required. (14 CCR § 15002(k)(3).) Here, because the City exempted the Project from CEQA entirely, the first step of the CEQA process applies.

CEQA identifies certain classes of projects as exempt from CEQA's provisions. These are called categorical exemptions. (14 CCR §§ 15300, 15354.) "Exemptions to CEQA are narrowly construed and '[e]xemption categories are not to be expanded beyond the reasonable scope of their statutory language.' [Citations]." (*Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 125.) The determination as to the appropriate scope of a categorical exemption is a question of law subject to independent, or de novo, review. (*San Lorenzo Valley Community Advocates for Responsible Education v. San Lorenzo Valley Unified School Dist.*, (2006) 139 Cal. App. 4th 1356, 1375 ["[Q]uestions of interpretation or application of the requirements of CEQA are matters of law. [Citations.] Thus, for example, interpreting the scope of a CEQA exemption presents 'a question of law, subject to de novo review by this court.'"].) Here, the City has recommended that the Project is categorically exempt from CEQA's requirements pursuant to the Class 32 Exemption, or "Infill Exemption." (14 CCR § 15332.)

Under CEQA's Infill Exemption, a project is exempt from CEQA's requirements if the project meets the following five conditions:

(a) The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
(b) The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.
(c) The ***project site has no value, as habitat for endangered, rare, or threatened species***.
(d) ***Approval of the project would not result in any significant effects relating to*** traffic, noise, ***air quality***, or water quality.
(e) The site can be adequately served by all required utilities and public services.

(14 CCR § 15332 [emph. added].)

DISCUSSION

I. CEQA's Infill Exemption does not apply on its face to the Project, thus a full CEQA analysis is required.

The City relies on the CEQA Infill Exemption for the Project. One of the Exemption's key limitations is that it does not apply if a project (1) has value as habitat for endangered, rare, or threatened species, or (2) will have any significant effects related to air quality. (14 CCR § 15332(c), (d).) Here, the Project does not qualify for the Infill Exemption because the Project site has value as habitat for several special-status species, and the Project will have significant adverse impacts related to air quality. Therefore, the City must prepare an initial study to determine the appropriate level of CEQA review before approval, whether an EIR or an MND.

A. There is substantial evidence that the Project will have significant adverse impacts on biological resources, precluding reliance on the Infill Exemption.

Expert wildlife ecologist Dr. Shawn Smallwood, Ph.D. has reviewed the Project, the Categorical Exemption Memo ("CE Memo"), and other relevant documents regarding the Project's impacts on biological resources. Dr. Smallwood concluded that the Project site serves as habitat for multiple special-status species and that the CE Memo failed to adequately analyze the Project's significant adverse impacts on wildlife. (Ex. A at 1, 22.) He recommended several mitigation measures that are needed to reduce the Project's significant impacts on biological resources. (*Id*. at 27-28.)

1. The CE Memo did not fully account for the diversity of species that use the Project site as habitat, including several special-status species.

Dr. Smallwood's associate, biologist Noriko Smallwood, M.S., visited the Project site on August 15, 2025 for a 3-hour survey and on August 19, 2025 for a 1.83-hour diurnal survey and a 1.67-hour nocturnal survey. (*Id*. at 2.) During her visit, Ms. Smallwood detected 24 species of wildlife at the Project site, including eight special-status species. (*Id*. at 3.) These special-status species included: (1) the Monarch Butterfly, a candidate for listing under the federal Endangered Species Act; (2) the Western Red Bat, a Western Bat Working Group ("WBWG") high-priority species and a California Species of Special Concern ("SSC"); (3) the Canyon Bat, a WBWG moderate-priority species; (4) the Northern Harrier, a Priority 3 California Bird SSC, a Bird of Conservation Concern ("BCC") with the U.S. Fish & Wildlife Service, and a Bird of Prey ("BOP") protected under California Fish & Game Code § 3503.5; (5) the Allen's Hummingbird, a BCC; (6) the American kestrel, a BOP; (7) the Cooper's Hawk, a BOP and a species on the California Department of Fish & Wildlife Taxa to Watch List ("WL"); and (8) the White-Faced Ibis, also on the WL. (*Id*. at 3, 12.)

In contrast to Noriko's site visit, the City failed to complete any wildlife surveys of the Project site. (*Id*. at 16.) As a result, the City has no basis for determining whether the site provides habitat to special-status species of wildlife. (*Id*.)

CEQA requires government agencies to describe the "environmental setting" of the Project. (CEQA Guidelines § 15063(d)(2); *Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322.) The "environmental setting" is defined as "the physical conditions which exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." (CEQA Guidelines §

15360; *see* CEQA Guidelines § 21060.5; *Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal.App.4th 1170, 1192.) By failing to conduct any wildlife surveys of the Project site, or disclose the site's existing conditions, including the fact that the site contains at least eight special-status species, the CE Memo inadequately described the Project's "environmental setting" and thereby insufficiently analyzed the Project's biological impacts.

Additionally, Dr. Smallwood found that the City's desktop review was incomplete. (Ex. A at 16.) Desktop review includes literature and database reviews and consultation with local experts to inform field surveys and interpret a project's impacts on wildlife. (*Id*.) Dr. Smallwood found that the City's desktop review was inadequate and incomplete. (*Id*.) The City's desktop review was distorted to minimize the chances of the occurrence of special-status species. (*Id*.) Furthermore, the City did not conduct any desktop review specifically to evaluate the likelihood of the occurrence of special-status wildlife species on the Project site. (*Id*.) From his own assessment based on database reviews and Ms. Smallwood's site visits, Dr. Smallwood estimates that about 137 special-status wildlife species are known to occur close enough to the Project site to warrant analysis of their occurrence potential. (*Id*.)

Given Ms. Smallwood's identification of at least eight special-status species on the Project site, as well as the records of the occurrence of multiple other special-status species near the site, Dr. Smallwood deems the site as habitat for special-status species. (*Id*. at 22.) These species use the site for stopover during migration, survival, and reproduction. (*Id*.) Therefore, the proposed Infill Exemption is improper. Further CEQA review is needed to appropriately assess and reduce the Project's impacts on the wildlife community.

2. The Project will have significant adverse impacts on wildlife that the CE Memo failed to analyze and mitigate.

Dr. Smallwood concluded that the Project will have significant impacts on biological resources, including: (a) habitat loss; (b) interference with wildlife movement; and (c) bird-window collision mortality. The CE Memo did not address any of these impacts.

a. <u>The Project will have a significant impact on the site's reproductive capacity as a result of habitat loss.</u>

Dr. Smallwood calculated that the loss of habitat from the Project would cause the loss of 13 bird nesting sites and 18 nesting attempts per year, a loss that "would qualify as significant impacts that have not been analyzed by the City of Fontana." (*Id*. at 23.) However, these impacts would not end with this immediate numerical loss of nesting sites, for the reproductive capacity of the Project site would also be permanently lost. Dr. Smallwood estimated that the Project would prevent the production of 52 fledglings and 59 birds per year. (*Id*.) He concluded that "the loss of 59 birds per year would be a loss of significant habitat value," and that "the loss of this many birds would easily qualify as an unmitigated significant impact." (*Id*.) This is a significant adverse impact that must be analyzed and mitigated in an MND or EIR.

b. The Project will have a significant impact on wildlife as a result of interference with wildlife movement.

Dr. Smallwood concluded that the Project site provides wildlife with stopover opportunities during migration and dispersal of young, facilitating wildlife movement. (*Id*.) The Project would deprive wildlife of all such opportunities. However, the CE Memo failed to analyze how the Project would interfere with wildlife movement. (*Id*.)

c. The Project will have a significant impact on birds as a result of window collisions.

The Project would introduce glass windows into open airspace space that is currently an essential bird habitat. (*Id*.) Dr. Smallwood's database review and Ms. Smallwood's site visits showed that there are 95 special-status bird species with the potential to use the airspace around the Project site. (*Id*.) Dr. Smallwood calculated that the Project will add about 13,455 square meters of external glass windows that would expose birds to collision mortality. He predicted that the Project will cause 984 bird fatalities per year from window collisions. (*Id*. at 26.) Most of these predicted deaths would be of birds protected under the Migratory Bird Treat Act and California Migratory Bird Protection Act, "thus causing significant unmitigated impacts." (*Id*.) Given the estimated level of bird-window collision mortality, Dr. Smallwood concluded that "the proposed project would result in potentially significant adverse biological impacts, including the unmitigated take of both terrestrial and aerial habitat of birds and other sensitive species." (*Id*.) Therefore, the Exemption would be improper for the Project, given the magnitude of the predicted adverse impact to wildlife caused by bird-window collision mortality.

3. Mitigation measures are needed to reduce the Project's significant impacts on biological resources.

Dr. Smallwood suggests numerous mitigation measures that the City should implement to reduce the Project's significant adverse impacts on biological resources, should the Project proceed. Potential mitigation measures include preconstruction take-avoidance surveys for nesting birds, use of bird-safe glass and window treatments, compensatory mitigation for habitat loss, funding of wildlife rehabilitation facilities, and native plant landscaping. (*Id*. at 27-28.)

B. There is substantial evidence that the Project will have significant adverse air quality impacts, thereby precluding reliance on the Infill Exemption.

Air quality experts Dr. Paul Rosenfeld, Ph.D., and Matt Hagemann, P.G., C.Hg., from the environmental consulting firm SWAPE have reviewed the Project, the CE Memo, and other relevant documents regarding the Project's air quality and human health impacts. SWAPE concluded that: (1) the CE Memo failed to adequately evaluate the Project's air quality impacts; and (2) the Project may have significant adverse health risk impacts related to Project's construction emissions. (Ex. B at 1, 6.) SWAPE recommended that "a full CEQA analysis be prepared . . . to ensure that the Project's potentially significant emissions are reduced to the maximum extent possible." (*Id*. at 7.)

1. The CE Memo failed to adequately evaluate the Project's construction emissions of toxic air contaminants.

CEQA requires agencies to substantively connect a project's air quality impacts to associated impacts on human health risks. (*See Sierra Club v. Cnty. of Fresno* (2018) 6 Cal.5th 502.) Here, SWAPE found that the CE Memo neither assessed the Project's construction emissions of diesel particulate matter ("DPM"), a toxic air contaminant and known carcinogen, nor conducted a quantified health risk assessment ("HRA") to evaluate the health risks posed by the Project's DPM emissions to nearby sensitive receptors. (Ex. B at 2.) Therefore, the CE Memo is inconsistent with CEQA's requirement to connect the increase in DPM emissions created by the Project's construction to the adverse impacts of those emissions on human health. (*Id*.) An MND or EIR must be prepared to evaluate these impacts.

2. The Project may have significant adverse health risk impacts related to the Project construction's emissions.

Using AERSCREEN, a screening-level air quality dispersion model, SWAPE conducted a preliminary HRA of the cancer risk impacts of the Project's construction DPM emissions on nearby residential sensitive receptors. (*Id*.) The CE Memo indicates that Project construction would produce about 69.5 pounds of DPM over the 422-day construction period. (*Id*.) The closest sensitive receptors to the Project site include single-family residences just 80 feet away. (*Id*. at 3; CE Memo at 14, 72.) SWAPE calculated that, during construction, the excess cancer risk of the Project's DPM emissions to these sensitive receptors is 29.3 per million. (Ex. B at 5.) This far exceeds the 10 per million cancer risk threshold of the South Coast Air Quality Management District ("SCAQMD"). (*Id*.) Thus, SWAPE's findings show that Project construction may result in a significant health risk impact. A full CEQA analysis should be prepared to analyze and mitigate this impact. (*Id*. at 6.)

C. There is substantial evidence that the Project will pose significant health risks from indoor air quality impacts, thereby precluding reliance on the Infill Exemption.

Certified industrial hygienist, Francis Offermann, P.E., C.I.H., has reviewed the Project, the CE Memo, and other relevant documents regarding the Project's indoor air emissions. These documents provide no analysis of the Project's indoor air quality impacts. Mr. Offermann concluded that the Project will expose its future residents to significant health impacts related to indoor air quality, particularly emissions of the cancer-causing chemical formaldehyde. Mr. Offermann is a leading expert on indoor air quality and has published extensively on the topic.

Mr. Offermann explained that many composite wood products used in building materials commonly found in residences contain formaldehyde-based glues which release formaldehyde gas over a very long period of time. He stated, "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. C at 2.)

Formaldehyde is a known human carcinogen, classified by the State as a Toxic Air Contaminant. The SCAQMD has established a CEQA significance threshold for airborne cancer risk of 10 per million. Mr. Offermann found that future Project occupants may be exposed to a cancer risk from formaldehyde emissions of about 120 per million for residents and 17.7 per million for commercial employees, even assuming that all materials comply with the California Air Resources Board's ("CARB") formaldehyde airborne toxics control measure. (*Id*. at 4-5.) This exceeds the SCAQMD's CEQA significance threshold for airborne cancer risk. (*Id*. at 2.)

Mr. Offermann concluded that the Project will have significant environmental impacts that must be analyzed in an EIR or MND and mitigation measures must be imposed to reduce the raised cancer risk. (*Id*. at 12-13.) Mr. Offermann prescribed a methodology for estimating the Project's formaldehyde emissions for a more project-specific health risk assessment. (*Id*. at 6-10.) He also identified feasible several mitigation measures to decrease the significant health risks, like installing air ventilation systems and requiring the use of composite wood materials only for all interior finish systems that are made with CARB-approved no-added formaldehyde ("NAF") resins or ultra-low emitting formaldehyde ("ULEF") resins. (*Id*. at 12-14.)

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. Cnty. of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District's "published CEQA quantitative criteria" and "threshold level of cumulative significance"]; *see also Communities for a Better Env't v. Cal. Res. Agency* (2002) 103 Cal.App.4th 98, 110-11 ["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 has shown the importance an air district significance threshold has in providing substantial evidence of a significant adverse impact. (*Communities for a Better Env't v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 327 [estimated emissions in excess of air district's significance thresholds "constitute substantial evidence supporting a fair argument for a significant adverse impact"].) Since expert evidence shows the Project will exceed the SCAQMD's CEQA significance threshold, there is substantial evidence that an "unstudied, potentially significant environmental effect[]" exists. (*See Friends of Coll. of San Mateo Gardens v. San Mateo Cty. Cmty. Coll. Dist.* (2016) 1 Cal.5th 937, 958.)

The City's failure to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *Cal. Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("*CBIA*"). The Court held in *CBIA* that CEQA does not generally require lead agencies to analyze the impacts of adjacent environmental conditions on a project. (*Id*. at 800-01.) However, to the extent that a project may exacerbate existing environmental conditions at or near a project site, those effects would still have to be considered pursuant to CEQA. (*Id*. at 801 ["CEQA calls upon an agency to evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present"].) In so holding, the Court expressly held that CEQA's statutory language requires 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 Mr. Offermann has identified are not an existing environmental condition. Those emissions will be from the Project. Residential tenants will be the Project's users. Currently, there is presumably little to no formaldehyde emissions at the site. Once built, the Project will start emitting formaldehyde at levels posing significant direct and cumulative health risks to the Project's users. The California Supreme Court in *CBIA* expressly found that this air emission and health impact from the Project on the environment and a "project's users and residents" must be addressed under CEQA.

The California Supreme Court's reasoning is well-grounded in CEQA's statutory language. CEQA expressly includes a project's effects on human beings as an effect on the environment that must be addressed in an environmental review. "Section 21083(b)(3)'s express language, for example, requires a finding of a 'significant effect on the environment' (§ 21083(b)) whenever the 'environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.'" (*CBIA*, 62 Cal.4th at 800 [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(b), (c), (d), (g), 21001(b), (d).) It goes without saying that the Project's future residents are human beings, and their health and safety must be subjected to CEQA's safeguards.

The City has a duty to investigate issues relating to a project's potential environmental impacts. (*See Cnty. Sanitation Dist. No. 2 v. Cnty. 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 Project will have significant effects on indoor air quality and health risks by emitting formaldehyde that will expose future residents to cancer risks exceeding SCAQMD's significance threshold for cancer risk of 10 per million. In light of this impact and the City's lack of any evidence to the contrary, the Project does not qualify for the Infill Exemption and must undergo CEQA review before approval.

II. The Project does not qualify for CEQA's Infill Exemption due to the Unusual Circumstances Exception.

The Unusual Circumstances Exception ("Exception") prohibits categorical exemptions where there is a "reasonable possibility" that a project will significantly impact the environment "due to unusual circumstances." (14 CCR § 15300.2(c).) To determine whether the Exception applies, agencies examine (1) whether the project has some feature that distinguishes it from others in the exempt class, such as its size or location, and (2) whether there is a reasonable possibility of a significant environmental effect due to that unusual circumstance. (*Berkeley Hillside Preservation v. City of Berkeley* (2015) 60 Cal.4th 1086, 1098; *IBC Business Owners for Sensible Development v. City of Irvine* (2023) 88 Cal.App.5th 100, 132.) The California Supreme Court has held that "a party may establish an unusual circumstance with evidence that the project will have a ***significant environmental effect***." (*Berkeley Hillside Preservation*, 60 Cal.4th at 1105 [emph. added].) That evidence, if convincing, necessarily also establishes a reasonable possibility that the project will significantly affect the environment due to those unusual

circumstances. (*Id*.)

The close proximity of a project site to sensitive receptors is an unusual circumstance. Here, the closest sensitive receptors include existing single-family residences as close as 80 feet northeast of the Project site. (CE Memo at 14, 72; Ex. B at 3.) As a result of this unusual circumstance, the Project poses a dramatically higher cancer risk from DPM to neighboring sensitive receptors, as discussed by SWAPE. DPM cancer risks are highly dependent on proximity. This is very similar to the case of *Lewis v. Seventeenth Dist. Agric. Assn.* (1985) 165 Cal. App. 3d 823, 831, where the close proximity of residences to a proposed automobile racetrack was held to be an "unusual circumstance" precluding reliance on a CEQA exemption because the proximity created heightened noise impacts.

Additionally, as discussed above, we have submitted substantial evidence that the Project will have significant adverse impacts related to biological resources and air quality. The fact that these impacts will occur constitutes an unusual circumstance, thereby precluding the City's reliance on the Exemption.

CONCLUSION

The City cannot rely on a CEQA Infill Exemption because SAFER has provided substantial evidence showing that the Project will have significant adverse impacts related to biological resources, air quality, and indoor air quality. Therefore, SAFER respectfully requests that the City Council find that the Project does not qualify for the Exemption. The City instead must prepare an MND or EIR before Project approval.

Sincerely,

Hayley Uno
LOZEAU DRURY LLP

EXHIBIT A

Shawn Smallwood, PhD
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28 August 2025

RE: Fontana Master Case No. 23-0101

Dear Ms. Davis,

I write to comment on potential impacts to biological resources that would result from development of the proposed Fontana Master Case No. 23-0101 project. I understand the project would add 163 residential units, 41 Americans with Disabilities Act Units and 5,000 sf of commercial space on 3.5 acres at the northeast corner of Sultana Ave and Foothill Blvd in Fontana, California. My comments that follow address my concern that the proposed Class-32 CEQA Categorical Exemption and the Exemption under AB 130 would be inappropriate, because the site is habitat for multiple special-status species, and there has been no analysis of potential impacts to wildlife due to habitat loss, interference with wildlife movement in the region and bird-window collision mortality.

My qualifications for preparing expert comments are the following. I hold a Ph.D. degree in Ecology from University of California at Davis, where I also worked as a post-graduate researcher in the Department of Agronomy and Range Sciences. My research has been on animal density and distribution, habitat selection, wildlife interactions with the anthrosphere, and conservation of rare and endangered species. I authored many papers on these and other topics. I served as Chair of the Conservation Affairs Committee for The Wildlife Society – Western Section. I am a member of The Wildlife Society and Raptor Research Foundation, and I've lectured part-time at California State University, Sacramento. I was Associate Editor of wildlife biology's premier scientific journal, The Journal of Wildlife Management, as well as of Biological Conservation, and I was on the Editorial Board of Environmental Management. I have performed wildlife surveys in California for thirty-seven years. My CV is attached.

THE WILDLIFE COMMUNITY AS A BIOLOGICAL RESOURCE

Most environmental reviews pursuant to the California Environmental Quality Act (CEQA) focus on special-status species because CEQA's Checklist Evaluation of Environmental Impacts specifies that such evaluation includes potential impacts to special-status species. However, an important policy of CEQA is "to prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history." Pub. Res. Code § 21001(c). This policy is not restricted to special-status species, but it also applies to wildlife populations and plant

and animal communities. In fact, the CEQA Guidelines Section 21155.1 defines wildlife habitat as "the ecological communities upon which wild animals, birds, plants, fish, amphibians, and invertebrates depend for their conservation and protection." This definition is consistent with the scientific definition of habitat, which is that portion of the environment that is used by members of a species for survival and reproduction (Hall et al. 1997). An essential portion of the environment used by any special-status species is composed of the collection of other species of plants and wildlife, because these species are forage, provisioners of refugia and nest substrates, and ecological mutualists; no special-status species can exist in a vacuum of other wildlife. The CEQA Checklist Evaluation assigns priority to special-status species to balance information and cost, but it does not exclude the need to evaluate environmental impacts to other species, which, after all, are members of the very communities within which special-status species inter-depend for survival and reproduction.

All wildlife species should be of concern in a CEQA review, but the CEQA prioritizes special-status species. The species I consider to be special-status species are those listed in California's Special Animals List inclusive of threatened and endangered species under the California and federal Endangered Species Acts, candidates for listing under CESA and FESA, California's Fully Protected Species, California species of special concern, and California's Taxa to Watch List (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406), continental and region-specific US Fish and Wildlife Service Birds of Conservation Concern (https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf), and naturally rare species such as raptors protected by California's Birds of Prey laws, Fish and Game Code Sections 3503, 3503.5, 3505 and 3513 (see https://wildlife.ca.gov/Conservation/ Birds/Raptors).

What follows is a summary of a site visit to detect as many of the species of wildlife as possible within the short time available. The survey was also intended to detect as many of the special-status species as possible, but with the understanding that most special-status species are less readily detectable due to rarity and crypticity. Nonetheless, the species detected can indicate the ecological integrity of the site and thus the likelihood of occurrence of special-status species not yet detected.

SITE VISIT

On my behalf, Noriko Smallwood, a wildlife biologist with a Master of Science Degree from California State University Los Angeles, visited the site of the proposed project for 3 hours from 06:16 to 09:16 hours on 15 August 2025, AND for 1.83 hours of diurnal survey from 18:04 to 19:54 hours and 1.67 hours of nocturnal survey from 19:25 to 21:05 hours on 19 August 2025. During daylight, Noriko walked the site's perimeter where accessible, stopping to scan for wildlife with use of binoculars. At night, Noriko strapped a Petterson M500 acoustic bat detector to a 30-foot pole, and cabled the detector to her computer, which ran Sonobat Live. Sonobat Live identifies bats to species based on the bats' sonograms that are detected by the M500. Noriko recorded all species of vertebrate wildlife she detected, including those whose members flew over the site or were seen just off the site. Animals of uncertain species identity were either recorded to the Genus or higher taxonomic level.

Conditions were cloudy with no wind and temperatures of 62-70° F on 15 August 2025. On 19 August 2025, conditions were sunny with 12 MPH west wind and temperatures of 89-84° F during the diurnal survey, and clear with 7 MPH west wind and temperatures of 84-78° F during the nocturnal survey. The site is primarily annual grassland that appears to be mowed periodically, with eucalyptus, willow, rosemary, and other ornamental plants and trees along the western and northern borders (Photos 1 and 2).

Noriko saw American kestrel and Cooper's hawk (Photos 3 and 4), Allen's hummingbird and Anna's hummingbird (Photos 5 and 6), white-faced ibis (Photo 7), lesser goldfinch and house finch (Photos 8 and 9), common raven (Photo 10), Cassin's kingbird and black phoebe (Photos 11 and 12), Eurasian collared-dove and mourning dove (Photos 13 and 14), northern mockingbird and western side-blotched lizard (Photos 15 and 16), Great Basin fence lizard (Photo 17), monarch (Photos 18 and 19), desert cottontail (Photo 20), canyon bat (Photos 21 and 24), California ground squirrel and house cat (Photos 22 and 23), and possible western red bat (Photo 25), among the other species listed in Table 1. Noriko detected 23 species of vertebrate wildlife at or adjacent to the project site, including six or seven species with special status as well as Monarch, which is a candidate for listing under the federal Endangered Species Act (Table 1).

Photos 1 and 2. *Views of the project site, 15 August 2025. Photos by Noriko Smallwood.*

Photos 3 and 4. *American kestrel (top), and American kestrel harassing a Cooper's hawk (bottom) on the project site, 15 and 19 August 2025. Photos by Noriko Smallwood.*


Photos 5 and 6. *Allen's hummingbird (left), and Anna's hummingbird (right) on the project site, 15 August 2025. Photos by Noriko Smallwood.*

Photo 7. *White-faced ibis flying over the project site, 15 August 2025. Photo by Noriko Smallwood.*

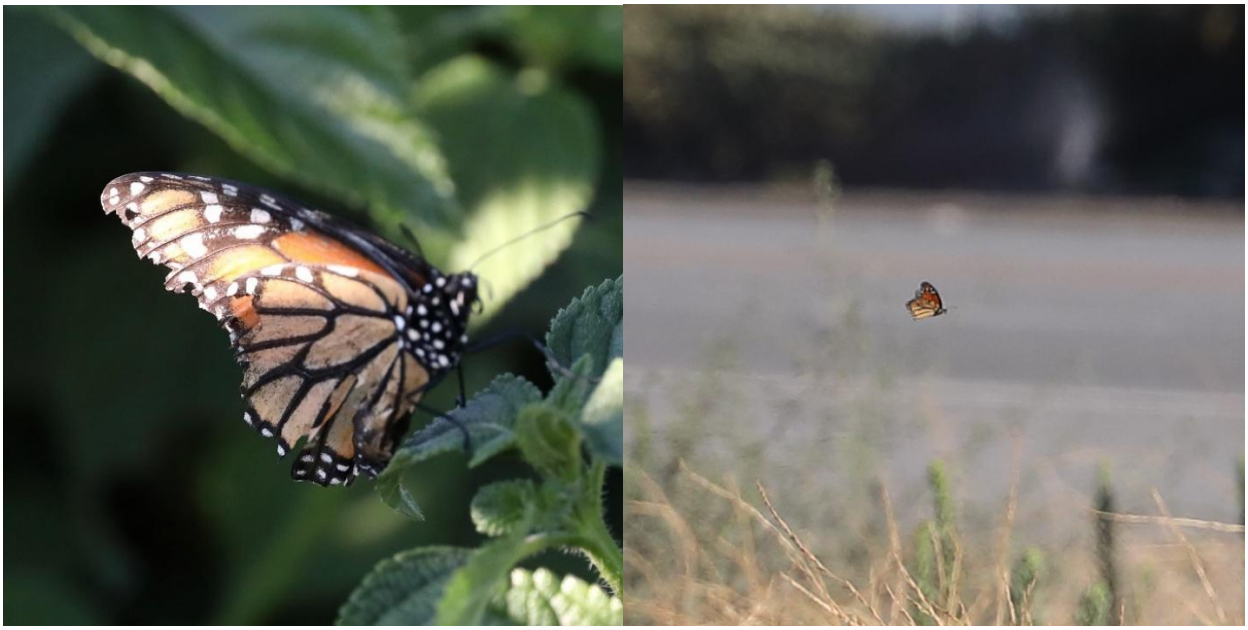
Photos 8 and 9. *Lesser goldfinch (left), and house finch (right) just off the project site, 19 and 15 August 2025. Photos by Noriko Smallwood.*

Photo 10. *Common ravens on the project site, 19 August 2025. Photo by Noriko Smallwood.*

Photos 11 and 12. *Cassin's kingbird (left), and black phoebe (right) on the project site, 15 August 2025. Photos by Noriko Smallwood.*

Photos 13 and 14. *Eurasian collared-dove just off the project site (left), and mourning dove on the project site (right), 19 and 15 August 2025. Photos by Noriko Smallwood.*

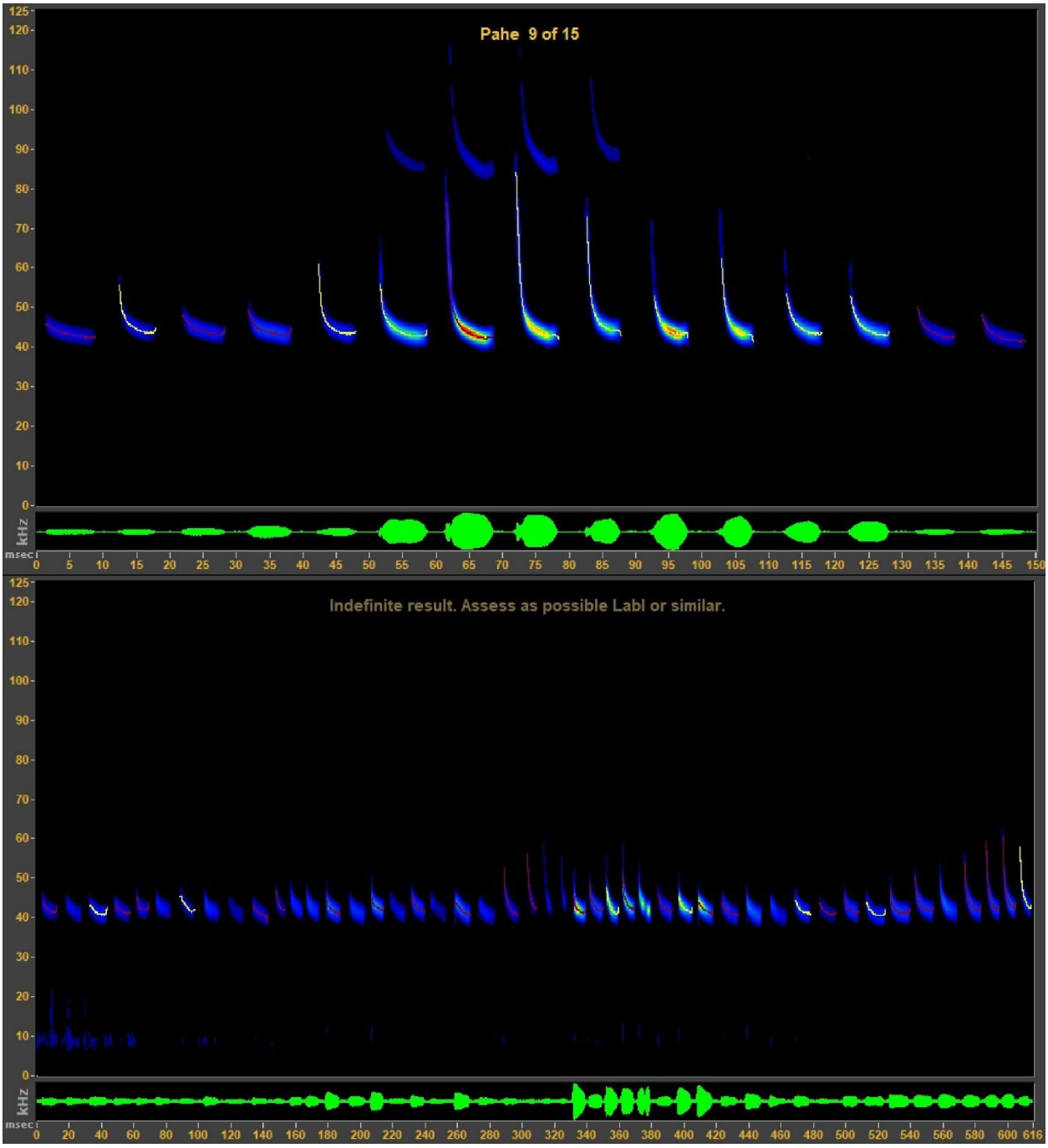
Photos 15, 16, and 17. *Northern mockingbird (top left), western side-blotched lizard (top right), and Great Basin fence lizard (bottom) on the project site, 19 August 2025. Photos by Noriko Smallwood.*



Photos 18 and 19. *Monarchs on the project site, 19 August 2025. Photos by Noriko Smallwood*. The Monarch is a candidate for listing as threatened or endangered under the federal Endangered Species Act.

Photos 20 and 21. *Desert cottontail (left), and canyon bat (right) on the project site, 15 and 19 August 2025. Photos by Noriko Smallwood.*

Photos 22 and 23. *House cat (bottom) hunting a California ground squirrel (top) just off the project site, 15 August 2025. Photos by Noriko Smallwood.*



Photos 24 and 25. *Sonograms of canyon bat (top) and possible western red bat (bottom) detected on site using Sonobat Live and a Pettersson M500, 19 August 2025.*

Table 1. *Species of wildlife Noriko observed during 3 hours of diurnal survey on 15 August 2025, and 1.83 hours of diurnal survey and 1.67 hours of nocturnal survey on 19 August 2025.*

Common name	***Species name***	**Status**[1]	**Notes**
Monarch	*Danaus plexippus*	FC	3 observed on site
Great Basin fence lizard	*Sceloporus occidentalis longipes*		Multiple juveniles
Western side-blotched lizard	*Uta stansburiana elegans*		Multiple juveniles
Rock pigeon	*Columba livia*	Non-native	Many
Eurasian collared-dove	*Streptopelia decaocto*	Non-native	Just off site
Mourning dove	*Zenaida macroura*		
Anna's hummingbird	*Calypte anna*		Foraged, territorial
Allen's hummingbird	*Selasphorus sasin*	BCC	Foraged, territorial
White-faced ibis	*Pledagis chihi*	WL	Flew over
Northern harrier	*Circus cyaneus*	BCC, SSC3, BOP	Flew over just off site
Cooper's hawk	*Accipiter cooperii*	WL, BOP	Pair, hunted over site, harassed by AMKE
American kestrel	*Falco sparverius*	BOP	Hunted over site, harassed COHA
Cassin's kingbird	*Tyrannus vociferans*		Flew over
Black phoebe	*Sayornis nigricans*		Foraged
Common raven	*Corvus corax*		
Northern mockingbird	*Mimus polyglottos*		
House finch	*Haemorphous mexicanus*		Juveniles
Lesser goldfinch	*Spinus psaltria*		
Canyon bat	*Parastrellus hesperus*	WBWG: M	Detected using Sonobat Live and Pettersson M500
Western red bat	*Lasiurus blossevillii*	SSC, WBWG: H	Possible, detected using Sonobat Live and Pettersson M500
Desert cottontail	*Sylvilagus audubonii*		One observed on site
California ground squirrel	*Otospermophilus beecheyi*		Hunted by house cat
House cat	*Felis catus*	Non-native	Hunted ground squirrels
Botta's pocket gopher	*Thomomys bottae*		Burrows

[1] Listed on CDFW's Special Animals List (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406) as FC = federal candidate for listing; BCC = U.S. Fish and Wildlife Service's Bird of Conservation Concern (https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf); SSC = California Species of Special Concern, and SSC1, SSC2 and SSC3 = California Bird Species of Special Concern priorities 1, 2 and 3, respectively); WL = CDFW's Taxa to Watch List; WBWG = Western Bat Working Group with priority rankings, of low (L), moderate (M), and high (H); BOP = protected by Birds of Prey (California Fish and Game Code 3503.5, see https://wildlife.ca.gov/Conservation/Birds/Raptors).

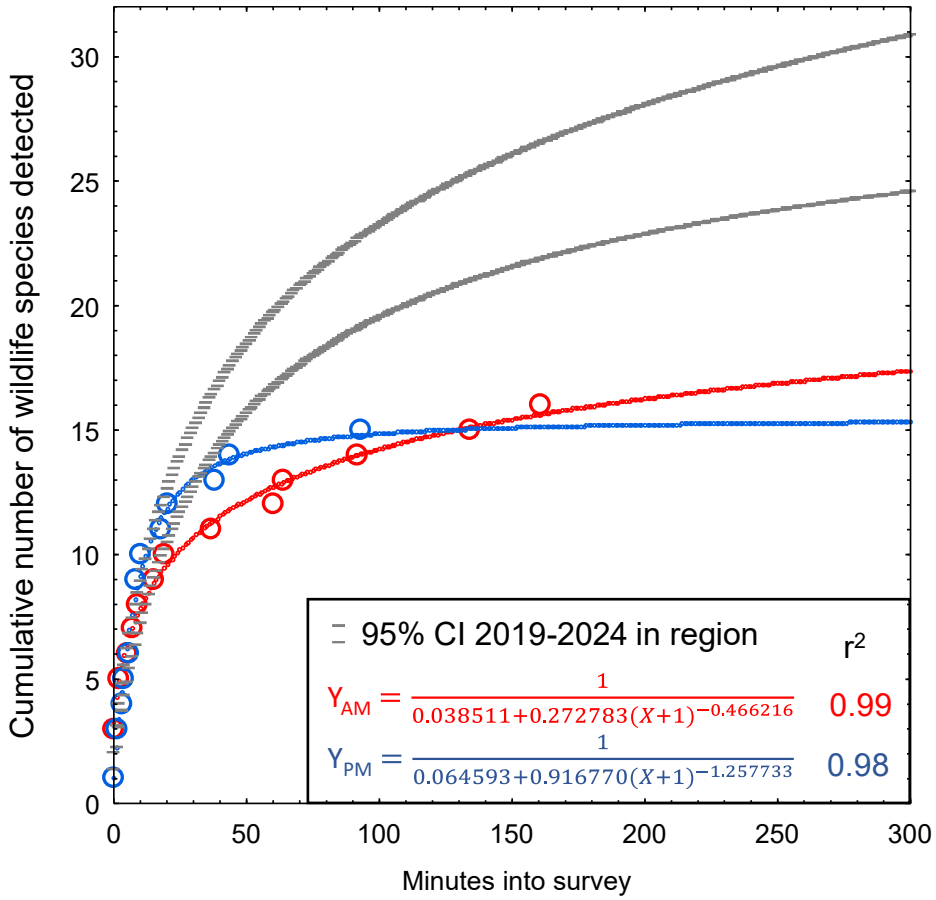
Noriko Smallwood certifies that the foregoing and following survey results are true and accurately reported.

Noriko Smallwood

ANALYSIS OF RECONNAISSANCE SURVEY DATA

Noriko detected 23 species of vertebrate willdife, which was a typical number for the brevity of her survey effort. However, the species of wildlife Noriko detected at the project site were not the only species that were present during her surveys, as there are always species that are not detected. To demonstrate this, I fit nonlinear regression models to Noriko's cumulative numbers of vertebrate species detected with time into her daytime surveys to predict the number of species that she would have detected with longer surveys or perhaps with additional biologists available to assist her. The type of model is a logistic growth model, which reaches an asymptote that corresponds with the theoretical maximum number of vertebrate wildlife species that could have been detected during the survey. The model fit to Noriko's survey data from the morning of 15 August, for example, predicts 26 species of vertebrate wildlife were available to be detected, or 10 more species than she detected that morning (Figure 1).

Figure 1. *Actual and predicted relationships between the numbers of vertebrate wildlife species detected and the elapsed survey time based on Noriko's visual-scan surveys on 15 and 19 August 2025.*



Unknown are the identities of the species Noriko missed, but the species that Noriko did and did not detect on 15 and 19 August 2025 composed only a fraction of the species that would occur at the project site over the period of a year or longer. This is because many species are seasonal in their occurrence, some require more survey effort because they are highly cryptic, and the members of other species would visit the site only periodically while patrolling large home ranges. A survey on only one or two days cannot possibly detect all of the species of the local wildlife community.

At least a year's worth of surveys would be needed to more accurately report the number of vertebrate species that occur at the project site, but I only have Noriko's two surveys. However, by use of an analytical bridge, a modeling effort applied to a large, robust data set from a research site can predict the number of vertebrate wildlife species that likely make use of the site over the longer term. This analytical bridge draws inference from the pattern of species detections more than it does from the research site, and I note that the pattern, i.e., rate, of species detections is consistent from site to site.

As part of my research, I completed a much larger survey effort across 167 km² of annual grasslands of the Altamont Pass Wind Resource Area, where from 2015 through 2019 I performed 721 1-hour visual-scan surveys, or 721 hours of surveys, at 46 stations. I used binoculars and otherwise the methods were the same as the methods I and other consulting biologists use for surveys at proposed project sites. At each of the 46 survey stations, I tallied new species detected with each sequential survey at that station, and then related the cumulative species detected to the hours (number of surveys, as each survey lasted 1 hour) used to accumulate my counts of species detected. I used combined quadratic and simplex methods of estimation in Statistica to estimate least-squares, best-fit nonlinear models of the number of cumulative species detected regressed on hours of survey (number of surveys) at the station: $\hat{R} = \frac{1}{1/a+b\times(Hours)^c}$, where $\hat{R}$ represented cumulative species richness detected. The coefficients of determination, r^2, of the models ranged 0.88 to 1.00, with a mean of 0.97 (95% CI: 0.96, 0.98); or in other words, the models were excellent fits to the data.

I projected the predictions of each model to thousands of hours to find predicted asymptotes of wildlife species richness. The mean model-predicted asymptote of species richness was 57 after 11,857 hours of visual-scan surveys among the 46 stations of my research site. I also averaged model predictions of species richness at each incremental increase of number of surveys, i.e., number of hours (Figure 2). On average I would have detected 17 species over my first 4.83 hours of diurnal surveys at my research site in the Altamont Pass (4.83 hours to match the 4.83 hours Noriko surveyed during daylight hours at the project site), which composed 30% of the predicted total number of species I would detect with a much larger survey effort at the research site. Given the example illustrated in Figure 2, the 21 diurnally active species Noriko detected after her 4.83 hours of daylight survey at the project site likely represented 30% of the species to be detected after many more visual-scan surveys over another year or longer. With many more repeat surveys through the year, Noriko would likely detect $21/0.30 = 70$ species of diurnally active vertebrate wildlife at the site. Assuming Noriko's ratio of special-status to non-special-status species was to hold through the detections of all 70

predicted species, then continued surveys would eventually detect 17 special-status species of diurnally active vertebrate wildlife.

Because my prediction of 70 species of vertebrate wildlife, including 17 special-status species, is derived from daytime visual-scan surveys, and would detect few nocturnal mammals such as bats, the true number of species composing the wildlife community of the site must be larger. Noriko's reconnaissance surveys should serve only as a starting point toward characterization of the site's wildlife community, but it certainly cannot alone inform of the inventory of species that use the site. More surveys are needed than her two surveys to produce an inventory the project site's wildlife community. Nevertheless, the large number of species I predict at the project site is indicative of a relatively species-rich wildlife community that warrants a serious survey effort.

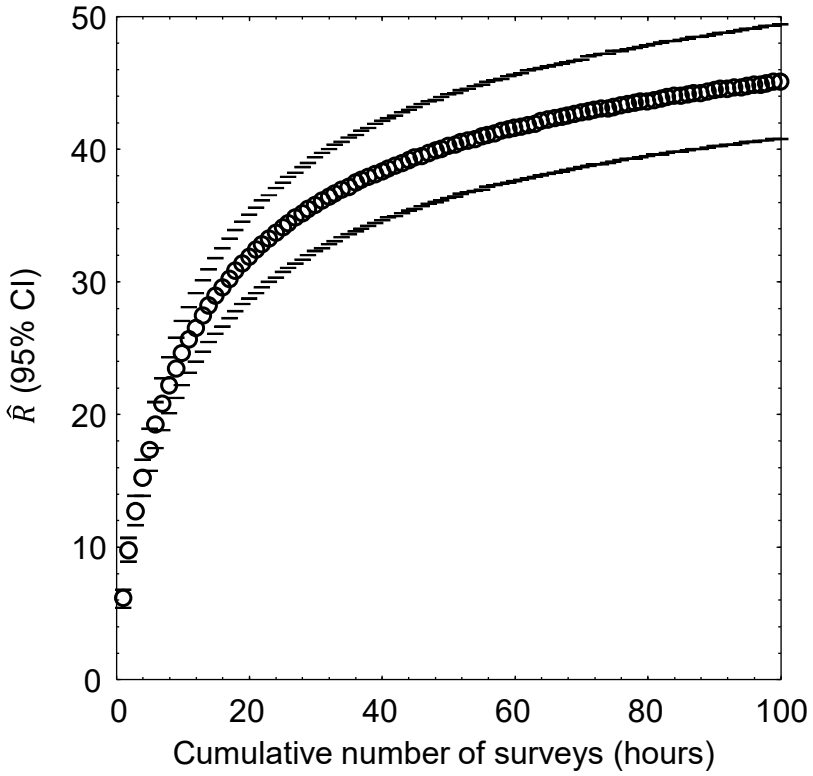


Figure 2. *Mean (95% CI) predicted wildlife species richness, $\hat{R}$, as a nonlinear function of hour-long survey increments across 46 visual-scan survey stations across the Altamont Pass Wind Resource Area, Alameda and Contra Costa Counties, 2015–2019. Note that the location of the study is largely irrelevant to the utility of the graph to the interpretation of survey outcomes at the project site. It is the pattern in the data that is relevant, because the pattern is typical of the pattern seen elsewhere.*

EXISTING ENVIRONMENTAL SETTING

The first step in analysis of potential project impacts to biological resources is to accurately characterize the existing environmental setting, including the wildlife community and any key ecological relationships and known and ongoing threats to special-status species. A reasonably accurate characterization of the environmental setting can provide the baseline against which to analyze potential project impacts. For these reasons, characterization of the environmental setting, including the project site's regional setting, is one of the CEQA's essential analytical steps. Methods to achieve this first step typically include (1) surveys of the site for biological resources, and (2) reviews

of literature, databases and local experts for documented occurrences of special-status species. In the case of the proposed project, these required steps remain incomplete and misleading.

Environmental Setting informed by Field Surveys

To the CEQA's primary objective to disclose potential environmental impacts of a proposed project, the analysis should be informed of which biological species are known to occur at the proposed project site, which special-status species are likely to occur, as well as the limitations of the survey effort directed to the site. Analysts need this information to characterize the environmental setting as a basis for opining on, or predicting, potential project impacts to biological resources. In the case of this project, however, no analysts obtained the information needed to accurately predict impacts to wildlife.

As far as I can determine, no wildlife survey of any kind has been completed on the project site. Therefore, the City of Fontana possesses no basis for determining whether the project site provides habitat to wildlife including special-status species of wildlife.

Environmental Setting informed by Desktop Review

The purpose of literature and database reviews and of consulting with local experts is to inform the field survey, and to augment interpretation of its outcome. Analysts need this information to identify which species are known to have occurred at or near the project site, and to identify which other special-status species could conceivably occur at the site due to geographic range overlap and migration flight paths. In the case of this project, the desktop review was incomplete, and the review that was completed was distorted to minimalize the likelihoods of occurrence of special-status species.

As far as I can determine, no desktop review has been completed to assess the occurrence likelihoods of special-status species of wildlife on the project site.

In my assessment based on a database review and site visits, 137 special-status species of wildlife are known to occur near enough to the site to warrant analysis of occurrence potential (Table 2). Of these 137 species, 7 were recorded on or just off the project site, and another 12 (9%) species have been documented within 1.5 miles of the site (Very close), another 36 (26%) within 1.5 and 4 miles (Nearby), and another 70 (51%) within 4 to 30 miles (In region). Almost half of the species in Table 2 have been reportedly seen within 4 miles of the project site. The site therefore supports at least seven special-status species of wildlife and carries the potential for supporting many more special-status species of wildlife based on the proximities of recorded occurrences.

Table 2. *Occurrence likelihoods of special-status bird species at or near the proposed project site, according to eBird/iNaturalist records (https://eBird.org, https://www.inaturalist.org) and on-site survey findings, where 'Very close' indicates within 1.5 miles of the site, "nearby" indicates within 1.5 and 4 miles, and "in region" indicates within 4 and 30 miles, and 'in range' means the species' geographic range overlaps the site. Entries in bold font identify species detected by Noriko Smallwood during her site visit.*

Common name	***Species name***	**Status[1]**	**Occurrences in data base records, Site visits**
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	In region
San Diego fairy shrimp	*Branchinecta sandiegonensis*	FE	In region
Riverside fairy shrimp	*Streptocephalus woottoni*	FE	In region
Delhi sands flower-loving fly	*Rhaphiomidas terminatus abdominalis*	FE	In region
Monarch	*Danaus plexippus*	FC	Very close/**On site**
Crotch's bumble bee	*Bombus crotchii*	CCE	Nearby
Western spadefoot	*Spea hammondii*	FC, SSC	In region
Western pond turtle	*Emys marmorata*	FC, SSC	In region
Blainville's horned lizard	*Phrynosoma blainvillii*	SSC	Nearby
Orange-throated whiptail	*Aspidoscelis hyperythra*	WL	In region
Coastal whiptail	*Aspidoscelis tigris stejnegeri*	SSC	In region
San Diegan legless lizard	*Anniella stebbinsi*	SSC	Very close
California glossy snake	*Arizona elegans occidentalis*	SSC	In region
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	SSC	In region
Two-striped gartersnake	*Thamnophis hammondii*	SSC	In region
South coast gartersnake	*Thamnophis sirtalis pop. 1*	SSC	In region
Red-diamond rattlesnake	*Crotalus ruber*	SSC	Nearby
Brant	*Branta bernicla*	SSC2	In region
Cackling goose (Aleutian)	*Branta hutchinsii leucopareia*	WL	In region
Redhead	*Aythya americana*	SSC2	Nearby
Western grebe	*Aechmophorus occidentalis*	BCC	Nearby
Clark's grebe	*Aechmophorus clarkii*	BCC	Nearby
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT, CE	In region
Black swift	*Cypseloides niger*	SSC3, BCC	In region
Vaux's swift	*Chaetura vauxi*	SSC2	Nearby
Calliope hummingbird	*Selasphorus calliope*	BCC	In region
Rufous hummingbird	*Selasphorus rufus*	BCC	Very close

Common name	***Species name***	**Status[1]**	**Occurrences in data base records, Site visits**
Allen's hummingbird	*Selasphorus sasin*	BCC	Very close/**On site**
Mountain plover	*Charadrius montanus*	SSC2, BCC	In region
Snowy plover	*Charadrius nivosus*	BCC	In region
Western snowy plover	*Charadrius nivosus nivosus*	FT, SSC	In region
Long-billed curlew	*Numenius americanus*	WL	In region
Marbled godwit	*Limosa fedoa*	BCC	In region
Red knot (Pacific)	*Calidris canutus*	BCC	In region
Pectoral sandpiper	*Calidris melanotos*	BCC	In region
Short-billed dowitcher	*Limnodromus griseus*	BCC	In region
Lesser yellowlegs	*Tringa flavipes*	BCC	Nearby
Willet	*Tringa semipalmata*	BCC	In region
Laughing gull	*Leucophaeus atricilla*	WL	In region
Franklin's gull	*Leucophaeus pipixcan*	BCC	In region
Heermann's gull	*Larus heermanni*	BCC	In region
Western gull	*Larus occidentalis*	BCC	In region
California gull	*Larus californicus*	BCC, WL	Very close
California least tern	*Sternula antillarum browni*	FE, CE, CFP	In region
Black tern	*Chlidonias niger*	SSC2, BCC	In region
Elegant tern	*Thalasseus elegans*	BCC, WL	In region
Black skimmer	*Rynchops niger*	BCC, SSC3	In region
Common loon	*Gavia immer*	SSC	In region
Double-crested cormorant	*Phalacrocorax auritus*	WL	Nearby
American white pelican	*Pelacanus erythrorhynchos*	SSC1	Nearby
Least bittern	*Ixobrychus exilis*	SSC2	In region
White-faced ibis	*Plegadis chihi*	WL	Nearby/**On site**
Turkey vulture	*Cathartes aura*	BOP	Very close
Osprey	*Pandion haliaetus*	WL, BOP	Nearby
White-tailed kite	*Elanus luecurus*	CFP, BOP	In region
Golden eagle	*Aquila chrysaetos*	BGEPA, CFP, BOP, WL	Nearby
Northern harrier	*Circus cyaneus*	BCC, SSC3, BOP	Nearby/**Just off site**
Sharp-shinned hawk	*Accipiter striatus*	WL, BOP	Very close

Common name	***Species name***	**Status[1]**	**Occurrences in data base records, Site visits**
Cooper's hawk	*Accipiter cooperii*	WL, BOP	Very close/**On site**
Bald eagle	*Haliaeetus leucocephalus*	CE, BGEPA, BOP	Nearby
Red-shouldered hawk	*Buteo lineatus*	BOP	Very close
Swainson's hawk	*Buteo swainsoni*	CT, BOP	Nearby
Red-tailed hawk	*Buteo jamaicensis*	BOP	Very close
Ferruginous hawk	*Buteo regalis*	WL, BOP	Very close
Zone-tailed hawk	*Buteo albonotatus*	BOP	In region
Harris' hawk	*Parabuteo unicinctus*	WL, BOP	In region
Rough-legged hawk	*Buteo lagopus*	BOP	In region
American barn owl	*Tyto furcata*	BOP	Nearby
Western screech-owl	*Megascops kennicotti*	BOP	In region
Great horned owl	*Bubo virginianus*	BOP	Very close
Burrowing owl	*Athene cunicularia*	BCC, CCE, SSC2, BOP	Nearby
Long-eared owl	*Asio otus*	BCC, SSC3, BOP	In region
Short-eared owl	*Asia flammeus*	BCC, SSC3, BOP	In region
Lewis's woodpecker	*Melanerpes lewis*	BCC	In region
Nuttall's woodpecker	*Picoides nuttallii*	BCC	Nearby
American kestrel	*Falco sparverius*	BOP	Very close/**On site**
Merlin	*Falco columbarius*	WL, BOP	Nearby
Peregrine falcon	*Falco peregrinus*	BOP	Very close
Prairie falcon	*Falco mexicanus*	WL, BOP	Nearby
Olive-sided flycatcher	*Contopus cooperi*	BCC, SSC2	Nearby
Willow flycatcher	*Empidonax trailii*	CE	Nearby
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, CE	In region
Vermilion flycatcher	*Pyrocephalus rubinus*	SSC2	Nearby
Least Bell's vireo	*Vireo bellii pusillus*	FE, CE	Nearby
Loggerhead shrike	*Lanius ludovicianus*	SSC2	Nearby
Oak titmouse	*Baeolophus inornatus*	BCC	Nearby
California horned lark	*Eremophila alpestris actia*	WL	Nearby
Bank swallow	*Riparia riparia*	CT	In region
Purple martin	*Progne subis*	SSC2	Nearby

Common name	***Species name***	**Status[1]**	**Occurrences in data base records, Site visits**
Wrentit	*Chamaea fasciata*	BCC	Nearby
California gnatcatcher	*Polioptila c. californica*	FT, SSC2	Nearby
California thrasher	*Toxostoma redivivum*	BCC	Nearby
Cassin's finch	*Haemorhous cassinii*	BCC	In region
Lawrence's goldfinch	*Spinus lawrencei*	BCC	Very close
Grasshopper sparrow	*Ammodramus savannarum*	SSC2	In region
Black-chinned sparrow	*Spizella atrogularis*	BCC	Nearby
Gray-headed junco	*Junco hyemalis caniceps*	WL	In region
Bell's sparrow	*Amphispiza b. belli*	WL	In region
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SSC2	In range
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	WL	Nearby
Yellow-breasted chat	*Icteria virens*	SSC3	Nearby
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC3	Nearby
Bullock's oriole	*Icterus bullockii*	BCC	Very close
Tricolored blackbird	*Agelaius tricolor*	CT, BCC, SSC1	In region
Lucy's warbler	*Leiothlypis luciae*	SSC3	In region
Virginia's warbler	*Leiothlypis virginiae*	WL, BCC	In region
Prothonotary warbler	*Protonotaria citrea*	BCC	Nearby
Prairie warbler	*Setophaga discolor*	BCC	In region
Yellow warbler	*Setophaga petechia*	SSC2	Nearby
Summer tanager	*Piranga rubra*	SSC1	In region
Little brown bat	*Myotis lucifugus*	WBWG: M	In range
Yuma myotis	*Myotis yumanensis*	WBWG: LM	In region
Long-eared myotis	*Myotis evotis*	WBWG: M	In region
Fringed myotis	*Myotis thysanodes*	WBWG: H	In range
Long-legged myotis	*Myotis volans*	WBWG: H	In range
California myotis	*Myotis californicus*	WBWG:L	In region
Small-footed myotis	*Myotis ciliolabrum*	WBWG: M	In region
Canyon bat	*Parastrellus hesperus*	WBWG: M	In region/**On site**
Big brown bat	*Episticus fuscus*	WBWG: L	In region

Common name	***Species name***	**Status**[1]	**Occurrences in data base records, Site visits**
Silver-haired bat	*Lasionycteris noctivagans*	WBWG: M	In range
Hoary bat	*Lasiurus cinereus*	WBWG: M	In region
Western red bat	*Lasiurus blossevillii*	SSC, WBWG: H	In region/**Possible on site**
Western yellow bat	*Lasiurus xanthinus*	SSC, WBWG: H	In region
Spotted bat	*Euderma maculatum*	SSC, WBWG: H	In range
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC, WBWG: H	In region
Pallid bat	*Antrozous pallidus*	SSC, WBWG: H	In range
Mexican free-tailed bat	*Tadarida brasiliensis*	WBWG: L	In region
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	SSC, WBWG: M	In range
Western mastiff bat	*Eumops perotis*	SSC, WBWG: H	In range
San Diego black-tailed jackrabbit	*Lepus californicus bennettii*	SSC	In region
Northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	SSC	In region
Pallid San Diego pocket mouse	*Chaetodipus fallax pallidus*	SSC	In range
Stephens' kangaroo rat	*Dipodomys stephensi*	FE, CT	In region
Los Angeles pocket mouse	*Perognathus longimembris brevinasus*	SSC	In region
San Diego Bryant's woodrat	*Neotoma bryanti*	SSC	In region
Southern grasshopper mouse	*Onychomys torridus ramona*	SSC	In range
American badger	*Taxidea taxus*	SSC	In region

[1] Listed on CDFW's Special Animals List (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406) as FT or FE = federal threatened or endangered; FC = federal candidate for listing; BGEPA = Bald and Golden Eagle Protection Act; CT or CE = California threatened or endangered; CCT or CCE = Candidate California threatened or endangered; CFP = California Fully Protected (California Fish and Game Code 3511); SSC = California Species of Special Concern, and SSC1, SSC2 and SSC3 = California Bird Species of Special Concern priorities 1, 2 and 3, respectively); WL = CDFW's Taxa to Watch List; WBWG = Western Bat Working Group with priority rankings, of low (L), moderate (M), and high (H); BCC = U.S. Fish and Wildlife Service's Bird of Conservation Concern (https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf); and BOP = protected by Birds of Prey (California Fish and Game Code 3503.5, see https://wildlife.ca.gov/Conservation/Birds/Raptors).

On the Presence of Special-status Species of Wildlife

There is no doubt that at least seven special-status species of wildlife occur on the project site, including the Monarch which is a candidate for listing under the federal Endangered Species Act. Modeling the rate of species detections during Noriko's survey, and analytically bridging Noriko's survey results to a larger research effort, predicts 17 special-status species of vertebrate wildlife should be detectable on the project site after a larger survey effort conducted over the period of a year or longer. Indeed, species occurrence records reveal that 19 special-status species of vertebrate wildlife have been detected within 1.5 miles of the site, and 48 special-status species of vertebrate wildlife have been detected within four miles of the site. The evidence is overwhelming that the project site provides habitat to multiple special-status species of wildlife.

Considering Noriko's observations of at least seven special-status species, and the occurrence records of multiple other special-status species very close to the project site the project site is habitat as defined in the scientific literature (Hall et al. 1997). These species are using the site for migration stopover, survival, and likely for reproduction. These species are members of a larger wildlife community, the entire composition of which has yet to be characterized but which undoubtedly adds to the habitat value of the project site. Therefore, the proposed Class-32 CEQA Categorical Exemption and the Exemption under AB 130 would be inappropriate, and at least a fair argument can be made for the need to prepare an EIR to appropriately characterize the wildlife community as an important part of the existing environmental setting.

BIOLOGICAL IMPACTS ASSESSMENT

In the following, I analyze several types of impacts likely to result from the project, none of which are analyzed by the City of Fontana.

REDUCED PRODUCTIVE CAPACITY FROM HABITAT LOSS

Habitat loss results in a reduced productive capacity of affected wildlife species. The site is proven to serve as habitat to at least 23 species of vertebrate wildlife which Noriko observed on the site, but the number of avian nest sites remains unknown. Because Noriko's survey was only a reconnaissance survey and therefore unsuitable for detecting all bird nests on the site, estimating total nest density of birds was not possible. The alternative method would be to infer productive capacity from estimates of total nest density elsewhere. Noriko has completed several studies to estimate total avian nest density in similar environments in the local area.

Noriko estimated 5.56 nests/acre on a 3.6-acre site of ruderal grassland bordering a woodland strip in Murrieta, and 1.86 nests/acre on another 4.83-acre grassland site bordering a strip of woodland in Murietta. The average of the above two estimates is 3.71 nests/acre. This density applied to the 3.5 acres of the project site would predict 13 nest sites. Assuming 1.39 broods per nest site based on a review of 322 North American bird species, which averaged 1.39 broods per year, then I estimate 18 nest attempts per

year on the project site. Assuming Young's (1948) study site typifies bird productivity of 2.9 fledged birds per nest attempt, then I predict 52 fledglings/year at the project site.

The loss of 13 nest sites and 18 nest attempts per year would qualify as significant impacts that have not been analyzed by the City of Fontana. But the impacts would not end with the immediate loss of nest sites. The reproductive capacity of the site would be lost. The project would prevent the production of 52 fledglings per year. Assuming an average bird generation time of 4 years, the lost capacity of both breeders and annual fledgling production can be estimated from an equation in Smallwood (2022): {(nests/year × chicks/nest × number of years) + (2 adults/nest × nests/year) × (number of years ÷ years/generation)} ÷ (number of years) = 59 birds per year denied to California.

The loss of 59 birds per year would be a loss of significant habitat value that is currently provided by the project site. Most if not all these birds are protected by the federal Migratory Bird Treaty Act and by California's Migratory Bird Protection Act, both of which are intended to most strongly protect breeding migratory birds. The loss of this many birds would easily qualify as an unmitigated significant impact.

INTERFERENCE WITH WILDLIFE MOVEMENT

One of CEQA's principal concerns regarding potential project impacts is whether a proposed project would interfere with wildlife movement in the region. The species Noriko detected on the project site had at some point moved to the site, and in fact members of some of these species were in flight when she detected them. At minimum, the project site provides wildlife with stopover opportunities during migration or dispersal of young. However, the City of Fontana has provided no reporting on any analysis of whether and how the project would interfere with wildlife movement in the region.

BIRD-WINDOW COLLISION MORTALITY

The project would introduce glass windows into an essential portion of avian habitat – that portion of the gaseous atmosphere that is referred to as the aerosphere (Davy et al. 2017, Diehl et al. 2017). The aerosphere is where birds and bats and other volant animals with wings migrate, disperse, forage, perform courtship and where some of them mate. Birds are some of the many types of animals that evolved wings as a morphological adaptation to thrive by moving through the medium of the aerosphere. The aerosphere is habitat, to which an entire discipline of ecology has emerged to study this essential aspect of habitat – the discipline of aeroecology (Kunz et al. 2008).

Many special-status species of birds have been recorded at or near the aerosphere of the project site. My database review and Noriko's site visit indicate there are 95 special-status species of birds with potential to use the site's aerosphere (Table 2). All the birds represented in Table 2 can quickly fly from wherever they have been documented to the project site, so they would all be within brief flights to the proposed project's windows. And Noriko confirmed 22 species on the project site, some of them flying across the site.

Window collisions are often characterized as either the second or third largest source or human-caused bird mortality. The numbers behind these characterizations are often attributed to Klem's (1990) and Dunn's (1993) estimates of about 100 million to 1 billion bird fatalities in the USA, or more recently by Loss et al.'s (2014) estimate of 365-988 million bird fatalities in the USA or Calvert et al.'s (2013) and Machtans et al.'s (2013) estimates of 22.4 million and 25 million bird fatalities in Canada, respectively. The proposed project would impose windows in the airspace normally used by birds.

Glass-façades of buildings intercept and kill many birds, but they are differentially hazardous to birds based on spatial extent, contiguity, orientation, and other factors. At Washington State University, Johnson and Hudson (1976) found 266 bird fatalities of 41 species within 73 months of monitoring of a three-story glass walkway (no fatality adjustments attempted). Prior to marking the windows to warn birds of the collision hazard, the collision rate was 84.7 per year. At that rate, and not attempting to adjust the fatality estimate for the proportion of fatalities not found, 4,574 birds were likely killed over the 54 years since the start of their study, and that's at a relatively small building façade. Accounting for the proportion of fatalities not found, the number of birds killed by this walkway over the last 54 years would have been about 14,270. And this is just for one 3-story, glass-sided walkway between two college campus buildings.

Klem's (1990) estimate was based on speculation that 1 to 10 birds are killed per building per year, and this speculated range was extended to the number of buildings estimated by the US Census Bureau in 1986. Klem's speculation was supported by fatality monitoring at only two houses, one in Illinois and the other in New York. Also, the basis of his fatality rate extension has changed greatly since 1986. Whereas his estimate served the need to alert the public of the possible magnitude of the bird-window collision issue, it was highly uncertain at the time and undoubtedly outdated more than three decades hence. Indeed, by 2010 Klem (2010) characterized the upper end of his estimated range – 1 billion bird fatalities – as conservative. Furthermore, the estimate lumped species together as if all birds are the same and the loss of all birds to windows has the same level of impact.

By the time Loss et al. (2014) performed their effort to estimate annual USA bird-window fatalities, many more fatality monitoring studies had been reported or were underway. Loss et al. (2014) incorporated many more fatality rates based on scientific monitoring, and they were more careful about which fatality rates to include. However, they included estimates based on fatality monitoring by homeowners, which in one study were found to detect only 38% of the available window fatalities (Bracey et al. 2016). Loss et al. (2014) excluded all fatality records lacking a dead bird in hand, such as injured birds or feather or blood spots on windows. Loss et al.'s (2014) fatality metric was the number of fatalities per building (where in this context a building can include a house, low-rise, or high-rise structure), but they assumed that this metric was based on window collisions. Because most of the bird-window collision studies were limited to migration seasons, Loss et al. (2014) developed an admittedly assumption-laden correction factor for making annual estimates. Also, only two of the studies included adjustments for carcass persistence and searcher detection error, and it was unclear how

and to what degree fatality rates were adjusted for these factors. Although Loss et al. (2014) attempted to account for some biases as well as for large sources of uncertainty mostly resulting from an opportunistic rather than systematic sampling data source, their estimated annual fatality rate across the USA was highly uncertain and vulnerable to multiple biases, most of which would have resulted in fatality estimates biased low.

In my review of bird-window collision monitoring, I found that the search radius around homes and buildings was very narrow, usually 2 meters. Based on my experience with bird collisions in other contexts, I would expect that a large portion of bird-window collision victims would end up farther than 2 m from the windows, especially when the windows are higher up on tall buildings. In my experience, searcher detection rates tend to be low for small birds deposited on ground with vegetation cover or woodchips or other types of organic matter. Also, vertebrate scavengers entrain on anthropogenic sources of mortality and quickly remove many of the carcasses, thereby preventing the fatality searcher from detecting these fatalities. Adjusting fatality rates for these factors – search radius bias, searcher detection error, and carcass persistence rates – would greatly increase nationwide estimates of bird-window collision fatalities.

Buildings can intercept many nocturnal migrants as well as birds flying in daylight. As mentioned above, Johnson and Hudson (1976) found 266 bird fatalities of 41 species within 73 months of monitoring of a four-story glass walkway at Washington State University (no adjustments attempted for undetected fatalities). Somerlot (2003) found 21 bird fatalities among 13 buildings on a university campus within only 61 days. Monitoring twice per week, Hager at al. (2008) found 215 bird fatalities of 48 species, or 55 birds/building/year, and at another site they found 142 bird fatalities of 37 species for 24 birds/building/year. Gelb and Delacretaz (2009) recorded 5,400 bird fatalities under buildings in New York City, based on a decade of monitoring only during migration periods, and some of the high-rises were associated with hundreds of fatalities each. Klem et al. (2009) monitored 73 building façades in New York City during 114 days of two migratory periods, tallying 549 collision victims, nearly 5 birds per day. Borden et al. (2010) surveyed a 1.8 km route 3 times per week during 12-month period and found 271 bird fatalities of 50 species. Parkins et al. (2015) found 35 bird fatalities of 16 species within only 45 days of monitoring under 4 building façades. From 24 days of survey over a 48-day span, Porter and Huang (2015) found 47 fatalities under 8 buildings on a university campus. Sabo et al. (2016) found 27 bird fatalities over 61 days of searches under 31 windows. In San Francisco, Kahle et al. (2016) found 355 collision victims within 1,762 days under a 5-story building. Ocampo-Peñuela et al. (2016) searched the perimeters of 6 buildings on a university campus, finding 86 fatalities after 63 days of surveys. One of these buildings produced 61 of the 86 fatalities, and another building with collision-deterrent glass caused only 2 of the fatalities, thereby indicating a wide range in impacts likely influenced by various factors. There is ample evidence available to support my prediction that the proposed project would result in many collision fatalities of birds.

Project Impact Prediction

By the time of these comments, I had reviewed and processed results of bird collision monitoring at 213 buildings and façades for which bird collisions per m^2 of glass per year could be calculated and averaged (Johnson and Hudson 1976, O'Connell 2001, Somerlot 2003, Hager et al. 2008, Borden et al. 2010, Hager et al. 2013, Porter and Huang 2015, Parkins et al. 2015, Kahle et al. 2016, Ocampo-Peñuela et al. 2016, Sabo et al. 2016, Barton et al. 2017, Gomez-Moreno et al. 2018, Schneider et al. 2018, Loss et al. 2019, Brown et al. 2020, City of Portland Bureau of Environmental Services and Portland Audubon 2020, Riding et al. 2020). These study results averaged 0.073 bird deaths per m^2 of glass per year (95% CI: 0.042-0.102). This average and its 95% confidence interval provide a robust basis for predicting fatality rates at a proposed new project.

The City's Notice of Public Hearing summarizes the project simply by the number of residential units and 5,000 sf of commercial space. The number and extent of structural glass on the project's building façades are not reported.

Assuming 1,127 sf per residential unit (the average of five condominium projects I have reviewed), then I estimate 229,208 sf of residential floorspace in the project. Assuming the average window space/sf of homes I have recorded from other proposed projects of 0.05835 m^2 of window/sf floorspace, then I predict 13,374 m^2 of windows among the 204 residential units. My average window space per sf of commercial space is 0.0162 at other projects. With this rate applied to 5,000 sf, I predict 81 m^2 of windows on the commercial space. Combined, the project is predicted to add 13,455 m^2 of external glass that would expose birds to collision mortality. The above-reported average of bird collision deaths per m^2 of glass per year applied to 13,455 m^2 of external glass in the project predicts 984 (95% CI: 584-1,383) bird collision fatalities per year.

The vast majority of these predicted deaths would be of birds protected under the Migratory Bird Treaty Act and under the California Migratory Bird Protection Act, thus causing significant unmitigated impacts. Given the predicted level of bird-window collision mortality, and the lack of any proposed mitigation, it is my opinion that the proposed project would result in potentially significant adverse biological impacts, including the unmitigated take of both terrestrial and aerial habitat of birds and other sensitive species. Not only would the project take habitat of rare and sensitive species of birds, but it would transform the project's airspace into a lethal collision trap to birds.

SUMMARY OF IMPACTS ANALYSES

The preceding analyses are only several of many types of impacts that need to be addressed in an EIR. Another potential impact would be caused by project-generated traffic, which can lead to wildlife-automobile collision mortality. Another is the project-generated demand for electrical energy, which would cause wildlife mortality wherever the energy is generated and along the electric distribution lines that deliver the energy to the project. Because the impacts would result in deaths and injuries of special-status species of wildlife, the proposed Class-32 CEQA Categorical Exemption and the

Exemption under AB 130 would be inappropriate, and at least a fair argument can be made for the need to prepare an EIR to appropriately analyze the potential impacts.

NEEDED MITIGATION MEASURES

Preconstruction Survey for Nesting Birds: To comply with the federal Migratory Bird Treaty Act, preconstruction, take-avoidance surveys must be required. Even with this measure, however, the impacts of the project on birds would be permanent and of large magnitude (see my prediction, above, of the lost productive capacity of breeding birds). Mitigation would still be needed for habitat loss.

Habitat loss: Should the project go forward, compensatory mitigation is needed for the loss of habitat. Habitat of equal or greater area should be protected as close to the project site as feasible.

Bird-Window Collision Mortality: If the project goes forward, it should at a minimum adhere to available Bird-Safe Guidelines, such as those prepared by American Bird Conservancy and New York and San Francisco. The American Bird Conservancy (ABC) produced an excellent set of guidelines recommending actions to: (1) Minimize use of glass; (2) Placing glass behind some type of screening (grilles, shutters, exterior shades); (3) Using glass with inherent properties to reduce collisions, such as patterns, window films, decals or tape; and (4) Turning off lights during migration seasons (Sheppard and Phillips 2015). The City of San Francisco (San Francisco Planning Department 2011) also has a set of building design guidelines, based on the excellent guidelines produced by the New York City Audubon Society (Orff et al. 2007). The ABC document and both the New York and San Francisco documents provide excellent alerting of potential bird-collision hazards as well as many visual examples. The San Francisco Planning Department's (2011) building design guidelines are more comprehensive than those of New York City, but they could have gone further. For example, the San Francisco guidelines probably should have also covered scientific monitoring of impacts as well as compensatory mitigation for impacts that could not be avoided, minimized or reduced.

New research results inform of the efficacy of marking windows. Whereas Klem (1990) found no deterrent effect from decals on windows, Johnson and Hudson (1976) reported a fatality reduction of about 69% after placing decals on windows. In an experiment of opportunity, Ocampo-Peñuela et al. (2016) found only 2 of 86 fatalities at one of 6 buildings – the only building with windows treated with a bird deterrent film. At the building with fritted glass, bird collisions were 82% lower than at other buildings with untreated windows. Kahle et al. (2016) added external window shades to some windowed façades to reduce fatalities 82% and 95%. Brown et al. (2020) reported an 84% lower collision probability among fritted glass windows and windows treated with ORNILUX R UV. City of Portland Bureau of Environmental Services and Portland Audubon (2020) reduced bird collision fatalities 94% by affixing marked Solyx window film to existing glass panels of Portland's Columbia Building. Many external and internal glass markers have been tested experimentally, some showing no effect and

some showing strong deterrent effects (Klem 1989, 1990, 2009, 2011; Klem and Saenger 2013; Rössler et al. 2015).

Van Doren et al. (2021) found that nocturnal migrants contributed most of the collision fatalities in their study, and the largest predictors of fatalities were peak migration and lit windows. Van Doren et al. (2021) predicted that a light-out mitigation measure could reduce bird-window collision mortality by 60%.

Monitoring and the use of compensatory mitigation should be incorporated at any new building project because the measures recommended in the available guidelines remain of uncertain efficacy, and even if these measures are effective, they will not reduce collision fatalities to zero. The only way to assess mitigation efficacy and to quantify post-construction fatalities is to monitor the project for fatalities.

Fund Wildlife Rehabilitation Facilities: Compensatory mitigation ought also to include funding contributions to wildlife rehabilitation facilities to cover the costs of injured animals that will be delivered to these facilities for care. Many animals would likely be injured by collisions with building windows and with automobiles traveling to and from the project site.

Landscaping: If the project goes forward, California native plant landscaping (i.e., grassland and locally appropriate scrub plants) should be considered to be used as opposed to landscaping with lawn and exotic shrubs and trees. Native plants offer more structure, cover, food resources, and nesting substrate for wildlife than landscaping with lawn and ornamental trees. Native plant landscaping has been shown to increase the abundance of arthropods which act as important sources of food for wildlife and are crucial for pollination and plant reproduction (Narango et al. 2017, Adams et al. 2020, Smallwood and Wood 2022.). Further, many endangered and threatened insects require native host plants for reproduction and migration, e.g., monarch butterfly. Around the world, landscaping with native plants over exotic plants increases the abundance and diversity of birds, and it is particularly valuable to native birds (Lerman and Warren 2011, Burghardt et al. 2008, Berthon et al. 2021, Smallwood and Wood 2022). Landscaping with native plants is a way to maintain or to bring back some of the natural habitat and lessen the footprint of urbanization by acting as interconnected patches of habitat for wildlife (Goddard et al. 2009, Tallamy 2020). Lastly, not only does native plant landscaping benefit wildlife, it requires less water and maintenance than traditional landscaping with lawn and hedges.

Thank you for your consideration,

Shawn Smallwood

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Shawn Smallwood, Ph.D.

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EXHIBIT B

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

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September 26, 2025

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Subject: Comments on the Master Case No. 23-0101 Project

Dear Ms. Uno,

We have reviewed the April 2025 Categorical Exemption Memorandum ("Memo") for the Master Case No. 23-0101 ("Project") located in the City of Fontana ("City"). The Project proposes to construct 204 residential units, five 1,000 square-foot retail units, and 277 parking spaces on the 3.5-acre site.

Our review concludes that the Memo fails to adequately evaluate the Project's health risk impacts. As a result, the proposed Project does not qualify for a Class 32 Categorical Exemption under the California Environmental Quality Act ("CEQA") and 14 Cal. Code of Regs. 1500 et seq. ("CEQA Guidelines") and, therefore, a full CEQA analysis must be prepared to adequately assess and mitigate the potential health risk impacts that the Project may have on the environment.

Air Quality

Improper Reliance on Class 32 Categorical Exemption

The Memo indicates that the Project is exempt from the California Environmental Quality Act ("CEQA") pursuant to Guidelines § 15332. Regarding Class 32 Categorical Exemptions, the Memo states:

> "CEQA Guidelines Section 15332 states that a Class 32 CE applies when:
>
> a) The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
> b) The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.
> c) The project site has no value as habitat for endangered, rare or threatened species.

d) Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.
e) The site can be adequately served by all required utilities and public services" (p. 1).

As demonstrated above, a project can only qualify for a Class 32 Categorical Exemption if approval of the Project would not result in any significant effects relating to traffic, noise, air quality, or water quality. However, the Memo's air quality analysis is insufficient. The Project may not qualify for a Class 32 exemption and a full CEQA analysis should be prepared for two reasons:

(1) The Memo fails to adequately evaluate diesel particulate matter emissions; and
(2) SWAPE's screening-level analysis indicates a potentially significant health risk impact.

1) Diesel Particulate Matter Emissions Inadequately Evaluated

The Memo does not evaluate the toxic air contaminant ("TAC") emissions associated with Project construction nor conduct a quantified health risk assessment ("HRA"). The Memo is thus inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project to the adverse impacts on human health caused by those emissions. Under CEQA, agencies must make a "reasonable effort to substantively connect a project's air quality impacts to likely health consequences." [1] To comply with this requirement, a construction-phase HRA should have been performed to assess the potential health risks to nearby sensitive receptors from diesel particulate matter ("DPM") emissions generated during construction. The resulting cancer risk estimate should then be compared against the SCAQMD established threshold of 10 in one million.[2]

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

We conducted a screening-level risk assessment using AERSCREEN, a screening-level air quality dispersion model which uses a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed.[3] We prepared a preliminary HRA of the Project's construction-related health risk impact to residential sensitive receptors using the annual PM_{10} exhaust estimates from the Memo's CalEEMod output files. Consistent with recommendations set forth by the Office of Environmental Health Hazard Assessment ("OEHHA"), we assumed residential exposure begins during the third trimester stage of life.[4]

The "TPM23-015, Fontana Detailed Report" model indicates that construction activities will generate approximately 69.5 pounds of DPM over the 422-day construction period.[5] The AERSCREEN model relies

[1] "Sierra Club v. County of Fresno." Supreme Court of California, December 2018, a*vailable at:* https://law.justia.com/cases/california/supreme-court/2018/s219783a.html
[2] "South Coast AQMD Air Quality Significance Thresholds." SCAQMD, March 2023, *available at*: https://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25.
[3] "Air Quality Dispersion Modeling - Screening Models," U.S. EPA, *available at:* https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models.
[4] "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 8-18.
[5] See Attachment A for health risk calculations.

on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over construction of the Project, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{69.5\ lbs}{422\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.000864\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.000864 grams per second ("g/s").

Construction was simulated as a 1.5-acre rectangular area source in AERSCREEN, with an initial vertical dimension of 1.5 meters and a maximum horizontal dimension of 168.31 meters. The minimum horizontal dimension is about 84.15 meters. A release height of three meters was selected to represent the height of stacks of operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution. The population of Fontana was obtained from U.S. 2024 Census data.[6]

The AESCREEN model generates maximum reasonable estimates of single-hour DPM concentrations for the Project. The U.S. Environmental Protection Agency ("U.S. EPA") suggests that the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10% in screening procedures.[7] The Memo states that the closest known sensitive receptors include single-family residential buildings that are as close as 80 feet, or 24.4 meters, to the Project site (Appendix C, pp. 82).

However, review of the AERSCREEN output files demonstrate that the *maximally* exposed individual receptor ("MEIR") is located approximately 75 meters downwind of the Project site.[8] Thus, the single-hour concentration estimated by AERSCREEN for construction of the Project is therefore approximately 1.806 µg/m^3 DPM at approximately 75 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.1806 µg/m^3 for Project construction.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA, as recommended by SCAQMD. Guidance from OEHHA and the California Air Resources Board ("CARB") recommends the use of a standard point estimate approach, including high-point estimate (i.e. 95th percentile) breathing rates and age sensitivity factors to account for the increased sensitivity to carcinogens during early-in-life exposure and accurately assess risk for susceptible subpopulations such as children. The residential exposure parameters used for the various age groups in our screening-level HRA are as follows:

[6] "Fontana." U.S. Census Bureau, 2024, *available at:* https://datacommons.org/place/geoId/0624680.
[7] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." U.S. EPA, October 1992, *available at:* https://www.epa.gov/sites/default/files/2020-09/documents/epa-454r-92-019_ocr.pdf.
[8] See Attachment B for AERSCREEN output files.

Exposure Assumptions for Residential Individual Cancer Risk						
Age Group	**Breathing Rate** (L/kg-day)[9]	**Age Sensitivity Factor**[10]	**Exposure Duration** (years)	**Fraction of Time at Home**[11]	**Exposure Frequency** (days/year)[12]	**Exposure Time** (hours/day)
3rd Trimester	361	10	0.25	0.85	350	24
Infant (0 – 2)	1090	10	2	0.85	350	24
Child (2 – 16)	572	3	14	0.72	350	24
Adult (16 – 30)	261	1	14	0.73	350	24

For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify doses for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor ("CPF") in units of inverse dose expressed in milligrams per kilogram per day (mg/kg/day^{-1}) to derive the cancer risk estimate. We used the following dose algorithm, therefore, to assess exposures:

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

where:

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

We then used the following equation for each appropriate age group to calculate the overall cancer risk:

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

[10] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 8-5 Table 8.3.

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

[12] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 5-24.

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

where:

$Dose_{AIR}$ = do.se by inhalation (mg/kg/day), per age group
CPF = cancer potency factor, chemical-specific $(mg/kg/day)^{-1}$
ASF = age sensitivity factor, per age group
FAH = fraction of time at home, per age group (for residential receptors only)
ED = exposure duration (years)
AT = averaging time period over which exposure duration is averaged (always 70 years)

Consistent with the 422-day construction schedule, the annualized average concentration for construction was used for the entire third trimester of pregnancy (0.25 years) and the first 0.91 years of the entire infantile stage of life (0-2 years). The results of our calculations are shown in the table below.

The Maximally Exposed Individual at an Existing Residential Receptor

Age Group	**Emissions Source**	**Duration** (years)	**Concentration** (ug/m3)	**Cancer Risk**
3rd Trimester	Construction	0.25	0.1806	2.46E-06
	Construction	*0.91*	*0.1806*	*2.69E-05*
	Operation	*1.09*	*	*
Infant (0 - 2)	Total	2		2.69E-05
Child (2 - 16)	Operation	14	*	*
Adult (16 - 30)	Operation	14	*	*
Lifetime		**30**		**2.93E-05**

**Operational HRA not conducted due to the residential nature of the Project.*

The estimated excess cancer risks for the 3rd trimester of pregnancy and infants at the MEIR located approximately 75 meters away, over the course of construction, are approximately 2.46 and 26.9 in one million, respectively. The excess cancer risk over the course of construction is approximately 29.3 in one million. The infant and lifetime construction cancer risks exceed the SCAQMD's threshold of 10 in one million, resulting in a potentially significant impact not addressed or identified by the Memo or associated documents.

Our analysis represents a screening-level HRA, which is known to be conservative. The purpose of the screening-level HRA is to demonstrate the potential link between project-generated emissions and

adverse health risk impacts. The U.S. EPA Exposure Assessment Guidelines suggest an iterative, tiered approach to exposure assessments, starting with a simple screening-level evaluation using basic tools and conservative assumptions.[13] If required, a more refined analyses with advanced models and detailed input data can follow.

Our screening-level HRA demonstrates that construction of the Project could result in a potentially significant health risk impact. A full CEQA analysis should therefore be prepared to include a refined HRA, as recommended by the U.S. EPA. If the refined analysis similarly reaches a determination of significant impact, then mitigation measures should be incorporated, as described in our "Feasible Mitigation Measures Available to Reduce Emissions" section below.

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

The Memo is required under CEQA to implement all feasible mitigation to reduce the Project's potential impacts. As demonstrated above, the Project may result in a significant health risk impact that should be mitigated further if a refined HRA similarly demonstrates a significant impact.

To reduce the DPM emissions associated with Project construction, we recommend the Memo consider several mitigation measures as listed below. The Southern California Association of Governments' Certified Final Program Environmental Impact Report for Connect SoCal 2024 recommends the following Project-level air quality mitigation measures: [14]

- 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 [hp] 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.
- Ensure that all construction equipment is properly tuned and maintained.
- Minimize idling time to 5 minutes or beyond regulatory requirements — saves fuel and reduces emissions.
- 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.
- Obtain CARB Portable Equipment Registration with the state or a local district permit for 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. Arrange appropriate consultations with

[13] "Exposure Assessment Tools by Tiers and Types - Screening-Level and Refined." U.S. EPA, May 2024, *available at:* https://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined.
[14] "Certified Final Program Environmental Impact Report for Connect SoCal 2024." SCAG, May 2020, *available at:* https://scag.ca.gov/program-environmental-impact-report-0.

CARB or the local air district to determine registration and permitting requirements prior to equipment operation at the site.

- Use Tier 4 Final equipment or better for all engines above 50 hp. In the event that construction equipment cannot meet to Tier 4 Final or better engine certification, the Project representative or contractor must demonstrate through future study with written findings supported by substantial evidence that is approved by the project's lead agency before using other technologies/strategies. Alternative applicable strategies may include, but would not be limited to, construction equipment with Tier 4 Interim or reduction in the number and/or horsepower rating of construction equipment and/or limiting the number of construction equipment operating at the same time. All equipment must be tuned and maintained in compliance with the manufacturer's recommended maintenance schedule and specifications. All maintenance records for each equipment and their contractor(s) should make available for inspection and remain on-site for a period of at least two years from completion of construction, unless the individual project can demonstrate that Tier 4 Final or better engines would not be required to mitigate emissions below significance thresholds. Project sponsors should also consider including ZE/ZNE technologies where appropriate and feasible or higher tier standard diesel equipment as it becomes developed and feasible.
- 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.

Provided above are several mitigation measures that would reduce Project-related DPM emissions. These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently reduce emissions released during Project construction.

A full CEQA analysis should be prepared that includes all feasible mitigation measures, as well as updated health risk analyses to ensure that the necessary mitigation measures are implemented to reduce emissions to the maximum extent feasible. The full CEQA analysis should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's potentially significant emissions are reduced to the maximum extent possible.

Disclaimer

SWAPE has received limited documentation 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: Health Risk Calculations
Attachment B: AERSCREEN Output Files
Attachment C: Matt Hagemann CV
Attachment D: Paul Rosenfeld CV

Construction				
2025			**Total**	
Annual Emissions (tons/year)	0.04		Total DPM (lbs)	69.47945205
Daily Emissions (lbs/day)	0.219178082		Total DPM (g)	31515.87945
Construction Duration (days)	212		Emission Rate (g/s)	0.000864377
Total DPM (lbs)	46.46575342		Release Height (meters)	3
Total DPM (g)	21076.86575		Total Acreage	3.5
Start Date	6/3/2025		Max Horizontal (meters)	168.31
End Date	1/1/2026		Min Horizontal (meters)	84.15
Construction Days	212		Initial Vertical Dimension (meters)	1.5
2026			Setting	Urban
Annual Emissions (tons/year)	0.02		Population	218,455
Daily Emissions (lbs/day)	0.109589041		Start Date	6/3/2025
Construction Duration (days)	210		End Date	7/30/2026
Total DPM (lbs)	23.01369863		Total Construction Days	422
Total DPM (g)	10439.0137		Total Years of Construction	1.16
Start Date	1/1/2026		Total Years of Operation	28.84
End Date	7/30/2026			
Construction Days	210			

The Maximally Exposed Individual at an Existing Residential Receptor				
Age Group	**Emissions Source**	**Duration** (years)	**Concentration** (ug/m3)	**Cancer Risk**
3rd Trimester	Construction	0.25	0.1806	2.46E-06
	Construction	*0.91*	*0.1806*	*2.69E-05*
	Operation	*1.09*	*	*
Infant (0 - 2)	Total	2		2.69E-05
Child (2 - 16)	Operation	14	*	*
Adult (16 - 30)	Operation	14	*	*
Lifetime		**30**		**2.93E-05**

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********** AREA PARAMETERS **********

SOURCE EMISSION RATE:	0.864E-03	g/s	0.686E-02	lb/hr
AREA EMISSION RATE:	0.610E-07	g/(s-m2)	0.484E-06	lb/(hr-m2)
AREA HEIGHT:	3.00	meters	9.84	feet
AREA SOURCE LONG SIDE:	168.31	meters	552.20	feet
AREA SOURCE SHORT SIDE:	84.15	meters	276.08	feet
INITIAL VERTICAL DIMENSION:	1.50	meters	4.92	feet
RURAL OR URBAN:	URBAN			
POPULATION:	218455			
INITIAL PROBE DISTANCE =	5000.	meters	16404.	feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 1. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.000	1.806	0	75.0	WIN

* = worst case diagonal

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Urban
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Winter

ALBEDO: 0.35
BOWEN RATIO: 1.50
ROUGHNESS LENGTH: 1.000 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	01	10	10	01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50

HT	REF TA	HT
10.0	310.0	2.0

********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
1.00	1.401	2525.00	0.1702E-01

25.00	1.558	2550.00	0.1679E-01
50.00	1.684	2575.00	0.1656E-01
75.00	1.806	2600.00	0.1635E-01
100.00	1.556	2625.00	0.1613E-01
125.00	1.015	2650.00	0.1593E-01
150.00	0.7910	2675.00	0.1572E-01
175.00	0.6412	2700.00	0.1552E-01
200.00	0.5346	2725.00	0.1533E-01
225.00	0.4554	2750.00	0.1514E-01
250.00	0.3947	2775.00	0.1495E-01
275.00	0.3467	2800.00	0.1477E-01
300.00	0.3080	2825.00	0.1459E-01
325.00	0.2763	2850.00	0.1442E-01
350.00	0.2498	2875.00	0.1424E-01
375.00	0.2274	2900.00	0.1408E-01
400.00	0.2085	2925.00	0.1391E-01
425.00	0.1919	2950.00	0.1375E-01
450.00	0.1775	2975.00	0.1359E-01
475.00	0.1650	3000.00	0.1344E-01
500.00	0.1540	3025.00	0.1329E-01
525.00	0.1441	3050.00	0.1314E-01
550.00	0.1352	3075.00	0.1299E-01
575.00	0.1273	3100.00	0.1285E-01
600.00	0.1202	3125.00	0.1271E-01
625.00	0.1137	3150.00	0.1257E-01
650.00	0.1078	3175.00	0.1244E-01
675.00	0.1024	3200.00	0.1230E-01
700.00	0.9743E-01	3225.00	0.1217E-01
725.00	0.9286E-01	3250.00	0.1204E-01
750.00	0.8867E-01	3275.00	0.1192E-01
775.00	0.8479E-01	3300.00	0.1180E-01
800.00	0.8121E-01	3325.00	0.1167E-01
825.00	0.7788E-01	3350.00	0.1155E-01
850.00	0.7479E-01	3375.00	0.1144E-01
875.00	0.7190E-01	3400.00	0.1132E-01
900.00	0.6921E-01	3425.00	0.1121E-01
925.00	0.6667E-01	3450.00	0.1110E-01
950.00	0.6430E-01	3475.00	0.1099E-01
975.00	0.6207E-01	3500.00	0.1088E-01
1000.00	0.5996E-01	3525.00	0.1078E-01
1025.00	0.5797E-01	3550.00	0.1067E-01
1050.00	0.5609E-01	3575.00	0.1057E-01
1075.00	0.5432E-01	3600.00	0.1047E-01
1100.00	0.5264E-01	3625.00	0.1037E-01
1125.00	0.5105E-01	3650.00	0.1028E-01
1150.00	0.4954E-01	3675.00	0.1018E-01
1175.00	0.4811E-01	3700.00	0.1009E-01
1200.00	0.4675E-01	3724.99	0.9993E-02
1225.00	0.4546E-01	3750.00	0.9902E-02
1250.00	0.4422E-01	3775.00	0.9813E-02

1275.00	0.4304E-01	3800.00	0.9724E-02
1300.00	0.4192E-01	3825.00	0.9638E-02
1325.00	0.4085E-01	3849.99	0.9552E-02
1350.00	0.3982E-01	3875.00	0.9468E-02
1375.00	0.3884E-01	3900.00	0.9385E-02
1400.00	0.3790E-01	3925.00	0.9303E-02
1425.00	0.3700E-01	3950.00	0.9223E-02
1450.00	0.3613E-01	3975.00	0.9143E-02
1475.00	0.3531E-01	4000.00	0.9065E-02
1500.00	0.3451E-01	4025.00	0.8988E-02
1525.00	0.3374E-01	4050.00	0.8913E-02
1550.00	0.3301E-01	4075.00	0.8838E-02
1575.00	0.3249E-01	4100.00	0.8764E-02
1600.00	0.3179E-01	4125.00	0.8692E-02
1625.00	0.3112E-01	4150.00	0.8620E-02
1650.00	0.3048E-01	4175.00	0.8549E-02
1675.00	0.2986E-01	4200.00	0.8480E-02
1700.00	0.2926E-01	4225.00	0.8411E-02
1725.00	0.2868E-01	4250.00	0.8344E-02
1750.00	0.2812E-01	4275.00	0.8277E-02
1775.00	0.2758E-01	4300.00	0.8211E-02
1800.00	0.2705E-01	4325.00	0.8146E-02
1825.00	0.2655E-01	4350.00	0.8082E-02
1850.00	0.2606E-01	4375.00	0.8019E-02
1875.00	0.2558E-01	4400.00	0.7957E-02
1900.00	0.2512E-01	4425.00	0.7896E-02
1924.99	0.2467E-01	4450.00	0.7835E-02
1950.00	0.2424E-01	4475.00	0.7775E-02
1975.00	0.2382E-01	4500.00	0.7716E-02
2000.00	0.2342E-01	4525.00	0.7658E-02
2025.00	0.2302E-01	4550.00	0.7600E-02
2050.00	0.2264E-01	4575.00	0.7544E-02
2075.00	0.2226E-01	4600.00	0.7488E-02
2100.00	0.2190E-01	4625.00	0.7432E-02
2125.00	0.2155E-01	4650.00	0.7378E-02
2150.00	0.2121E-01	4675.00	0.7324E-02
2175.00	0.2087E-01	4700.00	0.7271E-02
2200.00	0.2055E-01	4725.00	0.7218E-02
2225.00	0.2023E-01	4750.00	0.7166E-02
2250.00	0.1993E-01	4775.00	0.7115E-02
2275.00	0.1963E-01	4800.00	0.7064E-02
2300.00	0.1934E-01	4825.00	0.7014E-02
2325.00	0.1905E-01	4850.00	0.6965E-02
2350.00	0.1877E-01	4875.00	0.6916E-02
2375.00	0.1850E-01	4900.00	0.6868E-02
2400.00	0.1824E-01	4924.99	0.6820E-02
2425.00	0.1798E-01	4950.00	0.6773E-02
2450.00	0.1773E-01	4975.00	0.6726E-02
2475.00	0.1749E-01	5000.00	0.6681E-02
2500.00	0.1725E-01		

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

3-hour, 8-hour, and 24-hour scaled
concentrations are equal to the 1-hour concentration as referenced in
SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY
IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4)
Report number EPA-454/R-92-019
http://www.epa.gov/scram001/guidance_permit.htm
under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	1.844	1.844	1.844	1.844	N/A
DISTANCE FROM SOURCE	85.00 meters				
IMPACT AT THE AMBIENT BOUNDARY	1.401	1.401	1.401	1.401	N/A
DISTANCE FROM SOURCE	1.00 meters				

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

- **Geologic and Hydrogeologic Characterization, Investigation and Remediation Strategies**
- **Industrial Stormwater Compliance**
- **CEQA Review**
- **Expert Testimony**

Professional Certifications:
California Professional Geologist, P.G.
California Certified Hydrogeologist, C.Hg.

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 Experience:
30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. Spent nine years with the U.S. EPA in the Resource Conservation Recovery Act (RCRA) and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where I identified emerging threats to groundwater. While with EPA, I served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. 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, I developed extensive client relationships and has managed complex projects that include consultations as an expert witness and a regulatory specialist, and managing projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions held include:

Government:
Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);

Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
Geologist, U.S. Forest Service (1986 – 1998).

Educational:
Geology Instructor, Golden West College, 2010 – 2104, 2017;
Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
Instructor, College of Marin, Department of Science (1990 – 1995).

Private Sector:
Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);
Executive Director, Orange Coast Watch (2001 – 2004);
Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, responsibilities have included:

- Lead analyst and testifying expert, for both plaintiffs and defendants, 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.
- Recommending 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 exposure to hazards from toxins.
- Stormwater analysis, sampling and best management practice evaluation, for both government agencies and corporate clients, at more than 150 industrial facilities.
- Serving as expert witness for both plaintiffs and defendants in cases including contamination of groundwater, CERCLAcompliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns, for both government agencies and corporate clients.
- Lead analyst and testifying expert in the review of environmental issues in license applicationsfor 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., 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.
- Lead author for a multi-volume remedial investigation report for an operating school in LosAngeles that met strict Sate of California regulatory requirements.
- Development of strategic approaches for cleanup of contaminated sites in consultation withclients and regulators.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, 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 included:

- Leading efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiating a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identifying 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, developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. 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, 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 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. Prepared geologic reports, conducted 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.

Served as a hydrogeologist with the RCRA Hazardous Waste program. Duties included:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliancewith 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, directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following:

- 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 Mexicoand 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 as senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advising the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinkingwater supplies.
- Shaping EPA's national response to these threats by serving on workgroups and by contributingto guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improving the technical training of EPA's scientific and engineering staff.
- Earning 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.
- Establishing national protocol for the peer review of scientific documents.

Geology:

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

- Mapping geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinating research with community stakeholders who were concerned with natural resource protection.
- Characterizing the geology of an aquifer that serves as the sole source of drinking water for thecity of Medford, Oregon.

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

Duties included the following:

- Supervising year-long effort for soil and groundwater sampling.
- Conducting aquifer tests.
- Investigating active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, 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.
- Part time geology instructor at Golden West College in Huntington Beach, California from 2010 to 2014 and in 2017.

Summary of Testimony Experience Over Past Four Years

In Re New Jersey Department of Environmental Protection et al. vs. E.I. DuPont de Nemours and Company, in the United States District Court, District of New Jersey, Civil Action No. 1:19-cv-14766-RMB-JBC. Deposition in 2025. Representing Plaintiffs in matters regarding contamination of groundwater, wastewater, soil, and air with per- and poly-fluoroalkyl substances.

In Re Edmond Asher, et al., vs. RTX Corporation (f/k/a Raytheon Technologies Corporation, et al.) in the County of Huntington Superior Court, Indiana, Cause number 35D01-2006-CT-000338. Deposition in 2024. Representing Plaintiffs in matters regarding contamination of groundwater and soil vapor with trichlorethylene.

In Re Wright vs Consolidated Rail Corporation In the Circuit Court of Cook County, Illinois, Case No: 21L3966. Deposition in 2023, Representing Plaintiff in matters involving groundwater and drinking water contamination of perchloroethylene, trichlorethylene, 1,2-dichloroethane, and carbon tetrachloride.

In Re Behr Dayton Thermal Products LLC In the United States District Court for the Southern District of Ohio Western Division at Dayton, Case No: 08-cv-326. Deposition in 2022. Representing Plaintiff in matters regarding contamination of groundwater and indoor air with perchloroethylene and trichloethelene.

Orange County Water District vs. Sabic Innovative Plastics US, LLC, et al. In the Court of Appeal, Fourth District,

Division 1, California, Case No: D070553. Deposition in 2020. Representing Plaintiff in matters involving compliance with The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
Los Angeles Waterkeeper vs. AAA Plating and Inspection, Inc. In the United States District Court for the Central District of California, Case No: No. CV 18-5916 PA (GJSx). Deposition in 2019. Expert witness representing Plaintiff in matters involving contaminated stormwater runoff at an industrial facility in Compton, California.

Californians for Alternatives to Toxics vs. Schneider Dock and Intermodal Facility. In the United States District Court for the Northern District of California, Case No: 3:17-cv-05287-JST. Deposition in 2019. Expert witness representing Plaintiff in matters involving contaminated stormwater runoff at an industrial facility in Eureka, California.

Bells et al. vs. The 3M Company et al. In the United States District Court for the District of Colorado, Case No: 1:16-CV-02531-RBJ. Deposition in 2018. Expert witness representing Plaintiff on matters regarding the general hydrogeological conditions present in an area impacted by per- and poly-fluoroalkyl substances.

Ungar vs. Foundation for Affordable Housing. In the Superior Court, State of California, Los Angeles County, Case No. BC628890 Deposition in 2017. Expert witness representing defendant on matters involving alleged drinking water contamination.

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 andPublic Participation. Brownfields 2005, Denver, Coloradao.

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

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

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBEReleases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells.

Presentation to the Ground Water and Environmental Law Conference, National GroundwaterAssociation.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Waterin 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 Waterin 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 atribal EPA meeting, Pechanga, CA.

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

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking WaterSupplies. 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 ofthe National Groundwater Association.

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

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to AddressImpacts 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 andState Underground Storage Tank Program managers.

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

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 StorageTanks.

Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water 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 WatercraftUsage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George WrightSociety 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 AirStation, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

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

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

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Basesin 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.

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

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

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

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

Professional Experience

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

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

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Rosenfeld, P.E., Spaeth, K.R., McCarthy, S.J. *et al.* Camp Lejeune Marine Cancer Risk Assessment for Exposure to Contaminated Drinking Water From 1955 to 1987. *Water Air Soil Pollut* **235**, 124 (2024). https://doi.org/10.1007/s11270-023-06863-y.

Rosenfeld P.E., Spaeth K.R., Remy L.L., Byers V., Muerth S.A., Hallman R,C., Summers-Evans J., Barker S. (2023) Perfluoroalkyl substances exposure in firefighters: Sources and implications, *Environmental Research*, Volume 220, https://doi.org/10.1016/j.envres.2022.115164.

Rosenfeld P.E. and Spaeth K.R., (2023) Authors' Response to Letter to the Editor from Bullock and Ramacciotti, *Water Air Soil Pollution* Volume 234, https://doi.org/10.1007/s11270-023-06165-3

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

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

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

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

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

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

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

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

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

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

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

Cheremisinoff, N.P., **Rosenfeld, P.E.** Davletshin, A.R. (2008). ***Responsible Care***. Gulf Publishing. Texas.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affects 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. Master's 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. Bachelor's Thesis. University of California.

Presentations:

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

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

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

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

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

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

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

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

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. The 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 the 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 the 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 the 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 District Court of Harris County Texas
Mt Davis Interest, Inc v Sesco Cement Corp
Cause No 2023-26512
Trial 6-6-2-25

In the United States Southern District of New York
Gallo vs Avon Products Inc., et al
Civil Action No.: 1:23-cv-2023
Deposition 4-24-2025

In Vanderburgh Superior Court 5, County of Vanderburgh, Indiana
Markello v CSX
Civil Action No 82D05-2011-CT-004962
Deposition 3-26-25

Iin the Circuit Court of Cook County Illinois
Jarosiewicz v Northeast Regional Railroad
Case No 2023 L 002290
Deposition 2-27-25

In the District Court 191st Judicial District Dallas County
Acklin v Poly America International
Cause No DC-22-08610
Deposition 1-8-2025

United States District Court, Norther District of California
Asustin Vs Monsanto
Case No 2:23-cv-272
Deposition 12-20-25

In Jefferson Circuit Court Division One, Louisville, Kentucky
Stafford vs, CSX
Case No. 18-CI-001790

Deposition: 8-27-24

In the Twenty-Second Judicial Circuit of St. Louis. State of Missouri
Patricia Godfrey vs, Amtrak
Case No. 2122-CC-00525
Deposition: 7-17-24

In the Circuit Court of Jefferson County Alabama
Linda Early Vs. CSX
Case number CV-2021-00241
Deposition 6-24-24

In the Court of Common Please Lucas County, Ohio
Brenda Conkright vs. CSX
Case No. G-4801-CI-0202102664-000
Deposition: 6-4-24

In the Commonwealth of Kentucky, Greenup Circuit Court
Patsy Sue Napier vs. CSX
Case No. 19-CI-0012
Deposition: 5-8-2-24

In United States District Court of Hawaii
Patrick Feindt, Jr. et al. vs. The United States of America
Case No. 1:22-cv-LEK-KJM
Trial 3-29-24 and 4-5-24

In the District Court of Hood County State of Texas
Artie Gray vs. Exxon Mobil
Case No. C-2018047
Rosenfeld Deposition:4-22-2024

In the Elkhart Superior Court State of Indiana
Estate of Clark Stacy vs. Penn Central Corporation
Cause No 2D01-2001-CT-00007
Rosenfeld Deposition 1-25-2024 and 3-7-2024

In the Circuit Court of Trempealeau County, State of Wisconsin
Michael J. Sylla et al. vs. High-Crush Whitehall LLC
Case No. 2019-CV-63, 2019-CV-64, 2019-CV-65, 2019-CV-66
Rosenfeld Deposition: 3-5-2024

In the Circuit Court of Trempealeau County, State of Wisconsin
Leland Drangstveit vs. High-Crush Blair LLC
Case No. 19-CV-66
Rosenfeld Deposition 3-5-2024

In the Circuit Court of Jefferson County Alabama
Donald Lee Ashworth vs. CSX Transportation Inc.
Case No CV-2021-901261
Rosenfeld Deposition 1-23-2024

In the United States District Court for the Eastern District of Wisconsin
Gary L Siepe vs. Soo Line Railroad
Case No. 2:21-cv-00919
Rosenfeld Deposition 1-19-2024

In the United States District Court for the Western District of Louisiana
Ricky Bush v. Clean Harbors Colfax LLC
Case No. 1:22-cv-02026-DDD-JPM
Rosenfeld Deposition 12-18-2023 and 1-15-2024

In United States District Court of Hawaii
Patrick Feindt, Jr. et al. vs. The United States of America
Case No. 1:22-cv-LEK-KJM
Rosenfeld Deposition 11-29-2023

In the Circuit Court for the Twentieth Judicial Circuit St. Clair County, Illinois
Timothy Gray vs. Rural King et al.
Case No 2022-LA-355
Rosenfeld Deposition 9-26-2023

In United States District Court Eastern District of Wisconsin
Gary L. Siepe vs. Soo Line Railroad Company
Case No. 2:21-cv-00919
Rosenfeld Deposition 9-15-2023

In the Circuit Court of Cook County Illinois
Donald Fox vs. BNSF
Case No. 2021 L12
Rosenfeld Deposition 9-12-2023

In the Court of Common Please Cuyahoga County, Ohio
Thomas Schleich vs. Penn Central Corporation
Lead Case No. CV-20-939184
Rosenfeld Deposition 8-27-2023

In the Circuit Court of Jackson County Missouri at Kansas City
Timothy Dalsing vs. BNSF
Case No. No. 2216-cv06539
Rosenfeld Deposition 7-28-2023

In the United States District Court for the Southern District of Texas Houston Division
International Terminals Company LLC Deer Park Fire Litigation
Lead Case No. 4:19-cv-01460
Rosenfeld Deposition 7-25-2023

In the Circuit Court of Livingston County Missouri
Shirley Ralls vs. Canadian Pacific Railway and Soo Lind Railroad
Case No. 28LV-CV0020
Rosenfeld Daubert Hearing 7-18-2023 Trial Testimony 7-19-2023

In the Circuit Court of Cook County Illinois
Brenda Wright vs. Penn Central and Conrail
Case No. No. 2032L003966
Rosenfeld Deposition 6-13-2023

In the Circuit Court Common Please Philadelphia of Jefferson County Alabama
Frank Belle vs. Birmingham Southern Railroad Company et al.
Case No. 01-cv-2021-900901.00
Rosenfeld Deposition 4-6-2023

In the Circuit Court of Jefferson County Alabama
Linda De Gregorio vs. Penn Central
Case No. 002278
Rosenfeld Deposition 3-27-20203

In the United States District Court Eastern District of New York
Rosalie Romano et al. vs. Northrup Grumman Corporation
Case No. 16-cv-5760
Rosenfeld Deposition 3-16-2023

In the Superior Court of Washington, Spokane County
Judy Cundy vs. BNSF
Case No. 21-2-03718-32
Rosenfeld Deposition 3-9-2023

In The Court of Common Pleas of Philadelphia County, PA Civil Trial Division
Feaster v Conrail
Case No. 001075
Rosenfeld Deposition 2-1-2023

In United States District Court for the Central District of Illinois
Sherman vs. BNSF
Case No. 3:17-cv-01192
Rosenfeld Deposition 1-18-2023

In United States District Court District of Colorado
Gonzales vs. BNSF
Case No. 1:21-cv-01690
Rosenfeld Deposition 1-17-2023

In United States District Court District of Colorado
Abeyta vs. BNSF
Case No. 1:21-cv-01689-KMT
Rosenfeld Deposition 1-3-2023

In United States District Court For The Easter District of Louisiana
Nathaniel Smith vs. Illinois Central Railroad
Case No. 2:21-cv-01235
Rosenfeld Deposition 11-30-2022

In the Superior Court of the State of California, County of San Bernardino
Billy Wildrick, Plaintiff vs. BNSF Railway Company
Case No. CIVDS1711810
Rosenfeld Deposition 10-17-2022

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

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

In The Circuit Court of Livingston County, State of Missouri, Circuit Civil Division

Shirley Ralls, Plaintiff vs. Canadian Pacific Railway and Soo Line Railroad
Case No. 18-LV-CC0020
Rosenfeld Deposition 9-7-2022

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

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

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

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

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

In Circuit Court of the Sixth Judicial Circuit, Macon Illinois
Rocky Bennyhoff Plaintiff vs. Norfolk Southern
Case No. 20-L-56
Rosenfeld Deposition 8-3-2022, Trial 1-10-2023

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

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

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

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

In the Circuit Court of the 4th Judicial Circuit, in and For Duval County, Florida
Barbara Steele vs. CSX Transportation

Case No.16-219-Ca-008796
Rosenfeld Deposition 3-15-2022

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

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

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

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

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

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

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

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

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

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

In the United States District Court For the Northern District of Illinois

Theresa Romcoe vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail
Case No. 17-cv-8517
Rosenfeld Deposition 5-25-2021

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al. vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case No. CV20127-094749
Rosenfeld Deposition 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division
Robinson, Jeremy et al vs. CNA Insurance Company et al.
Case No. 1:17-cv-000508
Rosenfeld Deposition 3-25-2021

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

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

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

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

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

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

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

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

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants

Cause No. 1923
Rosenfeld Deposition 11-17-2017

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

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

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

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

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., Plaintifs, vs. Meritor Inc., et al., Defendants
Case No. 4:16-cv-52-DMB-JVM
Rosenfeld Deposition July 2017

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Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No. 13-2-03987-5
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Trial March 2017

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Case No. RG14711115
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Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
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Case Number: 03-C-12-012487 OT
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In the Court of Galveston County, Texas 56th Judicial District
MDL Litigation Regarding Texas City Refinery Ultracracker Emission Event Litigation
Cause No. 10-UC-0001
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In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the United States District court of Southern District of California
United States of America, Plaintiff vs. 2,560 Acres of Land, more or less, located in Imperial County, State of California; and Donald L. Crawford, et. al.
Civil No. 3:11-cv-02258-IEG-RBB
Rosenfeld Deposition: December 2012, January 2013

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., Plaintiffs, vs. Republic Services, Inc., et al., Defendants
Case No. 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition October 2012

In the 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.

EXHIBIT C

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Subject: Indoor Air Quality: Master Case No. 23-101 Project, Fontana, CA
(IEE File Reference: P-4898)

Pages: 20

Indoor Air Quality Impacts

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

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain

and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

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

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m^3, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the South Coast Air Quality Management District (SCAQMD, 2015).

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

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

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

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

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

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 Master Case No. 23-101 Project, Fontana, CA the building consists of residential and commercial spaces.

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

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

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

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

Because the commercial spaces will be constructed with CARB Phase 2 Formaldehyde ATCM materials and 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 $\mu g/m^3$ (Singer et. al., 2020)

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

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

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

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

Additionally, the SCAQMD's Multiple Air Toxics Exposure Study ("MATES V") identifies an existing cancer risk at the Project site of 511 per million due to the site's elevated ambient air contaminant concentrations, which are due to the area's high levels of vehicle traffic. These impacts would further exacerbate the pre-existing cancer risk to the building occupants, which result from exposure to formaldehyde in both indoor and outdoor air.

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

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

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

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

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

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

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

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

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

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

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

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

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

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

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

where:

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

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

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

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 insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

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

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

The Master Case No. 23-101 Project, Fontana, CA is close to roads with moderate to high traffic (e.g., Sultana Avenue, Foothill Boulevard. etc.), thus the Project site is a sound impacted site.

The NEC Foothill & Sultana Mixed-Use Noise Impact Analysis (Ganddini Group, 2025) contains in Table 1 just five short-term 15 minute noise measurements collected on Thursday November 21, 2024 which ranged from 48.6 to 67.6 Leq dBA and in Table 2 just one long-term 24 hour measurement with a CNEL dBA of 62.8. Tables 10 and 11 report modeled ambient noise levels for the existing with Project and the future (no future year cited) with Project respectively. The existing with Project ambient noise levels ranged from 65.9 to 73.4 CNEL dBA and the future with Project ambient noise levels ranged from 58 to 74 CNEL dBA.

In order to design the building such that the interior noise levels are acceptable, long-term one-week measurements need to be conducted to assess the ambient CNEL or Ldn dBA sound levels for the purpose of selecting the appropriate STC for the windows.

As a result of the high outdoor noise levels, the current project will 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.

$PM_{2.5}$ Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of $PM_{2.5}$. The Master Case No. 23-101 Project, Fontana, CA, is located in the South Coast Air Basin, which is a State and Federal non-attainment area for $PM_{2.5}$.

Additionally, the SCAQMD's MATES V study cites an existing cancer risk of 511 per million at the Project site due to the site's high concentration of ambient air contaminants resulting from the area's high levels of motor vehicle traffic.

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

It is my experience that based on the projected high traffic noise levels, the annual average concentration of $PM_{2.5}$ will exceed the California and National $PM_{2.5}$ annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. 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 OEHHA cancer risk of 10 per million is met.

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

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

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft^2 of floor area. Following installation of the

system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

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

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

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

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

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

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

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

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

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

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

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

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

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry,

could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

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

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

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