Post Meeting Material
Planning Commission
Meeting
April 13, 2022
Item 4

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April 13, 2022

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Re: Agenda Item 4 (22-259): Comments on the Freedom Circle Focus Area and Greystar General Plan Amendment Project

Honorable Members of the Planning Commission:

We write on behalf of Silicon Valley Residents for Responsible Development ("Silicon Valley Residents") to provide comments on Freedom Circle Focus Area and Greystar General Plan Amendment Project ("Project"), which appears as Item 4 (22-259) on the Agenda for the April 13, 2022 Santa Clara Planning Commission meeting. The Planning Commission will consider whether to adopt resolutions recommending (1) approval of an Environmental Impact Report ("EIR") and an associated Mitigation Monitoring and Reporting Program ("MMRP"); (2) adoption of General Plan amendments; and (3) rezoning for the Greystar site (collectively, "approvals").

The Freedom Circle Focus Area would allow, subject to a future planning study, 2,500 dwelling units beyond those anticipated in the Greystar General Plan Amendment, and an additional 2 million square feet of additional office space. The Focus Area is 108 gross acres bounded by San Tomas Aquino Creek to the east, Great America Parkway to the west, Great America Theme Park to the north and Highway 101 to the south.

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The Greystar Project, evaluated in the EIR at the project level, proposes development of three buildings with 1,075 residential units and 2,000 square feet of retail space, plus a 2.0-acre park. The 13.3-acre Greystar site lies within the Freedom Circle Focus Area and is bounded by San Tomas Aquino Creek to the East, Freedom Circle to the West, and Highway 101 in Santa Clara.

The Project requires the following approvals: (1) determination of the adequacy of the EIR prepared to analyze the potential environmental impacts for the project and an associated MMRP; (2) adoption of a General Plan text amendment to add language regarding the creation of additional Future Focus Areas, the re-designation of land outside of Focus Areas, creation of the new Very High-Intensity Office/Research & Development ("R&D") designation, and adoption of a General Plan Amendment to create the Freedom Circle Future Focus Area; (3) adoption of the Greystar General Plan Amendment from High Intensity Office/R&D (maximum Floor Area Ratio of 2.0) to Very High Density Residential (51- 100 Dwelling Unit/Acre; and (4) adoption of the Planned Development Rezoning for the Greystar site, which would allow up to 1,100 units on a 13.3 gross acre site bounded by Freedom Circle to the west, Mission College Boulevard to the north, San Tomas Aquino Creek to the east and Highway 101 to the south. As will be explained below, the above approvals will result in inconsistencies with the Santa Clara General Plan.

On December 20, 2021, Silicon Valley Residents submitted comments on the Draft EIR ("DEIR") prepared for the Project. On March 30, 2022, the City released the Final EIR ("FEIR"), which revises the DEIR and includes responses to our comments. As will be explained below, the FEIR fails to remedy the issues identified in our initial comments. We prepared our responses to the FEIR with the assistance of air quality and health risk experts from Soil / Water / Air Protection Enterprise ("SWAPE"),[1] and biological resources expert Shawn Smallwood, PhD.[2]

For these reasons, Silicon Valley Residents urges the Planning Commission to recommend against adopting the Project's Approvals at the Planning Commission meeting set for April 13, 2022. Silicon Valley Residents urges the Planning Commission to remand the FEIR back to Staff to allow for preparation of a legally adequate EIR pursuant to CEQA.

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[1] SWAPE's technical comments and curricula vitae are attached hereto as **Exhibit A**.
[2] Dr. Smallwood's reply comments and curricula vitae are attached hereto as **Exhibit B**.

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I. The Project's General Plan Amendment Related to Future Focus Areas Is Internally Inconsistent

The Project includes designation of the Freedom Circle Focus Area, which would allow, subject to a future planning study, 2,500 dwelling units beyond those anticipated in the Greystar General Plan Amendment, and an additional 2 million square feet of additional office space. The Freedom Circle Focus Area Plan is defined as a "focus area plan," which is one of several policy and regulatory tools used by the City of Santa Clara to implement the City's 2010-2035 General Plan. A focus area plan provides a foundation for the future comprehensive, detailed planning study (or "comprehensive plan," such as a specific plan) necessary to be adopted prior to allowing development in the Plan Area. A focus area plan provides a preliminary analysis of land use, utilities, streets, services, parks, and other public facilities as part of a coordinated planning process established to determine new infrastructure and service needs adequate to support future development and to plan for timing of development appropriate to sustain environmental quality.

The Project proposes to establish the Freedom Circle Focus Area via a General Plan Amendment. In order to establish the Focus Area through an Amendment, the Project includes a General Plan Amendment that would add the following text to the General Plan (under section "5.4.7 Future Focus Areas Goals and Policies"):

> In addition to the three Future Focus Areas, additional Future Focus Areas may be added to the General Plan Land Use diagram through the General Plan Amendment process. The creation of a Future Focus Area is a precursor to the comprehensive planning process required for all Focus Areas.

This General Plan Amendment is inconsistent with General Plan Goals. Goal 5.4.7-G1 provides: "All applicable prerequisites are met, and a comprehensive plan is adopted, prior to implementation of any Future Focus Area." It is contradictory to require a comprehensive plan prior to implementation of a Future Focus Area, while also stating the creation of a Future Focus Area precedes a comprehensive plan.[3] The Planning Commission should recommend against approval of this General Plan amendment.

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[3] General Plan Section 8.2-18: Implementation – "Actions, procedures, programs or techniques that carry out policies."

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II. The Project's Rezoning and Related General Plan Amendment Potentially Conflict With the General Plan

The Greystar Project would require rezoning the Project site from high-intensity office/R&D to high-density residential. But rezoning at this time conflicts with the General Plan, as the General Plan prohibits rezoning in future focus areas before a comprehensive plan (i.e. specific plan) is adopted for the future focus area:

> Policy 5.4.7-P1: "Require the adoption of the comprehensive plan prior to any rezoning within that designated Future Focus Area."
>
> Policy 5.4.7-P4 states: "Until such time as a comprehensive plan is adopted for a Future Focus Area, allow development in accordance with the land use designations on the Phase II General Plan Land Use Diagram."

Here, a comprehensive plan has not yet been prepared, yet the proposed rezoning would occur in what would be a Future Focus Area. Thus, the rezoning conflicts with the General Plan.

The Project includes the following General Plan Amendment, which purports to ensure the rezoning is consistent with the General Plan:

> Policy 5.4.7-P11 Allow for General Plan Amendments and rezonings outside of existing Future Focus Areas in combination with the designation of new Future Focus Areas.

It is unclear how this General Plan Amendment would resolve the issue of rezoning prior to comprehensive planning, as the new Policy does not waive the prerequisite comprehensive planning. Allowing for General Plan Amendments and rezonings in combination with Future Focus Areas while also prohibiting rezoning without prerequisite comprehensive planning would be an internal inconsistency within the General Plan. It is also inconsistent with the City's intent in adopting the current General Plan, which is to ensure proper planning for Future Focus Areas.

The Project's proposed Policy 5.4.7-P11 is also structurally inconsistent with General Plan policies listed above because this Policy undermines the General Plan's goals for cohesive development in Focus Areas:

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> Goal 5.1.1-G1 states: "Cohesive, integrated planning that restrains premature development prior to the necessary supportive infrastructure has been programmed for each phase of the Progressive General Plan."
>
> Goal 5.4.7-G1 states: "All applicable prerequisites are met, and a comprehensive plan is adopted, prior to implementation of any Future Focus Area."

And as stated in the DEIR:

> Comprehensive planning is a prerequisite for new development in Santa Clara, and Focus Areas have been identified throughout the city to support and foster a diverse economic and cultural base by encouraging improvements and new development tailored to each area's character and the quality of these areas. Future Focus Areas are intended to continue to support community vitality, and all Future Focus Areas require a detailed, comprehensive plan prior to any development approval.[4]

By allowing rezoning before comprehensive planning has occurred, the General Plan Amendment weakens the effectiveness of the Focus Area. As a result, the rezoning and the General Plan Amendment is inconsistent with the General Plan.

III. Prerequisite Planning and Studies Are Required Before the Greystar Project is Approved

General Plan Policy 5.1.1-P8 provides: "Prior to approval of residential development for Phase III in any Future Focus Area, complete a comprehensive plan for each area that specifies: [land uses, street system, community design, infrastructure and utilities, etc.]." The DEIR acknowledges that the Freedom Circle Focus Area would be subject to requirements for Phase III development:

> The Freedom Circle Focus Area (upon approval of the proposed General Plan amendment) would be added as a Phase III Focus Area to the General Plan (Section 5.4.7, and any change in land use designation or rezoning of land within the Freedom Circle area would be subject to the requirements of the

[4] DEIR, pg. 3-12.

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> Future Focus Area Goals and Policies of the General Plan, as amended (see above).[5]

However, the City argues that the Greystar Project is not subject to the Phase III requirements:

> Although projects identified for Phase III of the General Plan require the City to perform the necessary Phase III prerequisite studies as part of the planning process, there is no near-term timeframe limit during which a Future Focus Area can be considered, which would allow for the Greystar project to be developed concurrently with the Focus Area planning process.

This reasoning is unclear and does not resolve the General Plan inconsistency. The Planning Commission should recommend against approval of the Greystar Project until a comprehensive plan has been prepared.

IV. The City Fails to Conduct a Quantitative Health Risk Analysis

In our initial comments, we explained that the City's failure to conduct a quantitative health risk analysis violates CEQA. By failing to analyze and disclose key information such as the magnitude of diesel particulate matter ("DPM") generated by the Project, and the concentration of DPM by sensitive receptors, the City fails to meet CEQA's informational and analytical standards for EIRs. As the Court explained in *Sierra Club v. County of Fresno*, "a sufficient discussion of significant impacts requires not merely a determination of whether an impact is significant, but some effort to explain the nature and magnitude of the impact."[6]

In the FEIR, the City responds that analysis and disclosure of this information is not necessary. The City reasons that "[g]iven that the Greystar project would not result in a significant health risk impact, nor has the commenter provided any evidence that such an impact would occur, it is not necessary for the Draft EIR to explain in substantial detail the specific magnitude to which receptors could be adversely affected by exposure to diesel particulate matter (DPM) concentrations."[7]

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[5] DEIR, pg. 3-12.
[6] *Sierra Club,* 6 Cal.5th at 519, citing *Cleveland National Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 514–515.
[7] FEIR, response L4.31.

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The City's reasoning is flawed, as SWAPE's screening-level HRA shows the Project has potentially significant health risk impacts. This is substantial evidence that triggers the need for disclosure and analysis of the magnitude and concentrations of DPM.

The City argues that the HRA is not supported by substantial evidence, identifying elements of the screening-level HRA that are not representative of project-specific conditions. However, the City misconstrues the purpose of a screening-level HRA: the screening-level assessment conservatively evaluates the Project's impacts to determine whether more rigorous analysis is necessary. As stated in SWAPE's initial comments: "[a] Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project."[8] Thus, the City's critique of SWAPE's HRA does not affect its conclusion that a more rigorous quantitative analysis is justified.

V. The EIR Relies on Nonbinding Air Quality Mitigation

The EIR states that the proposed Greystar Project would not result in significant air quality impacts during construction activities.[9] The DEIR assumes that all heavy-duty off-road equipment would meet either U.S. EPA / CARB Tier III or IV emissions standards: the Applicant provided a list of the heavy-duty off-road equipment that would be used during construction of the Greystar Project, and all listed equipment meets meet either U.S. EPA / CARB Tier III or IV emissions standards.[10] But use of Tier III and IV equipment is not included in the Project's MMRP. As a result, this mitigation is not binding. CEQA requires that mitigation measures that are adopted by an agency must be enforceable through conditions of approval, contracts, or other means that are *legally* binding.[11] The MMRP must be revised to explicitly require the Greystar project to use Tier III or IV equipment as described in the Applicant's list. Therefore, potentially significant air quality impacts during construction activities remain unmitigated and the FEIR's conclusions must be revised and recirculated for public review.

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[8] SWAPE initial comments, pg. 11.
[9] DEIR, pg. 5-48.
[10] DEIR, pg. 5-44.
[11] Pub. Resources Code § 21081.6(b).

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VI. The DEIR Conceals Potentially Significant Environmental Impacts by Disguising Mitigation Measures as Project Design Features

When the EIR describes the Greystar Project's construction emissions impacts, its disclosure of "unmitigated" emissions assumes use of Tier III or IV construction equipment. The EIR reasons that the Applicant provided a list of the heavy-duty off-road equipment that would be used during construction of the Greystar Project, and that the listed equipment meets meet either U.S. EPA / CARB Tier III or IV emissions standards.[12]

But under CEQA, it is improper to attempt to disguise mitigation measures as part of the project's design if this obfuscates the potential significance of environmental impacts.[13] In *Lotus v. Department of Transportation*, an EIR prepared by the California Department of Transportation ("CalTrans") contained measures to help minimize potential stress on redwood trees during highway construction, such as restorative planting, invasive plant removal, watering, and use of an arborist and specialized excavation equipment.[14] The Court of Appeal held that because the EIR relied on these measures to reduce adverse impacts, they were actually mitigation measures.[15] The Court of Appeal held that the EIR improperly compressed the analysis of impacts and mitigation measures into a single issue because the EIR did not designate the measures as mitigation and concluded that because of the measures, no significant impacts were anticipated.[16]

As in *Lotus*, the EIR improperly compresses the analysis of impacts and mitigation measures into a single issue. Just as measures like restorative planting and invasive plant removal are not project design features of a highway construction project because their purpose are to reduce adverse impacts, use of Tier III and IV equipment is not a design feature because it reduces adverse emission impacts. By assuming use of Tier III and IV equipment when disclosing the Project's impacts, the EIR avoids disclosing significant impacts. The City must reconduct the air quality analysis, GHG analysis, and health risk analysis so that

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[12] DEIR, pg. 5-44.
[13] *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 658 (compression of mitigation measures into project design without acknowledging potentially significant impact if effects were not mitigated violates CEQA)
[14] *Id.* at 650.
[15] *Id. Lotus v. Dep't of Transp.* (2014) 223 Cal. App. 4th 645, 651-52.
[16] *Id.* at 656.

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the Project's unmitigated impacts are accurately disclosed. Also, as explained above, the City must include use of Tier III and IV equipment in the MMRP. Once these errors are corrected, the EIR must be recirculated.

VII. The EIR Fails To Adequately Analyze and Mitigate All Potentially Significant Impacts to Biological Resources

In our initial comments, we explained that the EIR's description of the Greystar site's biological baseline is not supported by substantial evidence. First, the EIR fails to substantiate any details of its site visit, so it is unknown who performed the survey, methods used, the time of day when the survey began, how long the survey lasted, which portion of the Project site was covered, and weather conditions during the survey. As a result, the EIR lacks substantial evidence that the baseline is as described. Second, the EIR assumes, without scientific evidentiary support (i.e., substantial evidence), that because the Greystar site is disturbed, it has low habitat value. Conversely, Dr. Smallwood's report provides photographic evidence that wildlife forages, nests, and moves through the site. Third, whereas the EIR claimed the site lacked burrows, Dr. Smallwood's site visit detected several burrow systems of California ground squirrels on the project site, which demonstrates that the site contains potential habitat for burrowing owls, and foraging grounds for carnivores. Fourth, the City failed to consult all available biological resources databases to establish which species are potentially present, even overlooking species actually seen at the Greystar site.

The City does not resolve these issues in any way in the FEIR. Dr. Smallwood's reply comments explain that the City's claims regarding the sufficiency of its analysis are flawed, and the City's environmental baseline is still not supported by substantial evidence. These errors require the City to revise its environmental setting, conduct new biological surveys, and analyze and mitigate impacts on the full spectrum of potentially present species.

VIII. Conclusion

The Planning Commission cannot recommend approval of the Project until the City complies with CEQA by preparing a legally adequate EIR for the Project. The Project still has potentially significant impacts to public health, air quality, climate change, and biological resources, all of which remain unmitigated. The Project relies on several General Plan amendments that result in internal inconsistencies within the General Plan. Silicon Valley Residents urges the

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Planning Commission to remand the FEIR back to Staff to allow for preparation of a legally adequate EIR and recirculation to the public, as required by CEQA.

Sincerely,

Aidan P. Marshall

Attachments

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EXHIBIT A

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

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April 13, 2022

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Subject: Comments on the Freedom Circle Focus Area Plan/Greystar Project General Plan Amendment (SCH No. 2020060425)

Dear Mr. Marshall,

We have reviewed the March 2022 Final Environmental Impact Report ("FEIR") and the November 2021 Public Release Draft Environmental Impact Report ("DEIR") for the Freedom Circle Focus Area Plan/Greystar Project General Plan Amendment ("Project") located in the City of Santa Clara ("City"). After our review of the FEIR, we find that the FEIR is insufficient in addressing our concerns regarding the Project's air quality and health risk impacts. Furthermore, we find additional errors within the DEIR's air quality analysis. As asserted in our December 17th comment letter, an updated EIR should be prepared to adequately evaluate the Project's potential impacts.

Air Quality

Failure to Implement All Feasible Mitigation to Reduce Emissions

The DEIR concludes that the Project's operational criteria air pollutant emissions would be significant-and-unavoidable (p. 5-41). Specifically, the DEIR concludes that the Project's operational NO_X and ROG emissions would exceed the applicable BAAQMD thresholds (see excerpt below) (p. 5-40, Table 5-16).

Table 5-16
FREEDOM CIRCLE FOCUS AREA PLAN: NET CHANGE IN OPERATIONAL CRITERIA AIR POLLUTANT EMISSIONS (2040)

Emissions Scenario / Source	Maximum Daily Pollutant Emissions (Pounds per Day)						
	ROG	NOx	CO	PM_{10}		$PM_{2.5}$	
				Dust	Exhaust	Dust	Exhaust
Proposed Focus Area Plan Operational Emissions in Year 2040							
Area Sources	249.5	2.4	147.1	0.0	0.9	0.0	0.9
Energy Sources	4.9	44.1	33.9	0.0	3.4	0.0	3.4
Mobile Sources	85.0	85.3	686.8	259.9	1.1	64.8	1.0
Total(A)	339.4	131.8	867.8	259.9	5.3	64.8	5.3
Existing Land Use Operational Emissions in Year 2040(B)							
Area Sources	83.7	<0.1	0.2	0.0	<0.1	0.0	<0.1
Energy Sources	2.8	25.0	21.0	0.0	1.9	0.0	1.9
Mobile Sources	20.7	22.1	166.8	63.0	0.3	15.7	0.3
Total(A)	107.2	47.1	187.9	63.0	2.2	15.7	2.2
Net Change in Emissions Levels							
Area Sources	165.8	2.4	147.0	0.0	0.9	0.0	0.9
Energy Sources	2.2	19.1	12.9	0.0	1.5	0.0	1.5
Mobile Sources	64.3	63.2	250.0	197.0	0.8	49.1	0.7
Total(A)	232.2	84.7	679.9	197.0	3.2	49.1	3.1
BAAQMD CEQA Threshold	54	54	--	None	82	None	54

Source: MIG 2021, see Appendix 25.2.
(A) Totals may not equal due to rounding.
(B) See Table 5-6.

As a result, the DEIR determines that the Project's operational criteria air pollutant emissions would be significant-and-unavoidable (p. 5-41). The DEIR states:

> "Despite the implementation of these mitigation measures, growth allowed for under the Focus Area Plan would still be substantially more than that accounted for in the City's General Plan and could result in a cumulatively considerable net increase in pollutants for which the region is in nonattainment. This impact would be significant and unavoidable" (p. 5-41).

However, while we agree that the Project's operational emissions would result in a significant air quality impact, the DEIR's conclusion that these impacts are "significant and unavoidable" is incorrect. According to CEQA Guidelines § 15096(g)(2):

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

As demonstrated above, an impact can only be labeled as significant and unavoidable after all available, feasible mitigation is considered. Here, while the DEIR includes Mitigation Measure ("MM") 5-3C and 5-3D, which require the use of low- and super-compliant VOC architectural coatings as well as the development of a Transportation Demand Management ("TDM") program, the DEIR and FEIR both fail to implement *all* feasible mitigation (p. 2.4-21). Thus, the DEIR's conclusion that the Project's operational criteria air pollutant impacts are significant-and-unavoidable is unsubstantiated. To reduce

air quality impacts to the maximum extent possible, additional feasible mitigation measures should be incorporated, such as those suggested in the section of this letter titled "Feasible Mitigation Measures Available to Reduce Emissions." Thus, the Project should not be approved until an updated EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels.

Insufficient Mitigation Measure to Reduce Operational Air Quality Emissions

Regarding the Project's mobile-source operational emissions, the DEIR states:

> "Despite the Focus Area Plan being served by frequent bus service via VTA Routes 20, 57, and 59 and featuring many amenities to help reduce trips within the Plan Area (i.e., people could walk or bike to their destination), emissions from mobile sources would still remain a substantial source of emissions associated with buildout of the Focus Area Plan. As described in Section 5.1.3.1, the SFBAAB is designated as non-attainment for ozone, and NOx and ROG/VOCs are precursors to ozone (see Section 5.1.1.1). The SFBAAB is also designated as nonattainment for state PM10 and state and federal PM2.5 air quality standards. Accordingly, the City would implement Mitigation Measure 5-3D, which requires future development within the Plan Area to develop and implement a TDM program, consistent with the City of Santa Clara's 2013 Climate Action Plan (see Chapter 9) and 2010-2035 General Plan (City of Santa Clara 2010, 2013)" (p. 5-40).

As demonstrated above, the DEIR incorporates MM 5-3D, which states:

> "Proposed residential and office land uses within the Freedom Circle Focus Area Plan shall prepare and implement Transportation Demand Management (TDM) programs that achieve a minimum reduction in vehicle miles traveled (VMT) of 20 percent compared to baseline conditions (i.e., without internal or external reductions accounted for, such as geographic location, land use interconnectivity, etc.), with at least 10 percent of the reduction coming through project-specific TDM measures (e.g., transit subsidies, telecommuting options, etc.)" (p. 5-43).

However, MM 5-3D is insufficient. According to CEQA Guidelines § 15126.4(a)(1)(B), a lead agency must identify "the type(s) of potential action(s) that can feasibly achieve that performance standard and that will [be] considered, analyzed, and potentially incorporated in the mitigation measure."[1] While MM 5-3D offers examples of TDM reduction measures (i.e. transit subsidies, telecommuting options), MM 5-3D fails to tangibly consider potential actions that could achieve the measure's performance standard. Thus, despite including a performance standard of reducing the Project's anticipated vehicle miles traveled ("VMT") by 20% compared to baseline conditions, with at least 10% coming through project-specific TDM measures, MM 5-3D fails to formally include actions that could be used to achieve this standard. As such, MM 5-3D is inadequate per CEQA Guidelines § 15126.4(a)(1)(B), and the DEIR and

[1] "2019 CEQA California Environmental Quality Act Statute & Guidelines." Association of Environmental Professionals, *available at:* https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/2019_CEQA_Statutes_and_Guidelines.pdf, p. 194.

FEIR both inadequately address and mitigate the Project's significant mobile-source operational emissions.

Screening-Level Analysis Indicates a Potentially Significant Health Risk Impact

As discussed in our December 17th comment letter, the DEIR failed to adequately evaluate the proposed Project's potential health risk impacts. Review of the FEIR demonstrates that the Project again fails to adequately evaluate the Project's potential health risk impacts. As such, we find the FEIR to be inadequate and maintain that the DEIR's less-than-significant impact conclusion regarding the Project's health risk impact should not be relied upon for five reasons.

First, regarding the construction-related DPM emission rate, the FEIR states:

> "The construction emissions rate for DPM derived by the commenter appears to be a combination of both on- and off-site emissions (e.g., trucks hauling materials to and from the site)" (p. 2-301).

As demonstrated above, the FEIR claims that SWAPE's HRA accounted for both on-site and off-site emissions during Project construction. This is incorrect. In order to calculate the construction-related DPM emission rate, we utilized the mitigated annual criteria air pollutant emissions summary, provided in the Supplemental Air Quality/GHG Information as Appendix 25.2 to the DEIR. Review of this summary demonstrates that almost no on-road mobile emissions were accounted for (see excerpt below) (pp. 1274, Table 2-2).

Table 2-2: Criteria Air Pollutant Emissions (Mitigated)

Year / Phase	Emissions (tons/yr)					
	NOx	CO	ROG	PM10 (Exh)	PM2.5 (Exh)	SOx
Year 2022						
Off-road Equipment	0.6	4.0	0.3	0.0	0.0	0.0
On-road Mobile	1.2	0.8	0.1	0.1	0.0	0.0
Year 2022 Total	1.8	4.8	0.3	0.1	0.1	0.0
Year 2023						
Off-road Equipment	1.4	1.8	0.1	0.1	0.1	0.0
On-road Mobile	0.2	1.6	0.1	0.0	0.0	0.0
Year 2023 Total	1.6	3.4	0.2	0.1	0.1	0.0
Year 2024						
Off-road Equipment	2.4	2.7	0.2	0.2	0.2	0.0
On-road Mobile	0.1	1.6	0.1	0.0	0.0	0.0
Year 2024 Total	2.6	4.3	0.2	0.2	0.2	0.0
Year 2025						
Off-road Equipment	3.5	4.0	0.2	0.3	0.2	0.0
On-road Mobile	0.2	2.0	0.1	0.0	0.0	0.0
Year 2025 Total	3.6	6.0	0.3	0.3	0.3	0.0
Year 2026						
Off-road Equipment	2.0	2.5	5.0	0.1	0.1	0.0
On-road Mobile	0.1	1.1	0.1	0.0	0.0	0.0
Year 2026 Total	2.1	3.6	5.0	0.2	0.1	0.0

As such, the DPM emission rate utilized by SWAPE almost entirely accounts for off-road construction equipment located on-site. Thus, the DPM emissions rate is not overestimated.

Second, the FEIR states:

> "The screening level HRA indicates that it uses PM_{10} exhaust estimates, while BAAQMD recommends using $PM_{2.5}$ exhaust estimates (BAAQMD Guidelines, pg. 8-8)" (p. 2-301).

After further review of BAAQMD guidelines, we agree that $PM_{2.5}$ exhaust estimates should have been utilized. However, review of the above-mentioned emissions summary demonstrates that the construction-related PM_{10} exhaust estimates and $PM_{2.5}$ exhaust estimates are the almost identical (see excerpt below) (pp. 1274, Table 2-2).

Table 2-2: Criteria Air Pollutant Emissions (Mitigated)

Year / Phase	Emissions (tons/yr)					
	NOx	CO	ROG	PM10 (Exh)	PM2.5 (Exh)	SOx
Year 2022						
Off-road Equipment	0.6	4.0	0.3	0.0	0.0	0.0
On-road Mobile	1.2	0.8	0.1	0.1	0.0	0.0
Year 2022 Total	1.8	4.8	0.3	0.1	0.1	0.0
Year 2023						
Off-road Equipment	1.4	1.8	0.1	0.1	0.1	0.0
On-road Mobile	0.2	1.6	0.1	0.0	0.0	0.0
Year 2023 Total	1.6	3.4	0.2	0.1	0.1	0.0
Year 2024						
Off-road Equipment	2.4	2.7	0.2	0.2	0.2	0.0
On-road Mobile	0.1	1.6	0.1	0.0	0.0	0.0
Year 2024 Total	2.6	4.3	0.2	0.2	0.2	0.0
Year 2025						
Off-road Equipment	3.5	4.0	0.2	0.3	0.2	0.0
On-road Mobile	0.2	2.0	0.1	0.0	0.0	0.0
Year 2025 Total	3.6	6.0	0.3	0.3	0.3	0.0
Year 2026						
Off-road Equipment	2.0	2.5	5.0	0.1	0.1	0.0
On-road Mobile	0.1	1.1	0.1	0.0	0.0	0.0
Year 2026 Total	2.1	3.6	5.0	0.2	0.1	0.0

As such, the construction-related emissions estimates utilized in SWAPE's screening-level HRA are an accurate representation of Project-generated $PM_{2.5}$ emissions, as recommended by BAAQMD guidance. Regarding the operational emissions estimates, we acknowledge that PM_{10} exhaust emissions were incorrectly used in our screening-level HRA. However, review of the CalEEMod output files demonstrates that the "Greystar Residential Development (2030; Mitigated)" model calculated 0.1107 tons/year of PM_{10} exhaust and 0.1088 tons/year of $PM_{2.5}$ exhaust (see excerpt below) (Appendix 25.2, pp. 1152).

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr									
Area	4.7120	0.1289	7.9852	6.6000e-004		0.0473	0.0473		0.0473	0.0473
Energy	0.0497	0.4248	0.1848	2.7100e-003		0.0343	0.0343		0.0343	0.0343
Mobile	2.0054	2.1395	15.1472	0.0460	4.5993	0.0291	4.6284	1.1472	0.0272	1.1745
Waste						0.0000	0.0000		0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000
Total	**6.7670**	**2.6933**	**23.3172**	**0.0494**	**4.5993**	**0.1107**	**4.7100**	**1.1472**	**0.1088**	**1.2560**

As such, the difference between operational PM_{10} exhaust emissions and $PM_{2.5}$ exhaust emissions is only 0.0019 tons/year. Thus, the difference is negligible.

Third, the FEIR states:

> "The operational emissions estimate used by the commenter came from the Greystar Project (2030) Unmitigated CalEEMod run. The Greystar Project would be subject to mitigation that would reduce emissions" (p. 2-301).

However, the FEIR's claim that we utilized *unmitigated* operational emissions estimates is incorrect. As indicated above, we utilized the *mitigated* operational emissions estimates calculated in the "Greystar Residential Development (2030; Mitigated)" model (Appendix 25.2, pp. 1152).

Fourth, regarding the operational DPM emission rate, the FEIR states:

> "The operational emissions rate derived by the commenter incorrectly assumes that all $PM_{2.5}$ exhaust emissions from the Project (i.e., from area, energy, and mobile sources) would be 100 percent DPM, and that all the Project's emissions would occur within the 13.3-acre area" (p. 2-302).

Furthermore, the FEIR states:

> "[I]t is not appropriate to assume all mobile source emissions would be generated within the 13.3-acre Project site, as reflected in the emissions rate and, ultimately, the area modeled by the commenter. Mobile sources would operate primarily outside of the Plan Area, distributing the same quantity of pollutants over a greater area and resulting in lower concentrations than that assumed by the commenter" (p. 2-302).

We acknowledge that the operational DPM emission rate utilized by SWAPE is overestimated. As the DEIR and associated documents did not provide the on-site DPM emissions associated with Project

operation, we were unable to calculate a more precise emission rate. Regardless, we have included our screening-level HRA below, now only accounting for construction emissions, in order to not artificially inflate the Project's cancer risk (see table below).[2]

The Maximally Exposed Individual at an Existing Residential Receptor

Age Group	Emissions Source	Duration (years)	Concentration (ug/m3)	Breathing Rate (L/kg-day)	Cancer Risk (without ASFs*)	ASF	Cancer Risk (with ASFs*)
3rd Trimester	Construction	0.25	0.2212	361	2.56E-07	10	**2.56E-06**
Infant (Age 0 - 2)	Construction	2	0.2212	1090	6.18E-06	10	**6.18E-05**
Child (Age 2 - 16)	*Construction*	*1.75*	*0.2212*	*572*	*2.40E-06*	3	*
	Operation	*12.25*	*	*572*	*		
	Total	14			*		
Adult (Age 16 - 30)	Operation	14	*	261	*	1	*
Lifetime		**30**			**6.43E-06**		**6.43E-05**

* Operational cancer risk not accounted for.

As you can see in the excerpt above, the excess cancer risk over the course of Project construction is 64.3 in one million, which still exceeds the BAAQMD threshold of 10 in one million and results in a potentially significant impact not previously addressed or identified by the DEIR or FEIR.

To conclude, we reiterate our December 17th comment that our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection.[3] The purpose of the screening-level construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. According to the U.S. EPA:

> "EPA's Exposure Assessment Guidelines recommend completing exposure assessments iteratively using a *tiered approach* to *'strike a balance between the costs of adding detail and refinement to an assessment and the benefits associated with that additional refinement' (U.S. EPA, 1992).*
>
> In other words, an assessment using basic tools (e.g., simple exposure calculations, default values, rules of thumb, conservative assumptions) can be conducted as the first phase (or tier) of the overall assessment (i.e., a screening-level assessment).

[2] Methodology discussed in SWAPE's December 17th comment letter.

[3] "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. 1-5

The exposure assessor or risk manager can then determine whether the results of the screening-level assessment warrant further evaluation through refinements of the input data and exposure assumptions or by using more advanced models."[4]

As demonstrated above, screening-level analyses warrant further evaluation in a refined modeling approach. Because our screening-level HRA demonstrates that the Project could result in a potentially significant health risk impact, the City should prepare an updated, refined quantitative health risk analysis which more accurately evaluates health risk impacts associated with both Project construction and operation.

Feasible Mitigation Measures Available to Reduce Emissions

Our analysis demonstrates that the Project would result in a significant air quality impact that should be mitigated further. As such, in an effort to reduce the Project's emissions, we identified several mitigation measures that are applicable to the proposed Project. Therefore, to reduce the Project's emissions, we recommend consideration of SCAG's 2020 *RTP/SCS* PEIR's Air Quality Project Level Mitigation Measures ("PMM-AQ-1"), as described below: [5]

SCAG RTP/SCS 2020-2045
Air Quality Project Level Mitigation Measures – PMM-AQ-1: In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the *State CEQA Guidelines*, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:
m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
p) As appropriate require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.

[4] "Exposure Assessment Tools by Tiers and Types - Screening-Level and Refined." U.S. EPA, *available at:* https://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined.

[5] "4.0 Mitigation Measures." Connect SoCal Program Environmental Impact Report Addendum #1, September 2020, available at: https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocal_addendum_4_mitigationmeasures.pdf?1606004420, p. 4.0-2 – 4.0-10; 4.0-19 – 4.0-23; See also: "Certified Final Connect SoCal Program Environmental Impact Report." Southern California Association of Governments (SCAG), May 2020, *available at:* https://scag.ca.gov/peir.

q) Require projects within 500 feet of residences, hospitals, or schools to use Tier 4 equipment for all engines above 50 horsepower (hp) unless the individual project can demonstrate that Tier 4 engines would not be required to mitigate emissions below significance thresholds.

t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.

u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).

y) Projects that will introduce sensitive receptors within 500 feet of freeways and other sources should consider installing high efficiency of enhanced filtration units, such as Minimum Efficiency Reporting Value (MERV) 13 or better. Installation of enhanced filtration units can be verified during occupancy inspection prior to the issuance of an occupancy permit.

z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.

bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible:

- Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%
- Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.
- Nonroad diesel engines on site shall be Tier 2 or higher.
- Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp.
- Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer.
- Diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 ppm or less.
- The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following:
    i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
    ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.
    iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.
- The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.
- The contractor shall maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes:
    i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
    ii. Any problems with the equipment or emission controls.
    iii. Certified copies of fuel deliveries for the time period that identify:
        1. Source of supply
        2. Quantity of fuel

3. Quantity of fuel, including sulfur content (percent by weight)
cc) Project should exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code). The following measures can be used to increase energy efficiency: - Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers. - Provide traffic calming measures, such as: i. Marked crosswalks ii. Count-down signal timers iii. Curb extensions iv. Speed tables iv. Raised crosswalks v. Raised intersections vi. Median islands vii. Tight corner radii viii. Roundabouts or mini-circles ix. On-street parking x. Chicanes/chokers - Create urban non-motorized zones - Provide bike parking in non-residential and multi-unit residential projects - Dedicate land for bike trails - Limit parking supply through: i. Elimination (or reduction) of minimum parking requirements ii. Creation of maximum parking requirements iii. Provision of shared parking - Require residential area parking permit. - Provide ride-sharing programs i. Designate a certain percentage of parking spacing for ride sharing vehicles ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles iii. Providing a web site or messaging board for coordinating rides iv. Permanent transportation management association membership and finding requirement.

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

Disclaimer

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

reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

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

Paul E. Rosenfeld, Ph.D.

Attachment A: Matt Hagemann CV
Attachment B: Paul E. Rosenfeld CV

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

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

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

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

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

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

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

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

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

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

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

Executive Director:

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

Hydrogeology:

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

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

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

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

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

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

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

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

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

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

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

Policy:

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

Activities included the following:

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

principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

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

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

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

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

Teaching:

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

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

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

Invited Testimony, Reports, Papers and Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Other Experience:

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

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

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

Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

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

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

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

Professional Experience

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

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

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_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:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

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

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

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

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

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

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

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

Academic Grants Awarded:

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

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

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

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

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

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

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

Deposition and/or Trial Testimony:

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

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

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

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

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

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

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

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

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

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

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

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

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

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow 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., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

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

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

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

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

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

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

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

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

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

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

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

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

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

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

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

EXHIBIT B

Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

Aidan Marshall
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080 11 April 2022

RE: Freedom Circle Focus Area and Greystar General Plan Amendment Project

Dear Mr. Marshall,

I write to reply to the responses to yours and my comments regarding potential impacts to biological resources of the proposed project, which is the Freedom Circle Focus Area and Greystar General Plan Amendment Project. My replies follow the City of Santa Clara's (City's) responses, which I numbered to be consistent with the numbers the City assigned the comments. Some responses raised multiple issues. In these cases, I separated out the text directed to each separate issue and presented them under the same numbered response. For example, Response L4.57 appears multiple times, but each occurrence of it raises a different issue.

Responses L4.53 and L4.54: The Draft EIR describes the existing conditions in the Plan Area and on the Greystar Project Site. See Draft EIR p. 3-4, 3-7, as well as Fig. 3.3 Plan Area Aerial Base Map and Figure 3.4 Aerial Base.

Reply: The cited sections of the DEIR describe the current environmental setting as flat ground covered by mostly vacant buildings. It describes nothing of the setting that is relevant to potential use of the site by wildlife. It makes no mention of the many trees on site, or of the open field proposed for the Greystar portion of the project. It provides no description of the current environmental setting that would be relevant and useful to an analysis of potential impacts to biological resources.

Response L4.55: Comment noted. Please see the response to L4.57, which explains that both a desktop analysis and site visit were used to assess biological resources. The analysis is more in-depth than just the information obtained during the site visit.

Reply: The desktop analysis is grossly inadequate, and the site visit largely unreported as to who performed it and how it was done. No report is provided of the species detected during the site survey. Furthermore, the findings of the site survey that are reported – that no mammal burrows occur on site – were readily refuted by my own site visit and the photos I provided of it.

Response L4.56: Comment noted. These were the conditions observed during the site visit. Please see the response to L4.66 which explains that the Greystar site is subject to biological mitigation measures.

Reply: Again, the conditions I observed at the site are at odds with the conditions reported in the DEIR. The response says the conditions described in the DEIR accurately reflect the conditions observed during the site survey on 12 December 2020, but no substantial evidence is provided in the DEIR nor in the response to support this finding, which does not comport with the evidence I provided in my 20 December 2021 comment letter. When I visited the site, I observed (and photographed that the Greystar site was covered by vegetation, included ground squirrel burrows, and was visited by numerous birds.

By not providing more detail about the biological resources survey on 12 December 2020, it is impossible for the reader to assess whether the survey was performed with sufficient rigor to support the DEIR's findings. The introductory paragraphs of the Biological Resources chapter of the DEIR included multiple statements of presumption that the project site should be devoid of wildlife, which suggests the DEIR's findings had preceded and superseded the survey. If this was the case, then the survey might have been curtailed to support the presumptive findings. It is therefore critical for the reader to know of the level of effort that was committed to the survey.

Response L4.57 and L4.138: According to CEQA, "The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives." The Draft EIR describes the physical setting extensively of this infill, highly urbanized area so as to provide the public an understanding of the Project and potential impacts. ... The analysis is based on more than the site visit, which was conducted to verify site conditions at the time.

Reply: According to the response, the survey for biological resources was performed to verify the site description that had already been prepared. The biological resources survey appears to have been a fait accompli, which is perhaps why its methods and a list of species detected remain unreported. Considering the stated purpose of the biological resources survey, which was to verify the DEIR's characterization of the current environmental setting, I can understand how the cited CEQA standard was operationalized to justify the decision to not commit a serious effort to survey the site for biological resources. After all, the finding had already been made that the site holds no value to biological resources. It follows, therefore, that a survey effort that is "no longer than necessary" would be a very minimal survey effort – one for which methods and observations need not be reported. But this justification is founded on a false premise. The site does hold value to biological resources, as my survey readily demonstrated.

Response L4.57 and L4.151: As stated in the Draft EIR under 6.1 Methods and Setting, the biological impact analysis included both a site visit to inspect current site conditions and a desktop analysis of special-status species recorded to occur within a nine-USGS quadrangle area, including the quadrangle that the project site is located on and the eight surrounding quadrangles. This covers a significant portion of the south bay area surrounding the Project. The desktop analysis is completed first, then a site visit is conducted to determine vegetation types and other habitat features present.

Thus, the analysis includes not only an assessment of the "real conditions on the ground," but also an assessment of what has been found in the area in the recent past.

Reply: As I commented, this approach was inconsistent with the intended use of CNDDB. CNDDB was never intended to be used to screen out the possible occurrences of special-status species of wildlife. Its usefulness is in verifying the documented observations of wildlife at sites, but certainly not as supporting evidence of absence. In my comment letter, I explained why CNDDB is inappropriate for the use it was given in the DEIR. I will briefly add another reason here. Another limitation of CNDDB is its focus on special-status species. Most species of wildlife in California are not special-status species, and so are not reported to CNDDB, because CNDDB is not interested in them and Scientific Collecting Permits do not require reporting of them. This means that any species recently designated with special status will not be as well represented in CNDDB as are other species that were assigned special status decades ago. As examples, northern harrier, willet, wrentit, western gull, California thrasher, and Bullock's oriole were only recently added to the U.S. Fish and Wildlife Service's list of Bird Species of Conservation Concern, and monarch butterfly was only recently emergency-listed as federally Endangered and Crotch's bumble bee was only recently listed as a Candidate Endangered species under the California Endangered Species Act. At the times when these species were upgraded to special status, none of them would have been represented by more than a few records in CNDDB queries.

Unlike CNDDB, records in eBird and iNaturalist can be of any species of wildlife, and can therefore more comprehensively represent the wildlife community at a site. eBird has the added advantage of the public being able to report sightings of birds using private properties that the birder cannot access. So long as line-of-sight or sound permits, a birder can detect a bird 200 m distant on private property, and a record of that detection can end up reported to eBird. And because eBird and iNaturalist are so much more accessible to the public, these data bases include many more observations than does CNDDB. Nevertheless, the same basic limitation applies; absences of records in eBird and iNaturalist should not be used to determine absences of species form a site or low likelihoods of occurrence.

Response L4.57: The research and site visit were conducted by an MIG biologist (Melinda Mohamed, M.S.) who prepared the EIR section; a separate report was not necessary to complete the impact analysis.

Reply: I concur that a separate report was unnecessary, but only on condition that the CEQA review document itself provides support reporting of the survey. The response only provides the name of the biologist who visited the site, but continues to not report when the survey started, how long it lasted, the weather conditions at the time of the survey, which survey method(s) was used, or which species were seen. The response continues to keep the reader unaware of the most fundamental details needed to assess the credibility of the biological resources survey.

Response L4.57: The conditions observed during the site visit are stated in section 6.1.

Reply: The conditions described in section 6.1 are of physical conditions, which were inaccurate, but they were not of weather conditions, which were the conditions comment L4.57 pointed out as unreported.

Response L4.57: Any particular site visit will result in different species observances, depending on the time of year, weather conditions that particular year, and other variables.

Reply: The response is true to a point, and the truth of it warrants multiple surveys to better prevent a grossly false characterization of a project site based on the outcome of a survey completed on an atypical, bad day. The point where the response is not true pertains to fossorial mammal burrows. Whereas many species of bird often vary from day to day whether they are detectable on a site, the burrows of fossorial mammals are relatively stable. In my experience with mapping and monitoring the burrow systems of fossorial mammals since the 1980s, individual burrows might remain intact only a few months to year, but ground squirrel burrow systems persist for years so long as the ground squirrels continue to occupy them. Ground squirrel burrow systems that have been in long-term use are notable by the raised soil on and around the burrow system, and by the distinct suite of plant species that grow on them. It looked to me as though the ground squirrel burrow systems along the levee were relatively new, but those on the Greystar site had been occupied by ground squirrels for years. The DEIR's reporting of the 12 December 2020 survey outcome is deficient, and the characterization of the current environmental setting is misleading.

Response L4.57 and L4.151: The premise of the analysis in the Draft EIR is to respond to the CEQA checklist questions. ... The checklist (under "a") identifies which species to consider: "any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service."

Reply: §15380 of the CEQA Guidelines defines special-status species as Endangered, Rare, or Threatened. This definition differs from that of the CEQA Checklist questions with its use of the term Rare instead of Sensitive. The meanings of these terms are different, but their differences also broaden the suite of species that CEQA intends should be considered as special-status species. The meanings of the terms Rare and Sensitive also often underly the inclusions of species on special-status species lists compiles by resource agencies. Rareness can apply to species that have diminished in abundance or geographic extent, or it can apply to species that are naturally scarce owing to their position at the top of the food-chain or to some other ecological factor. Sensitive can apply to species that respond disproportionately adversely to changes to their environment, often due to susceptibility to pollutants or pathogens or to the loss or degradation of a narrow portion of the environment on which the species relied. For example, burrowing owls depend on ground squirrels for the squirrels' provisions of burrows as nest sites and for their mutual predator-alarm calling. Therefore, burrowing owls are sensitive to human changes to the environment that diminish ground squirrels.

The CEQA definition is consistent with how I identified special-status species in Table 2 of my original comment letter. I relied on the status assigned each species in California's Special Animal List (California Department of Fish and Wildlife, Natural Diversity Database. November 2021. Special Animals List. Periodic publication.) – a list that is updated annually and often relied upon for CEQA reviews. The Special Animals List compiles designations of special status to species from various agencies and for various reasons. According to policy of the California Department of Fish and Wildlife regarding species of special concern (SSC) (https://www.wildlife.ca.gov/Conservation/SSC#394871319-how-are-sscs-addressed-under-the-california-environmental-quality-act), "*SSCs should be considered during the environmental review process. The California Environmental Quality Act (CEQA; California Public Resources Code §§ 21000-21177) requires State agencies, local governments, and special districts to evaluate and disclose impacts from "projects" in the State. Section 15380 of the CEQA Guidelines clearly indicates that species of special concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein. Sections 15063 and 15065 of the CEQA Guidelines, which address how an impact is identified as significant, are particularly relevant to SSCs. Project-level impacts to listed (rare, threatened, or endangered species) species are generally considered significant thus requiring lead agencies to prepare an Environmental Impact Report to fully analyze and evaluate the impacts. In assigning "impact significance" to populations of non-listed species, analysts usually consider factors such as population-level effects, proportion of the taxon's range affected by a project, regional effects, and impacts to habitat features.*"

Raptors are protected by California Fish and Game Code 3503.5, otherwise known as the Birds of Prey Code. Raptors are protected by this Code because raptors are top predators wherever they live. Their positions in the food chain naturally require that they are rare, which is one of the key conditions – and one of the key words – that meets the CEQA definition of special-status species.

Some species of bat are listed or designated as California Species of Special Concern, but others are assigned conservation priority rankings the Western Bat Working Group (WBWG), which California Department of Fish and Wildlife relies upon and which CDFW tracks in its list of California' special animals.

And then there are the bird species assigned to the Taxa to Watch List in California. These assignments are again assignments of special status; otherwise, there would be no point to assigning them to the Taxa to Watch List. Specifically, they are species that were assigned prior concern, but which did not rank as high as those species currently on the Species of Special Concern list (Shuford and Gardali 2008). Nevertheless, CDFW commissioned the development of this list, and would not have done so without concern for the rarity and of the sensitivity of the species listed.

For the reasons summarized above, the response gives a flawed premise for its scope of analysis of potential impacts to biological resources. The DEIR's consideration of occurrence likelihoods is applied to an incomplete list of special-status species.

Response L4.57 and L4.151: The biologist also consulted citizen-science based applications, but these data sources are not vetted and therefore provide potentially less reliable information.

Reply: The DEIR presents no findings of a review of citizen-science databases, nor is any such database mentioned.

The response inaccurately characterizes eBird and iNaturalist as unvetted and therefore providers of less reliable information than CNDDB. CNDDB deserves credit for the screening it requires of posted records. The standards of vetting are appropriately high at CNDDB. However, as I pointed out earlier, CNDDB records are limited by multiple factors and must be interpreted carefully. Postings to eBird and iNaturalist are also scrutinized by reviewers, who send queries or make recommendations to posters of bird observations. Documentation of observations are also often provided in the form of photographs and written notes. I have found a few errors in both data bases, usually involving immature birds mistaken as other species in eBird, and tracks that are misidentified in iNaturalist. Overall, however, accuracy has been high and sufficiently trustworthy to have resulted in a large and growing list of papers published in the peer-reviewed scientific literature. Through 2021, 595 peer-reviewed papers have been published from analyses of eBird data over the past two decades (https://ebird.org/science/research-and-conservation/publications). The same cannot be said of CNDDB.

Response L4.57: The site visit conducted one year later by Dr. Smallwood did not reveal any substantial change in site conditions that would require additional analysis or mitigation.

Reply: Because conditions that existed at the time of the 12 December 2020 survey for biological resources were only vaguely reported as disturbed or developed, I lacked any basis for concluding that site conditions substantially changed by the time of my survey. I offered no such conclusion. What I reported was what I saw, including 31 species of vertebrate wildlife. The DEIR reported none of the species seen during the 12 December 2020 survey. I saw vegetation on the Greystar site, but the DEIR reported none was there. I saw ground squirrels on the Greystar site, but the DEIR reported none were there. I saw hundreds of mature trees all around and across the project site, but the DEIR makes no mention of their value to wildlife. These trees would not have changed in number or stature between 2020 and 2021. The well-established burrow systems of ground squirrels on the Greystar site would not have suddenly been excavated between 2020 and 2021. The 31 species of vertebrate wildlife I detected on the project site, as well as all the species that use the site but which I did not detect, did not suddenly decide to use the site after the 2020 survey. What I saw and reported on site had been there for a long time. What I reported was substantial evidence in support of the conclusion that the project site currently holds great value to many species of wildlife, including special-status species of wildlife.

Response L4.58 and L4.147: CEQA Guidelines Section 15125(c) states that "Knowledge of the regional setting is critical to the assessment of environmental

impacts." The Project Site is located in a highly urbanized infill location. See Draft EIR pp. 3-4, 3-7, Fig. 3.3 Plan Area Aerial Base Map and Figure 3.4 Aerial Base, as well as Chapter 6.1 Methods and Setting. Nevertheless, the Draft EIR does not state that human disturbance prevents the occurrence of wildlife. It does state that physical disturbance of habitat by developing it or disking it reduces habitat value by removing vegetation and animal burrows. These activities reduce habitat value by removing vegetation and collapsing animal burrows.

Reply: I concur that "Knowledge of the regional setting is critical to the assessment of environmental impacts." But the DEIR cites no source of knowledge in support of the DEIR's assertion that urbanized infill locations lack value to special-status species. The DEIR cites no source of knowledge in support of the DEIR's implication that disked soil destroys all opportunities for special-status species of wildlife. In fact, members of special-status species often do use urbanized infill locations, such as the white-tailed kites I recorded nesting on cemetery grounds interior to a city, and Swainson's hawks nesting down the street from me in the city where I live. And in fact, special-status species often make use of tilled soil, such as Swainson's hawks hunting for prey items disturbed by the tillage. Only two weeks ago I photographed a merlin hunting American pipits that were themselves foraging on a disked field. And finally, the DEIR cites no source of knowledge that would suggest special-status species are anything other than known to occur in the project area. Knowledge of the regional setting should have warranted multiple surveys for biological resources, including surveys at different times of day, in different seasons, and based on several methods.

Furthermore, the response is inconsistent with an earlier response (L4.57) which states the purpose of the 12 December 2020 survey was to verify the site description that had already been prepared in the DEIR. Instead of relying on knowledge of the regional setting, which is knowledge available in occurrence databases and local species' experts, the DEIR relies on preconceived, convenient notions that special-status species cannot find habitat value in urbanized infill locations and a disked field.

Response L4.59: The December 2020 site visit identified that the Greystar site, which Dr. Smallwood photographed, is disked and was significantly impacted by use as a construction staging area from 2000 - 2014, which is information that the commenter's December 2021 site visit does not include. This was confirmed by examining multiple years of aerial photos (Google Earth Pro images 2000-2021).

Reply: That the Greystar site was used as a construction staging area from 2000 – 2014 is irrelevant to the species of wildlife I detected at the site in 2021. The current environmental setting is the current setting, not the setting of an earlier decade. The response does not refute my findings that "Thousands of birds selectively fly across the site during daily movements from foraging to roosting area, and hundreds if not thousands roost in the trees on the site. Just about every tree I encountered on the evening of 18 December 2021 was full of birds of multiple species. I also saw many bird nests among the trees of the site. Wildlife are not just using the site for foraging, roosting, and movement, but they are breeding there as well."

Response L4.60: Please see the response to comment L4.57 and L4.59 that explains that the Draft EIR environmental setting is based on (1) a desktop analysis of biological resources known in the area, (2) an analysis of Google Earth photos over several years; and (3) a site visit. Further, the Draft EIR acknowledges that site conditions change over time. The photographs and documentation provided in the comment do not add new information that would change the conclusions in the Draft EIR, which are supported by substantial evidence, about the setting or mitigation measures necessary to avoid significant impacts to biological resources. In addition, disagreement amongst experts does not make an EIR inadequate (CEQA Guidelines Section 15151).

Reply: Whether site conditions changed over time, which they did not between 2020 and 2021, is irrelevant to the DEIR's inaccurate characterization of the wildlife community as a component of the current environmental setting. If the consulting biologist who visited the site actually detected any species of wildlife, the DEIR reports none of the detections. A review of Google Earth photos would not have detected any species of wildlife, so I cannot understand why the response identifies that method as having been used. The response cites a CEQA section that says disagreement amongst experts does not make an EIR inadequate, but that standard applies to speculative opinions. What is at issue here is not a disagreement between experts. It is, on the one hand, the lack of due diligence to characterize the wildlife community as part of the current environmental setting and the lack of reporting of survey findings in the DEIR, and on the other hand, it is the substantial evidence I presented of wildlife use of the site. The DEIR's conclusions are speculative, whereas mine are substantial.

Response L4.61: Several other sources are listed in the Draft EIR in Section 6.1. Databases such as eBird and iNaturalist, are not vetted and provide anecdotal information that may not be reliable. The Draft EIR analysis relies on databases that are scientifically reviewed and are reliable sources of information regarding biological resources. The information provided in the Draft EIR also relies on the expertise of a biologist familiar with the habitats, potential species of concern, and CEQA to assess the biological impacts of the project.

Reply: The response's claim that CNDDB records are scientifically reviewed whereas eBird records are not is not credible. eBird is managed by the world's leading organization in ornithology – the Cornell University Laboratory of Ornithology. Its members have published many papers in the peer-reviewed scientific literature, and many other scientists have published hundreds of papers based on research using eBird data. Records submitted to eBird are subject to various levels of review, and those who submit records to iNaturalist also get feedback on their records based on the evidence they provide.

Anyhow, whatever sources of information the response claims were relied upon to inform the DEIR, the DEIR neglects many special-status species documented to have occurred on the project site or very near the site. It also misuses CNDDB to rule out special-status species that did not turn up as occurrence records in CNDDB queries. This is not the way CNDDB was intended to be used, and it is inappropriate. The DEIR

mischaracterizes the wildlife community that composes an important part of the current environmental setting.

Response L4.62: The analysis did not rely solely on the CNDDB. Please see the responses to L4.57 and L4.61.

Reply: The response does not deny that the way CNDDB was used to inform the EIR was inappropriate and misleading. Given the misapplication of CNDDB, which appeared to contribute more substantially than did the site visit to the DEIR's determinations of occurrence likelihoods of special-status species, the characterization of the current environmental setting needs to be revised from scratch. A more accurate characterization of the current environmental setting should inform a revised and recirculated DEIR.

Response L4.63: Please see the response to L4.57. The biological baseline includes an assessment of current site conditions and a database search for protected resources in the area. That was completed for the Draft EIR, and the results are included in the analysis.

Reply: The response restates earlier responses that steps were taken to complete the DEIR's characterization of the current environmental setting, but it does not deny that the DEIR's characterization is inaccurate as asserted in the comment. The mere act of having taken steps to complete the characterization does not suffice if the steps were flawed and the characterization inaccurate. CNDDB should be used as intended. Other data bases should be consulted. Additional surveys for biological resources should be completed as I recommended earlier, and very importantly, the outcomes of those surveys should be interpreted more carefully with attention to the precautionary principle in risk assessment.

Response L4.64: Please see the response to L4.57, which explains the premise of the biological analysis under CEQA and the methods used to complete the analysis. Substantial evidence supports the analysis in the Draft EIR. The analysis focuses on the possible presence of protected species based on substantial evidence such as the site visit and desktop analysis conducted by MIG biologists. Please also see, the response to L4.57. After an assessment of current site conditions, review of past site conditions, and an assessment of where special-status species occur in the region, MIG biologists concluded that no further biological surveys are required for this highly urbanized, infill housing and mixed-use development to provide an accurate discussion of the biological setting in the Draft EIR.

Reply: The response's assertion is empty that the 12 December 2020 site visit serves as substantial evidence in support of the DEIR's conclusions. The reporting of the site visit lacked the fundamental details needed by the reader to assess the usefulness of the site visit. The reader is left unaware of whether the consulting biologist visited the site for 2 hours, 1 hour, or 2 minutes. The reader is left unaware whether the biologist saw as many species at the site as I did, or whether the biologist detected none at all.

The response also reveals a double standard. Whereas the responses to L.4's comments defended the DEIR's reliance on CNDDB due to CDFW's vetting of CNDDB's data, the DEIR denies the reader the opportunity to vet the outcome of the 12 December 2020 site visit. Just as CDFW explains its vetting process and warns of the limitations of CNDDB, I described my site survey methods and I provided graphs and text to explain the limitations of my own survey (see my comment letter of 20 December 2021). But unlike CNDDB, and unlike my reporting, City of Santa Clara hides the methods and results of its site survey for biological resources, and the City is unwilling to discuss the limitations of its survey or to directly acknowledge that their use of CNDDB was inappropriate.

Response L4.65: Please see the responses to L4.56, L4.57, and L4-66. Recirculation of the Draft EIR is not warranted.

Reply: I refer to my replies to responses L4.56, L4.57, and L4-66.

Response L4.66: Mitigation Measures 6-3, and 6-4 do apply to the Greystar project. Mitigation Measure 6-2 does not apply because the project site was already evaluated.

Reply: The Greystar site might have been evaluated, but again, I must point out that essential details of the methods and outcome of the evaluation remain unreported. The reader of the DEIR remains unaware of whether the biologist who visited the site merely glanced at it or completed a serious survey, and the reader remains unaware of which species, if any, the biologist detected while there. As I commented in my letter of 20 December 2021, the likelihood of detection of special-status species is largely a function of survey effort, as well as of methods used, time of day and time of year. The DEIR must inform of how the evaluation was completed, which species were detected, and what were the limitations to interpretation of the outcome. Otherwise, the evaluation that appears in the DEIR cannot substitute for protocol-level detection surveys directed toward burrowing owl and other special-status species.

Response L4.66: However, although the Draft EIR determined that the Greystar site does not provide habitat for threatened or endangered species, it still requires future survey of all sites, including the Greystar site, for special plant species in Mitigation Measure 6-3 (i.e., before any project work within the project area, including the Greystar project site..."), as well as nesting birds in compliance with Mitigation Measure 6-4, and ordinance trees in compliance with General Plan Policy 5.4-P10, as indicated on page 6-14 of the Draft EIR. This is also addressed under cumulative impacts on pages 20-3 to 20-4, which also specifies that the mitigation applies to the Greystar site.

Reply: The wording of this response is inconsistent with the standard that Response L4.57 claims to hold. Response L4.66 says the Greystar site does not provide habitat for threatened or endangered species, but according to Response L4.57, the species at issue are "any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service" per the CEQA checklist question a. Protocol-level detection surveys are appropriate for all special-status species, and not just listed

species. An example is burrowing owl, which is not threatened or endangered, but which is a special-status species for which detection survey guidelines are available (CDFW 2012). The Greystar site supports ground squirrels, the presence of which typically warrants implementation of the CDFW (2012) survey guidelines for burrowing owls. The DEIR reports that ground squirrels do not occur on the Greystar site, but my observations of their burrows on site reveal the DEIR's report as inaccurate. A detection survey for burrowing owls needs to be completed.

According to the 2021 Annual Report of the Santa Clara Valley Habitat Plan (SCVHP), burrowing owls are well on their way to extirpation from the SCVHP study area and from the Bay Area altogether. According to Menzel et al. (2021), burrowing owls in the Santa Clara Valley Habitat Plan study area declined from an estimated 43–47 pairs in 1991–1993 to 17 pairs in 2021. Menzel et al. (2021) conclude, "Currently, the goal of establishing a stable, then increasing owl population is not being met." The current dire trend of burrowing owls in the project area serves as all the more reason to perform protocol-level detection surveys for burrowing owls on the Greystar site.

Response L4.67: As demonstrated in the Chapter 6 analysis, and substantiated with database review and site visit, the redevelopment of this already developed area. The Draft EIR found no significant habitat loss for special-status species; and CEQA does not require mitigation for habitat loss unless it has a substantial effect on special-status species.

Reply: The response relies on a flawed database review, as I pointed out earlier. The City should not conclude special-status species are absent from the site based on absence of occurrence records, because this approach is inconsistent with how CNDDB is intended to be used, and it cannot be defended scientifically.

I documented 3 special-status species that used the project site during my survey, and I cited eBird as the source of occurrence records of 11 special-status species on site, 41 special-status species within 1.5 miles of the site, and 15 special-status species within 1.5 and 3 miles of the site. And the sightings of special-status species have continued since my comment letter. California gull, Cooper's hawk, Nuttall's woodpecker and double-crested cormorant were again seen and reported to eBird at or immediately adjacent to the Greystar site on 8 April 2022, 16 April 2022, 13 March 2022, and 15 March 2022 respectively. San Francisco common yellowthroat, which I had reported having been seen within 1.5 miles of the site, was since detected immediately adjacent to the Greystar site on 8, 9, 13 and 15 March 2022. In short, the evidence of use of the site and its immediate surrounds by special-status species is not only substantial, but overwhelmingly so.

Regarding my calculations of the impacts to birds caused by habitat loss, the response claims that CEQA does not require mitigation for habitat loss to birds unless the birds at issue are special-status species. This response is misleading because some of the birds included in my calculation would be members of special-status species and the majority would be protected by the federal Migratory Bird Treaty Act and the California Migratory Bird Protection Act.

Response L4.68: Burrowing owl is addressed in the Draft EIR (p. 6-33), and Mitigation Measure 6-4, which requires a pre-construction survey and coordination with the resource agencies, and that coordination with the resource agencies be required in the Mitigation Monitoring and Reporting Plan.

Reply: Considering that ground squirrels occupy the site, and that burrowing owls are fast declining in the region, protocol-level detection surveys are needed before preconstruction surveys.

Response L4.69: See Draft EIR, p. 6-1 and 6-10. The project site Focus Area immediately abuts US-101, a multi-lane freeway. The Focus Area nevertheless provides habitat for common wildlife species that are adapted to urban environments. However, the land in the Focus Area, including the Greystar site, is either developed or significantly degraded by annual disking for weed control, and as indicated in the Draft EIR has low value for special-status species. Redevelopment will provide some habitat for common wildlife species that are adapted to urban environments, and additional biological review of future development proposals is included in Mitigation Measure 6-2 to determine if special-status species will be impacted. Because the Greystar site was determined to provide low-quality habitat for special-status species, the project would not impact special-status species habitat; thus, compensatory mitigation for habitat loss was not deemed to be necessary.

Reply: The Response's determination that the Greystar site provides only low-quality habitat is flawed, so its justification for providing no compensatory mitigation for habitat loss is also flawed. The determination is based on an inappropriate use of CNDDB and by a site survey that fails to meet minimum professional standards of reporting. It also was readily refuted by my survey of the site. Another problem with it is its application to the status of habitat quality. Habitat quality has a very specific meaning in wildlife ecology, and is measured by productivity metrics such as fecundity, young surviving to reproductive age, and so on. Unless the City has measured productivity in one way or another, it has no basis for determining habitat quality.

Response L4.70 and L4.159: Using both a site visit and a desktop analysis of the resources contained in the Focus Plan Area and the surrounding areas, the Draft EIR analysis determined that the area contains neither a significant wildlife corridor, nor a significant nursery site (Draft EIR page 6-9). This is based on the habitat quality determined to be present. A significant wildlife corridor is one that is important to the survival of populations that migrate between winter and summer habitat, or which provides an unimpeded link between populations to allow for gene exchange. That is not present in the Focus Plan Area, which is urbanized, abutting US 101, and is surrounded by urbanization. A significant nursery site is a site that is essential for population survival because it has unusual characteristics that are not found elsewhere, and the species are able to successfully reproduce using that site. The Focus Plan Area provides urban habitat for common wildlife species, and redevelopment will provide the same. It does not contain a significant nursery site.

Reply: The DEIR was not entirely silent on the question of whether the project would interfere with wildlife movement in the region, but it provides no analysis; it is conclusory. In fact, the Greystar site is immediately adjacent to San Tomas Aquino Creek, which serves to channel the flights of many species of birds, including to special-status species. What I saw of the site during my survey identifies it as important to wildlife movement in the region (see my photos in my 20 December 2021 comment letter of birds flying over the site). Also, eBird queries for bird sighting records often reveal linear patterns of distribution along San Tomas Aquino Creek, with spillover into adjacent properties. This is the case, as examples, for San Francisco common yellowthroat and Cooper's hawks (Figures 1 and 2). Not only is the project site located next to a Creek, but the Greystar site is one of the last patches of open space in the region, and is therefore targeted by multiple species of birds flying through the area, and it is used for its stopover opportunity. The many trees of the Freedom Circle Focus Area are also used by many birds as stopover refugia.

Figure 1. *Distributions of eBird records of common yellowthroat (left) and Cooper's hawk (right), denoted by blue and red teardrops, with red denoting recent sightings mostly along San Tomas Aquina Creek (the Greystar site is at lower right portion of image).*

The response implies that only by disrupting the function of a wildlife movement corridor can a project interfere with wildlife movement in the region. This premise, however, represents a false CEQA standard, and is therefore an unnecessary condition for determining significance. The primary phrase of the CEQA standard goes to wildlife movement regardless of whether the movement is channeled by a corridor. A site such as the Greystar site is critically important for wildlife movement because it composes an increasingly diminishing area of open space within a growing expanse of anthropogenic uses, forcing more species of volant wildlife to use the site for stopover and staging during migration, dispersal, and home range patrol. The project would cut wildlife off from stopover and staging opportunities, forcing volant wildlife to travel even farther between remaining stopover sites. But, as already pointed out, it also happens to abut San Tomas Aquino Creek.

Response L4.71 and L4.72 and L4.161 to L4.167: The Plan Area abuts multi-lane US 101, Great America Parkway, and is proximate to Montague Expressway, SR-237, as well as the 49ers stadium (Draft EIR p. 17-3 to 17-8 and Figure 3.2). This is a highly urbanized area with thousands of daily vehicular trips. Nevertheless, the commenter does not raise concerns with the extensive existing urbanized development and existing potential roadkill risk, but raises concerns about road-kill being increased by the project due to the vehicle miles traveled (VMT) estimated for buildout of the Focus Plan Area. Since the project is not growth-inducing, the VMT would consist of traffic already present in the region that is re-directed. There is no evidence that increased traffic in the already urbanized Focus Plan Area will result in a significant increase in wildlife roadkill. Because the area is developed and not pristine wildlife habitat, and does not support high quality habitat for special-status species, or significant wildlife corridors, or significant nursery sites, the likelihood of roadkill of wildlife, including special-status species is low. Many of these species thrive in an urban setting because they have adapted to traffic, either through behavior or reproductive rates. It is not expected that the project will result in a significant impact related to roadkill.

Reply: The response distorts the project's contribution to traffic, as well as the geographic extent of the traffic. The DEIR's predicted annual VMT are miles not being driven currently; they are miles that would result from the project and would add considerable risk of collision death to wildlife in the region, not just around the 49ers Stadium. The remainder of the response is pure speculation about wildlife being able to adapt their behaviors to automobile traffic in the area.

What founded my analysis in my 20 December 2021 comment letter was scientific inference drawn from actual data collected as part of an actual study. I could have used the results of other studies, as well, but the Vasco Road study was closer to the project site and using that study I was able to compare fatalities to vehicle miles driven along that road during the study. The data were factual and the inferences drawn from them scientific. I also adopted a conservative approach to projecting the per-mile fatality rates from Vasco Road to the project area by assuming that the project area is home to only 25% of the wildlife that are vulnerable to traffic along Vasco Road.

Regardless of the accuracy of the DEIR's precited annual VMT or of my extrapolation of the per-mile fatality rate between Vasco Road and the project area, the many annual vehicle miles traveled that would be generated by the project would kill many wild animals. No evidence exists in support of the City's speculation that wild animals would adapt to automobile traffic on the rapidly urbanizing landscape of the project area. No evidence exists in support of the implication that wildlife in Santa Clara would avoid the same fate of the millions of other wild animals that have been killed by automobile traffic across the country. Rather than speculate wildly, the City ought to complete the appropriate analysis of potential impacts to wildlife caused by project-generated traffic, and then recirculate revised DEIR.

Response L4.73 and L4.168: Given the high level of urbanization surrounding the Plan Area, including nearby freeways, the commenter has not provided substantial evidence that special-status wildlife species are present or that they would be significantly impacted by traffic levels, especially given no net increase in VMT.

Reply: Wildlife occur in the project area, including 90 special-status species of vertebrate wildlife. Given that wildlife occur there, scientific inference from the many studies of wildlife-traffic collision mortality leads to the reasonable conclusion that project-generated traffic would kill wildlife in the project area. But whereas there is uncertainty over how many animals would be killed by project-generated traffic, scientific inference drawn from the available studies lead to the reasonable conclusion that the number would be large and the impact significant.

Response L4.74 and L4.169 to L4.171: The comment consists of speculation based on a number of assumptions by Sean Smallwood, Ph.D., which likely overestimate the amount of bird strike. Sean Smallwood, Ph.D., has made assumptions about the amount and type of glass that will be included in future development. The analysis that is presented is based on empirical data collected at several buildings, resulting in an estimated bird strike rate of 0.073 bird deaths per square meter of glass per year. It does not describe anything about the glazing on the buildings that were studied, or the landscaping around them, or their physical setting.

Reply: The response asserts my analysis was speculative, but based on empirical data collected from "several" buildings. And then the response proceeds to speculate about how I performed my analysis. The response blurs the difference between scientific inference and speculation, but the difference is large and significant. Whereas speculation has led to many new ideas, it is not nearly as efficient as scientific inference when it comes to prediction and hypothesis-testing.

I reviewed reports of avian fatality monitoring at 213 buildings and façades, i.e., more than "several buildings," in a wide variety of environmental settings, types of structures, and types of glass on structural façades. The variety of settings, types of structures and types of glass included in the studies lent the mean number of fatalities/m^2 of glass a sufficiently wide 95% confidence interval for capturing the level of collision mortality that would result from the project. In other words, I sought out the wide variation in settings, structures and types of glass in my review. By citing all of my sources and by

providing the references, I also gave the City the capacity to look into the settings, types of structures, and types of glass that served as the basis of my estimated mean mortality.

It is true that I made assumptions that contributed to my estimation of how much glass would cover the facades of project buildings. The DEIR did not provide the information I needed to extrapolate mean fatalities/m^2 of glass to the extent of glass on the project's buildings. Therefore, I assumed the buildings would typify other buildings of the same purpose and for which I had data on the extent of glass. Note that the response did not dispute my assumptions, nor did it dispute the extent of structural glass I estimated for the project.

However, the response says that I likely overestimated bird-window collision mortality. The response offers no explanation for this opinion, which appears to be purely speculative. In fact, I made no adjustments to the reported estimates of collision mortality that informed my estimated mean, but I did note that the reported estimates were likely too low because most were unadjusted for the proportion of fatalities undetected due to searcher error and scavenger removal of carcasses. And what of the confidence interval I estimated? The response refers only to my estimated mean mortality, but is silent with regard to my confidence interval. The confidence interval is an important part of the estimate.

Response L4.74: As reported in the San Francisco Standards for Bird Safe Buildings and other documents, the typical bird strike zone is from grade to 60 feet, the primary concern is with any uninterrupted glazing 24 square feet or larger in size, and the likelihood of strike depends on the glazing used, the angle of the glass, the orientation of the building, and landscaping. In the urban setting, birds spend the majority their time in landscape vegetation in the bird strike zone, where the vegetation may be reflected in glass, making the glass look like vegetation and undetectable to the bird. As shown in Draft EIR Figures 3.10 to 3.21 the proposed building facades include many materials other than glass that are visible to birds. These include cement plaster; fiber cement siding; porcelain tile; green screens; vinyl window; aluminum window; metal awnings; metal railing; and perforated metal panels. The plans for the Greystar site do not have large uninterrupted glazing areas that could potentially be more susceptible to bird strikes.

Operational impacts related to potential bird strikes on structures are primarily related to bird species being injured or killed by flying into large, uninterrupted areas of glass or other reflective surfaces2 that, to a bird, may not appear noticeably different from the surrounding area or the sky. At night, especially during inclement weather during spring and fall bird migrations, birds can be attracted to lighted structures, resulting in collisions, entrapment, excess energy expenditure, and exhaustion. As shown in Draft EIR Figures 3.10 to 3.21, the Greystar project includes design features that minimize large, uninterrupted reflective surfaces, including articulated facades, setbacks, avoidances of large planes, a series of balconies, and various design elements that serve to break up the surface of the buildings. These project design features would serve to minimize operational impacts. While bird strikes cannot be completely

avoided, these features reduce potentially significant impacts related to bird-glass strikes to less than significant. The City uses standard conditions of approval (see below) to enforce bird safety standards.

Reply: The response cites factors thought to affect bird-window collisions, and it cites the San Francisco Standards for Bird Safe Buildings "other documents" (it would help to be more specific). It then argues that the cited causal factors would not play significant roles in the proposed project. The first problem with this approach is the largely speculative nature of the cited causal factors. Whereas it is relatively straightforward to arrive at a fatality estimate (though not as straightforward as many might believe), it is much more difficult to allocate levels of effect to causal factors. To estimate fatalities, and skipping over the nuances of the appropriate methodology, investigators periodically search the perimeters of buildings for dead and injured birds. Next, fatality counts are normalized to the timespan of the fatality monitoring, and a few investigators, including myself, also normalize the counts to the extent of glass overlying the search area. The result is the number of fatalities/m^2 of glass searched/unit time (use years as my unit). The investigator can conclude with some confidence that the facade or building searched had caused the number of fatalities/m^2/year that was estimated, but unless the study was designed to do so, the investigator cannot conclude which causal factor contributed this much or that much to the fatality estimate. For example, in the case of a high-rise building, it is usually not possible to determine whether a dead bird found on the ground was killed by a window 5 feet above ground or 100 feet above ground (unless a smudge or remnant blood and feathers can be found on glass where collision impact happened). Confounding of causal factors usually prevents sound conclusion about which causal factor contributed to the fatalities that were found. That is, the glass on a building facade can include panels that are reflective and panels that are transparent, windows on corners and windows in the middle, small windows and large windows, and recessed windows and projected windows, and so on. It is usually impossible to know which exact factor contributed to a given fatality, or even whether a combination of factors – interactive effects – contributed to it.

The San Francisco Standards for Bird Safe Buildings were prepared longer than a decade ago. They are good guidelines, especially considering when they were prepared, which was prior to many more recent research reports. And this is important, because it is the research reports where new findings about causal factors are to be found. These are the reports I relied upon and which I cited in my comment letter. The San Francisco Standards for Bird Safe Buildings relied on the available research reports at the time, as well as consultation with experts in the field, including with me. But they are not the source the City should turn to in support of its speculation that the project would not cause the same levels of collision mortality as documented wherever it has been studied. The San Francisco Standards for Bird Safe Buildings are a useful starting point for formulating mitigation measures, but more recent research reports should also be consulted because much has been learned since 2011 (see my comment letter for references).

Response L4.74: Most of the Focus Plan Area and its surroundings are urbanized and do not provide habitat that can sustain special-status species (Draft EIR, Chapter 6). Urban-adapted and common birds are the most likely species to collide with windows.

Reply: With 90 special-status species in the project area (see Table 2 of my comment letter), the premise of this statement is grossly inaccurate. The conclusion appears to imply that because most of the birds in the area are urban-adapted and common, their deaths at windows of the proposed project are insignificant. I cannot agree. Most species of birds are protected by the federal Migratory Bird Treaty Act and the California Migratory Bird Protection Act.

Response L4.74 and L4.173 to L4.179: The City uses the following standard condition of approval for bird safety, which will be applied to the Focus Plan Area, including the Greystar buildings:

- Reduce mirrors and large areas of reflective glass.

Reply: The rendition of the project in the DEIR is inconsistent with this standard (Figures 2–4).

Figure 2. *Part of the DEIR's rendition of a proposed building on the Greystar site, depicting large, reflective windows.*

Figure 3. *Part of the DEIR's rendition of a proposed building on the Greystar site, depicting large, reflective windows.*

Figure 4. *Part of the DEIR's rendition of a proposed building on the Greystar site, depicting large, reflective windows.*

Response L4.74: The City uses the following standard condition of approval for bird safety, which will be applied to the Focus Plan Area, including the Greystar buildings:

・ Avoid transparent glass skyways, walkways, or entryways, free-standing glass walls, and minimize transparent building corners, or utilize glazing treatments to mitigate the hazard.

Reply: The renderings of the project in the DEIR is inconsistent with this standard (Figure 5). Renderings of the project depict large transparent glass walls and an abundance of transparent glass railings.

Figure 5. *Part of the DEIR's renderings of a proposed building on the Greystar site, depicting large transparent glass walls (top and middle images) and transparent glass balcony rails (all 3 images).*

Response L4.74: The City uses the following standard condition of approval for bird safety, which will be applied to the Focus Plan Area, including the Greystar buildings:

・ Strategically place landscaping to reduce reflection and views of foliage inside or through glass.

Reply: The renderings of the project in the DEIR is inconsistent with this standard (Figure 6). Renderings of the project depict many settings in which foliage is planted next to larger reflective glass panels on the ground floors and on the buildings themselves next to large glass panels and behind transparent glass railings.

Figure 6. *Part of the DEIR's renderings of proposed buildings on the Greystar site, depicting large ground-level reflective glass windows next to trees and with foliage grown on balconies.*

Response L4.74 and L4.176: Quantitative analyses of building variables and building context support published recommendations about how to mitigate or eliminate avian-glass collision mortality (Klem et al. 2009, with reference to Brown and Caputo 2007 and City of Toronto Green Development Standard 2007). Minimizing the use of large expanses of glass and nearby vegetation in the vicinity of clear and reflective panes mitigates bird-glass collisions (Klem et al. 2009) With the application of design measures and standard
conditions of approval, the project will not result in a significant increase in bird collision hazard.

Reply: The response is vague in its assertion that quantitative analysis supports the design standards that it claims would be operationalized in the project. However, of the sources cited, only Klem et al. (2009) provided quantitative analysis, and theirs demonstrated the problem with confounding that I discussed in an earlier reply. Of the many variables Klem et al. (2009) measured, only 2 or 3 stood out as contributive to the variation in fatality rates, and that was due to confounding among variables, as I earlier discussed. But these variables – the variables that founded Klem et al.'s (2009) recommendations for building design standards – are rendered in the DEIR as serious threats to bird-window collision mortality at the project's buildings. Klem et al. (2009) recommended minimizing "the proportion of glass to other building materials in new construction," minimizing use of reflective panes, and "reducing ground cover, including changes in height of vegetation, and eliminating shrubs and trees from areas in front of buildings." These recommendations appear unheeded in the DEIR's renderings of the project.

Should the project go forward with so much glass, then I recommend reviewing my comment letter for information on mitigation measures. Treated glass is available, and has been shown to reduce collision mortality. Additionally, the project should be monitored for collision injuries and fatalities for several years following construction.

Response L4.75: Please see the response to L4.74.

Reply: Except for suggesting that my predicted annual bird-window collision mortality is likely overestimated, Response L4.74 does not explain how this might be true. The response does not deny my estimate of the extent of glass to be used in the project, nor does it challenge any of my analytical steps taken to arrive at my prediction.

Response L4.76: Please see the response to L4.74.

Reply: Response L4.74 does not deny that my "analysis of window collision impacts on wildlife constitutes substantial evidence that the Project will result in potentially significant impacts on wildlife." Neither does the response provide an alternative analysis other than to claim the City's building design standards would sufficiently minimize bird collision mortality. Response L4.74 also does not address the feasible mitigation measures I recommended in my comment letter.

Response L4.77: See responses to L4.56, L4.58, L4.59, and L4.66 regarding existing habitat quality and mitigation. The Draft EIR does not conclude that no cumulative impacts could occur but rather that redevelopment in the Plan Area and development of the Greystar site, as mitigated, would not contribute a cumulatively considerable incremental effect. The existing anthropogenic and disked environments are used by wildlife species that have adapted to such altered environments and would continue to be used in a similar manner over the course of project area development.

Reply: The response continues to reflect the City's flawed characterization of cumulative effects as those effects that remain after a project's direct effects have been incompletely mitigated. The City's argument would also have the reader believe that any species making use of the currently open field at the Greystar site would readily make use of the buildings that would replace the field. In reality, no burrowing owl will be able to do so, nor would white-tailed kites, horned larks, California gulls, merlin, Vaux's swifts, or any other special-status species. There are limits to the adaptability of wildlife.

This claim that the on-site wildlife are tolerant and therefore the project would have no impact on wildlife is nothing new from environmental consultants and project proponents. But it is readily testable. As an antidote, I can point to the outcomes of a project that was developed in Santa Clara. When I surveyed a site proposed for the Brokaw Campus in 2018, I detected 12 species of vertebrate wildlife on site. The site at the time looked much like the Greystar site, and was covered by ruderal grassland after having been disked on occasion. When I surveyed it in 2021 after several mid- to high-rise buildings were constructed, and having done so at the same time of year, the same start time, the same survey duration, and the same methods, I detected 5 species of vertebrate wildlife. I saw 58% fewer species after construction than I had before. But the real impact was evident in the numbers of each species I saw before and after development. I saw 200 white-crowned sparrows before development, and 1 lonely white-crowned sparrow afterwards. I saw 50 house finches before and none after, and 50 mourning doves before and none after. I saw a total 415 birds before and 26 after for a 94% reduction in the number of birds on site. At this project site, wildlife were not as tolerant as WRA and the City would have the reader believe.

I will add that while surveying the Brokaw Campus site post-construction, I saw the carcass of a large bird at the base of one of the buildings. Above the carcass, on the 8th floor, was a smudge where the bird collided with a large glass pane on the building. The window was on a wing of the building where the jutting out of the wing added a cavity-like appearance. Not only did the project result in a net loss of bird habitat, but it transformed into a lethal trap to flying birds. Along with the habitat lost to multiple other projects in the area and with the bird-window collision mortality they also cause, the project contributes significantly to cumulative impacts. The same would be true of the Freedom Circle Focus Area and Greystar General Plan Amendment Project should it go forward as proposed.

Response L4.134: This description of Dr. Smallwood's visit is noted for the record. However, we note that Dr. Smallwood's results are not significantly different than the

results presented from the site visit conducted for the Draft EIR analysis in December 2020, and did not reveal any substantial changes in site conditions that would require additional analysis or mitigation.

Reply: This response does not comport with the DEIR's reporting of having not seen evidence of fossorial mammals on the Greystar site, whereas I did. Furthermore, the DEIR fails to report the methods used to survey the site on 12 December 2020, and it fails to report which species were seen. The response continues to not report these important details.

Response L4.135: While it is not surprising that a ground squirrel burrow was observed in this area, the more important point is that ground squirrels are controlled at the site either by regular disking for weed control or active management by others to protect the integrity of the levee of San Tomas Aquino Creek. Those activities affect the quality of the habitat for special-status species, including the Western burrowing owl and other raptors, which aligns with the assessment in the Draft EIR.

Reply: The response is purely speculative and again misapplies the term, habitat quality. Ground squirrels are present where the field was not disked. And at these locations, burrowing owls are possible. I have many times recorded burrowing owls using ground squirrel burrows surrounded by disked fields, including farm fields and at airports.

The response also begs the question of why the ground squirrel burrows were missed during the 12 December 2020 survey. The methods and results of that survey should be fully reported.

Response L4.136: Comment noted. The Draft EIR includes measures to protect nesting birds. The comment does not state which special-status species were observed.

Reply: I did report which special-status species I observed. Perhaps the response means that I did not report which special-status species are nesting on the project site? If so, then it is true I did not. To do so would have required a much larger survey effort. This said, the DEIR did not report that bird nests occur on the site at all.

The draft EIR does not include measures to protect nesting birds after the season of construction. With the removals of the existing trees, hundreds of bird nests would cease to exist, as I commented in my letter of 20 December 2021.

Response L4.137: Comment noted. With regard to Dr. Smallwood's statement that the California gull in particular has "special status assigned it by both California and the US Fish and Wildlife Service," as is discussed in more detail in the response to comment L4.151, this species is common in the project area and expected to be present based on recent eBird observations, but only nesting colonies are protected on CDFW's watchlist. There is no nesting habitat in the project area or documented nesting colonies within or near the area.

Reply: The comment is inaccurate. California gulls are protected by the federal Migratory Bird Treaty Act and the California Migratory Bird Protection Act. Its listing on the Taxa to Watch List does not limit its protection to breeding areas, and neither does its listing by the US Fish and Wildlife Service as a Bird Species of Conservation Concern. If California gulls cannot find sufficient forage and opportunities for staging and stopover during long-distance flights, they will not successfully breed.

Response L4.139: The City disagrees. The more important measure is an assessment of the habitat present to support breeding and foraging habitat for special-status species. Please also see the response to L4.57, which provides information about how the analysis was conducted consistent with CEQA requirements. Further, we note that a categorical exemption has not been relied on in this instance. Rather, a full and complete Draft EIR was prepared.

Reply: The City's approach is unscientific and vulnerable to abuse. Habitat is defined by the species' use of the environment, and not by a project proponent. The most reliable means of determining whether a place serves as habitat is to survey for the species whose habitat is at issue. Unless a protocol-level detection survey was completed with negative findings, then the negative findings of a lesser survey cannot be used to conclude the species is absent, or that its habitat is unavailable or of lower "quality."

Response L4.140: The Draft EIR does not dispute the fact that the area supports biological resources. Please also see the response to L4.57. which explains that the analysis is based on substantial evidence including a site visit and database review, that adequately meets CEQA requirements.

Reply: The DEIR needs to be recirculated after it is revised to include the reporting of methods and results of the 12 December 2020 survey. It also needs to include the results of additional surveys for special-status species, such as for burrowing owl, and it otherwise needs to adopt a more cautious approach to interpretation of the survey findings, consistent with the precautionary principle in risk assessment.

Response L4.141: The Draft EIR does not refute that the Focus Plan Area may include more species than what were detected in a single site visit. It is widely recognized that most projects do not have a CEQA timeframe to complete a four season survey, and particularly in an urban location, a four season survey is not necessary to determine potential impacts. After an assessment of current site conditions, review of past site conditions, and an assessment of where special-status species occur in the region, MIG biologists concluded that no further biological surveys are required for this highly urbanized, infill housing and mixed-use development to provide an accurate discussion of the biological setting in the Draft EIR. This approach is typical in CEQA documents. Please see the response to L4.57 for more information about the methods supporting the analysis.

Reply: As I understand the response, the City recognizes that the site supports many more species of wildlife than were detected during the 12 December 2020 survey, but

nevertheless dismisses the likelihood that special-status species also find habitat value on the site. In the face of substantial evidence that many special-status species of wildlife occur in the project area -- evidence which is available on eBird and which has been available in my comment letter since 20 December 2021 – and apparently knowing that many more species of wildlife occur at the site than were seen during its survey, the City concludes that special-status species do not use the site. If my understanding of this response is accurate, then the City's approach is inconsistent with CEQA's first objectives. The environment is not being protected to the degree feasible, and the public and decision-makers are not being informed of the project's potential impacts to biological resources.

Response L4.142: Comment noted. This level of survey is not necessary to determine impacts under CEQA. Please see the response to L4.141 and L4.57.

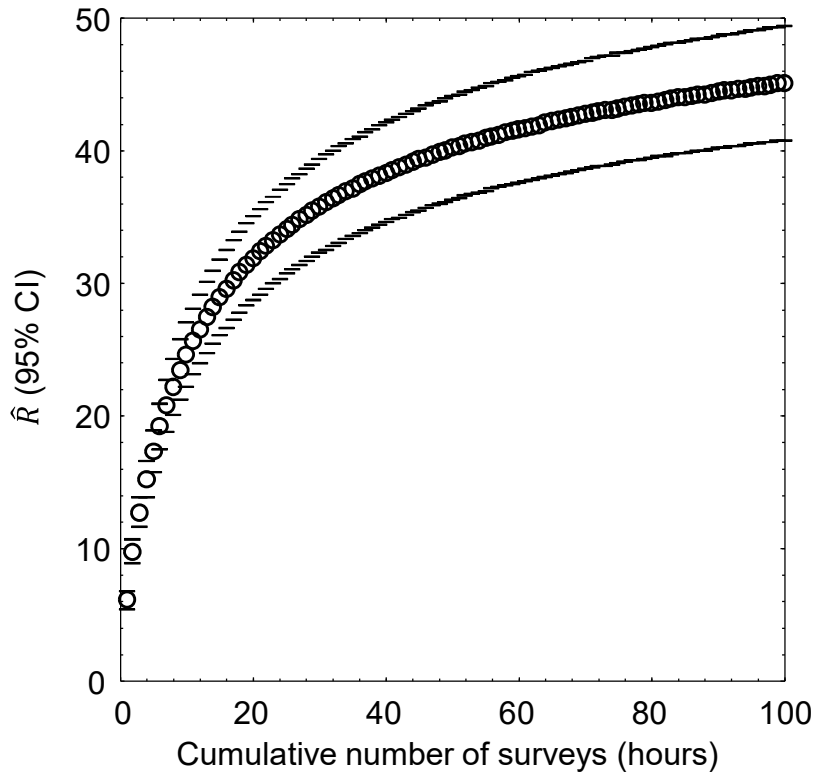
Reply: I do not understand the response. I did not advocate for any particular level of survey effort, so the statement "This level of survey is not necessary" makes no sense.

The point of my comment was to answer my question of how many more species of vertebrate wildlife would I likely have detected by repeating my visual-scan survey multiple times through the year. I answered my question by fitting a model to 6 survey outcomes at one site that I surveyed throughout one year. Since my comment letter of 20 December 2021, I analyzed more of my data from many more surveys I completed at one of my research sites. These other data can provide a more robust answer to my original question, so I use them here.

I completed a much larger survey effort across 167 km² of annual grasslands of the Altamont Pass Wind Resource Area in Alameda and Contra Costa Counties, 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 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 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. I also averaged model predictions of species richness at each incremental increase of number of surveys, i.e., number of hours (Figure 7). On average I detected 11.2 species over the first 2.5 hours of surveys in the Altamont Pass (2.5 hours to match the number of hours I surveyed at the Freedom Circle project site), which composed 19.6% of the total predicted species I would detect with a much larger survey effort.

Given the example illustrated in Figure 7, the 31 species I detected after my 2.5 hours of survey at the project site likely represented 19.6% 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, I would likely detect $^{31}/_{0.196} = 158$ species of vertebrate wildlife at the site.

Figure 7. *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.*



My prediction based on this more expansive data set is an increase of 51 species over my prediction in my 20 December 2021 comment letter. Again, however, my prediction of 158 species of vertebrate wildlife is derived from visual-scan surveys during the daytime, and would not detect nocturnal mammals. The true number of species composing the wildlife community of the site must be larger. And again, a reconnaissance-level survey should serve only as a starting point toward characterization of a site's wildlife community, but it certainly cannot alone inform of the inventory of species that use the site. Without careful interpretation, the City's survey outcome should not serve as the foundation for characterizing the current environmental setting, because there were truly many more species that used the site at the time of the survey than were detected by the City (whatever that number was – it was unreported).

An important implication of my original comment, which is heightened by my revised analysis, is that as more species are know to occur at a site, the likelihood of occurrence of special-status species also increases. For example, for all the birds that must use the many nests I saw on site, special-status species of raptors are sure to visit the site.

Response L4.143: The potential for significant impacts to special-status species is based on the presence, and quality, of breeding and forage habitat in the project area.

Specifically, the Draft EIR identifies special-status species with the potential to utilize the types of breeding and forage habitat in the project area and assesses potential impacts to those special-status species based on whether the project will remove breeding and forage habitat of significant quality for these species, such that their populations would be threatened. Please also see the response to L4.57.

Reply: The same logic can be applied to ground squirrels, which the DEIR erroneously reports are not present. Again, the City adopts an unscientific and error-prone approach toward assessing the occurrence likelihoods of special-status species. Special-status species of wildlife require greater care than the City gives to its impacts analysis.

Only two weeks ago I surveyed for wildlife on a field that had also been disked, and which according to the City's approach to habitat assessment, would have provided no habitat to special-status species. Nevertheless, I watched a merlin foraging over that field. I have many times recorded special-status species on sites that the City of Santa Clara would regard as of no value to special-status species, because the sites were disked or located within urban areas. On such sites I have recorded tricolored blackbirds, white-tailed kites, peregrine falcons, Swainson's hawks, California gulls, ferruginous hawks (Photo 1), prairie falcons, loggerhead shrikes, willow flycatcher, yellow warbler and many others. The better approach is to actually look for wildlife species that are making use of a given site, regardless of its infill setting within a city or whether and to what degree it has been abused. And the better approach is to assume presence of species until the site has been surveyed sufficiently to justify an absence determination.

Photo 1. *A ferruginous hawk attacks a pocket gopher on an infill site that had been*

disked the previous spring and is only just being covered by ruderal grassland, 25 January 2018.

Response L4.144: The Draft EIR does not rely on a reconnaissance-level survey as the only source of information for an assessment of biological resources that could be impacted by the project. Please see the response to L4.57 which explains that other methods were also undertaken as part of the analysis.

Reply: Nor does the survey rely on a desktop analysis that is reasonably complete and sound in method. The DEIR's determinations of occurrence likelihoods of special-status species are based on a grossly deficient survey effort and a flawed desktop analysis. These determinations poorly inform of the current environmental setting, which means the impacts analysis is on poor footing.

Response L4.145: The City disagrees. Please see the response to L4.57 and L4.138 to L4.144.

Reply: It is unclear with which part of my comment the City disagrees. Surely the City must agree that "The first step in analysis of potential project impacts to biological resources is to accurately characterize the existing environmental conditions, including the species that use the site, their relative abundances, how they use the site, key ecological relationships, and known and ongoing threats to those species with special status." Surely the City must agree that "A reasonably accurate characterization of the environmental setting can provide the baseline against which to analyze project impacts." The City must agree with me that "Methods to achieve this first step typically include surveys of the site for biological resources and reviews of literature, databases and local experts for documented occurrences of special-status species," because after all, the City reportedly completed a survey of the site and performed some desktop review. That only leaves my conclusion that the DEIR "is both incomplete and inaccurate in its characterization of the environmental setting as it relates to wildlife." But the facts bear this conclusion out. My desktop review revealed many special-status species at and around the same site where the City's desktop review said there are none. My survey detected 31 special-status species, including 3 with special-status, and I reported seeing ground squirrels and many bird nests, but the City's survey comes up short on all of these results, as far as I can tell from the reporting.

Response L4.146: The Draft EIR includes an appropriate description of and analysis based on the site visit. Please see the response to L4.57.

Reply: Other than the date of it, the DEIR does not describe the site visit, nor does it report its results. The reporting of the visit does not meet minimum professional standards, nor does it meet industry standards. It fails to provide the reader with the essential information needed to assess the DEIR's findings of impacts, which are supposed to be based on the survey.

Response L4.148: The Draft EIR reports methods and results in sections 6.1 and 6.3. The methods were thorough and consistent with CEQA requirements. Please also see the response to L4.57.

Reply: The first two assertions of the response are false. The methods on page 6-1 are the following: "During the site visit on December 12, 2020…" That is it; this brief phrase is the methods. The results on page 6-1 are the following: "vegetation was overwhelmingly absent and/or in the dieback stage. No small mammal burrows were observed. The entirety of the other property within the Freedom Circle Focus Area Plan outside the Greystar site is developed." The results on page 6-3 are the following: "Based on ground-truthing, all species were evaluated for their potential to occur on, or in the immediate vicinity of, the project area according to the following criteria:

- **Not Expected:** CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and/or no components of suitable habitat are present within or adjacent to the project area.

- **Low Potential:** The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area."

These methods and results cannot adequately inform the reader of the DEIR. Again, it is left unknown whether the biologist who performed the survey ever got out of her car, or whether she saw no animal species or perhaps more than I did. This is not reporting that is worthy of a DEIR. I suggest revising the DEIR and recirculating it.

Response L4.149: CEQA requires that an EIR address impacts to special-status species, and does not require an assessment of impacts to common wildlife species.

Reply: This is a false distinction, as special-status species do not occur without the presence of "common species." Many of the "common species" are also protected by the federal Migratory Bird Treaty Act and the California Migratory Bird Protection Act. All wildlife are part of the very environment that CEQA seeks to protect.

Response L4.151: Most of the response repeats earlier responses. The part that is unique is the following, but I do not repeat the Table: "Table 1 below evaluates the potential occurrence of the 32 special-status species included in Table 2 of the comment letter that do meet the CEQA definition of special-status species and that were not already evaluated in the Draft EIR. Consistent with the findings of the Draft EIR, special-status species habitat in the project area is marginal to non-existent, and all 32 species are either not expected to occur in the project area or have a low potential to occur. In addition, many of the bird species in the table do not breed in the project area. To summarize, the information provided by the commentor does not comprise a new significant impact not addressed by the Draft EIR."

Reply: The response says Table 1 addresses species that appeared in my Table 2 but which otherwise fail to meet the CEQA definition of special-status species. As I replied

earlier, the City has adopted an erroneous definition of special-status species, or more accurately, the City has misunderstood the definition, which the response quotes from App. G of the CEQA Guidelines. But this error aside, the very first species in the response's Table 1 – Monarch butterfly -- would clearly meet the City's definition of special-status, as would all of the others.

Table 1 repeats other problems, as well. CNDDB continues to be misapplied. It does not matter that any of the species might not appear as CNDDB records within 5 miles of the site, because as I explained earlier, the lack of CNDDB records is not evidence of absence.

Table 1 repeatedly contrives a false distinction between nesting habitat and other alleged types of habitat. Habitat is habitat, and there is no type of habitat. Within habitat there exists breeding site and foraging opportunities and travel opportunities where there is sufficient travel medium along with opportunities for stopover and staging. Habitat also include refugia. The City conveys the false notion that projects can take every other part of a species' habitat without causing an impact, so long as breeding sites are left alone. No species can breed without sufficient forage, non-breeding season refugia and sufficient opportunity for safe travel.

By the way, bald eagles are not endangered (see Table 1).

Response L4.152: The distance of the nearest recorded occurrence of a special-status species to the project area is not sufficient criteria to evaluate the potential occurrence of a special-status species in the project area. A habitat evaluation of the project area is also essential for determining the potential occurrence of special-status species, as many project sites, particularly in urban parts of the San Francisco Bay Area, are near special-status species habitat even while the site itself lacks such habitat. For example, the project area is approximately two miles south of the San Francisco Bay shore, which contains marsh habitat, parklands, and salt ponds that support a number of special-status species; and one mile west of the Guadalupe River which has a riparian corridor and also supports special-status species. Most of the recorded occurrences of special-status species near the project site are near the Bay and/or River. The project area is heavily developed with buildings, parking lots, and roads and is surrounded by major regional highways and other development. The grassy site within the project area is regularly disced and lacked evidence of small mammal burrows at the time of the December 12, 2020 biological survey. San Tomas Aquino Creek is channelized and lacks woody riparian vegetation where it runs parallel to the eastern side of the project area. Therefore, the 20 special-status species referenced in the comment were found to be not expected or to have a low potential to occur in the project area based on a lack of suitable habitat to support these species rather than from distance from known occurrences or known suitable habitat.

Reply: Considering that the species at issue are rare and precious, the CEQA analysis should err on the side of caution. Distances to nearest sightings records are relevant to determining likelihood of occurrence and whether a greater survey effort is warranted, including whether protocol-level detection surveys are warranted. The site, much of

which is heavily wooded with mature trees, and 13 acres of which consists of open space with natural soil, abuts a creek and yielded to me 31 species of vertebrate wildlife in only 2.5 hours of survey. The site is not the sterile wasteland the DEIR portrays. It warrants an appropriately rigorous survey effort and a more thorough and careful desktop review of available databases and local experts.

Response L4.153: The Draft EIR includes Mitigation Measure 6-2 to assess potential impacts to biological resources for each site that comes in for redevelopment. If a particular project is going to remove raptor habitat, including nest sites used by white-tailed kite if there are any, that would be addressed at that time. That is because conditions can change over time, and future review is necessary to avoid significant impacts.

Reply: Should the project go forward, Measure 6.2 should be implemented, and it should be implemented at the Greystar site as well. This agreed, Measure 6.2 cannot offset the impacts of permanent habitat loss. Compensatory mitigation would also be appropriate for both the direct and cumulative impacts of habitat loss and habitat fragmentation.

Response L4.155: It is true that non-occurrence of a species in the CNDDB is not proof that they are not present, and is well understood. However, if suitable habitat is not present to support special-status species, then they are not likely to persist, and the project is not likely to result in significant impacts. The Draft EIR fully addresses the potential for special-status species to occur on the site through the habitat assessment and the special-status species analysis, and includes mitigation measures to protect species through pre-construction surveys.

Reply: If the stated limitation of CNDDB is well understood, then I fail to understand why Table 1 in an earlier response continues to misapply CNDDB. The rest of the response relies on the credibility of the habitat assessment, which is not credible. The habitat assessment is easily refuted by visiting the site to see species that the DEIR concludes are absent. It is easily refuted because it applies an inappropriate methodology and fails to apply the precautionary principle in risk assessment. In my own experience, I have many times been surprised by the occurrence of some species that I thought unlikely. The most effective means of assessing habitat is via documentation of the use of a site by a given species.

Response L4.156: CNDDB records are one of many resources that were used to assess the impacts to biological resources for this project, as explained in the responses to L4.57 and L4.151. No one source is perfect, and site conditions change, as explained in the Draft EIR. Mitigation measures are stipulated to protect the species reasonably expected to be impacted by the project, based on the site and desktop analysis and the expertise of the biologist that completed the analysis.

Reply: If it is true that many sources in addition to CNDDB were used, then the DEIR should identify those other sources and explain exactly how they were used.

I concur that no source is perfect for assessing occurrence likelihoods, but this is no excuse for using CNDDB inappropriately.

The proposed mitigation measures would not protect the species at issue. Please see my comment letter.

Response L4.157: The analysis relies on more than CNDDB and the scientists that prepared the analysis are aware of limitations of species accounts reported in any databases. Please see also response to comment L4.151.

Reply: Again, if the scientists are aware of the limitations, then why do they continue to misuse CNDDB? Awareness of an inappropriate method does not make it appropriate.

Response L4.158: Foraging habitat is discussed in section 6.1 of the Draft EIR. The mitigation included in the Draft EIR focusses on nesting birds to assure compliance with state and federal law that protects birds from direct harm. The Draft EIR does not refute the fact that common wildlife species forage and nest in the Focus Area Plan area, but the biologist did make a determination that the project area does not provide suitable habitat to sustain populations of special-status species.

Reply: The response continues with the false distinction between breeding habitat and other types of habitat. Please see my comment and earlier replies which address this fallacy.

Response L4.160: The City disagrees that redevelopment of an already developed area would result in a loss of this magnitude. The Focus Area Plan will still provide habitat for common urban species. Regardless, CEQA does not require that impacts to common species be enumerated. The Draft EIR includes Mitigation Measure 6-4 to protect nesting birds.

Reply: The City disagrees with my prediction, but only in the form of an opinion. The methodology I used was peer-reviewed and published in a scientific journal (Smallwood 2022), so it is sound. Because I did not actually count the many bird nests I saw on site, nor could I count the many more nests I did not see, I assumed the nesting capacity of the site was 25% that of the study sites I cited. It is this assumption that is most vulnerable to error in my approach. Considering the abundance of mature trees on site, as well as the presence of many shrubs and the grassland on the Greystar site, I suspect my assumption was conservative, but my point was to show that even a crude analysis is readily feasible and certainly closer to the true impact than pretending that the project would have no impact on breeding birds.

The response again introduces a false standard by asserting that "CEQA does not require that impacts to common species be enumerated." Not in so many words. But CEQA does not require most of the steps taken by the City, such as performing a survey for biological resources or consulting CNDDB. The steps typically taken as part of CEQA reviews are not explicitly required, but those participating with the reviews come to

understand what needs to be done to meet CEQA's objectives. Because the project site includes many mature trees and other avian nest substrates, it stands to reason that an important issue in need of review is the project's potential impacts to breeding birds. Yes, more concern should be directed towards the nests of special-status species of birds, but the nests of all birds are important. And to this point, § 681, Title 14 of the California Code of Regulations protects bird nests.

Response L4.172: Species of migratory birds have long been protected by state and federal law, as explained in Section 6.2 of the Draft EIR. Fish and Game Code section 3513 was enacted in response to past federal action to change the federal Migratory Bird Treaty Act, which is now moot due to an Executive Order.

Reply: I fail to understand the point of the response, which does not address my comment about the many special-status species of birds in Table 2 of my comment letter that are known to collide with windows.

Response L4.180: Comment noted, although the City concludes impacts would be less than significant.

Reply: Fatality monitoring for bird-window collision victims should be implemented regardless of whether the City concludes impacts would be less than significant. Considering the magnitude of bird-window collision mortality, and considering the large number of special-status species of birds known to fly in the area, and considering the large expanse of glass on the facades of the proposed buildings, fatality monitoring is warranted. If the City's conclusion is correct, then the monitoring can prove it. But by not performing the monitoring, the City would simply hide the impact, which should not be done.

Responses L4.181 to L4.183: Comment noted, although the City concludes impacts would be less than significant.

Reply: The response makes clear that the City intends to implement no feasible mitigation measures to minimize the risk of bird-window collision mortality, and then not to monitor for mortality.

Response L4.184: Please see the response to L4.57. The Draft EIR satisfies CEQA's requirements.

Reply: I failed to understand what I was supposed to find in L4.57 that addresses my comment regarding cumulative impacts.

Response L4.185: The redevelopment of an already developed site does not typically result in significant cumulative impacts because, as identified in the Draft EIR, this urban environment does not provide habitat that supports the ability for special status species to successfully forage, breed, and sustain a population. The mitigation measures will protect nesting birds, including Western burrowing owl, and protected bat species.

Any other project of this magnitude in the City will be subject to the same requirements, reducing cumulative impacts. See also response L4.77.

Reply: Rather than respond to my comment, the response simply repeats the same refuted assertion that the project site provides no habitat value to wildlife. It does provide habitat value, as proven by the 31 species of wildlife I saw there and the 90 special-status species of wildlife that show up as occurrence records at and near the project site. Trees on site are loaded with birds, and they are loaded with bird nests. But my comment went to the false CEQA standard adopted by the City to unsoundly conclude that cumulative impacts would be less than significant.

Response L4.186: Please see the response to L4.74, which includes the City's standard conditions of approval for bird safety that will be applied to projects in the Focus Area Plan area. The City respectfully disagrees with the numbers presented, and reiterates that the Draft EIR is consistent with CEQA requirements and appropriately concludes that the project, with incorporation of the design features and standard conditions of approval enumerated in the response to L4.74, will have less than significant impacts to birds.

Reply: As I replied earlier, renderings of the project buildings are inconsistent with the building design standards the City claims to follow. Photos I provided in my comment letter indicate that the design standards have not always been applied.

Response L4.187: Smallwood is correct that the project area already includes development with windows and that bird strikes likely occur under existing conditions. Please see the response to L4.74, which includes the City's standard conditions of approval for bird safety, and explains why potential bird strike impacts are considered less than significant.

Reply: The response mischaracterizes my comment. By "windows in the City," I was not referring to the existing buildings on the project site. Certainly, my photos of large reflective windows in Santa Clara were not of windows on the project site. The buildings on the project site are relatively small, whereas the windows on more recently constructed buildings are expansive and often highly reflective or transparent.

Response L4.187: CEQA does not require a lead agency to conduct every recommended test and perform all recommended research to evaluate the impacts of a proposed project. The fact that additional studies might be helpful does not mean they are required.

Reply: True, and as I replied earlier, there are many steps routinely or more occasionally taken that are not required by CEQA. However, CEQA's objectives are clear enough. Impacts to the environment that are relevant or of large magnitude ought to be analyzed in an EIR. Bird-window collisions comprise one of the largest sources of bird mortality in the USA, and this is so at a time when science just discovered the skies over the USA have lost nearly a third of their birds over the past 48 years. City of Santa Clara

would better serve the readers of the DEIR by performing appropriate analyses of potential impacts to biological resources.

Response L4.188 and L4.189: Comment noted. We note that this comment is speculative and based on a variety of assumptions. CEQA prohibits speculation in Draft EIR analysis, and no further study is required.

Reply: The predictions I presented are not speculative. They are predictions based on scientific inference.

Response L4.190: With regard to the Greystar site, the Draft EIR includes pre-construction surveys as a mitigation measure in measure 6-3 to verify that the project does not impact special-status species, with a focus on Western burrowing owl, which is known to occur nearby, but habitat onsite is of low quality.

Reply: Preconstruction surveys are not detection surveys. Performing only a preconstruction survey without having performed protocol-level detection surveys would not be consistent with the CDFW (2012) guidelines for burrowing owls.

Response L4.191: The City disagrees with the assertion that compensatory mitigation is required. Nesting bird surveys are done by carefully watching bird behavior, since nests are well hidden and take considerable time. Bat roosts are detected by finding signs of bat use or with an acoustic bat detector. Careful survey by a qualified biologist, and subsequent buffers and protection measures for any active nests or roosts that are detected is common mitigation practice that reduces the potential impact to less than significant.

Reply: If the preconstruction surveys are performed with anything like the same level of rigor as the site survey of 12 December 2020, then consider me a skeptic that the City intends to complete nest surveys by carefully watching bird behavior. And anyhow, the constricted time typically allotted for preconstruction surveys is not conducive to careful watching of bird behavior to locate nests.

Response L4.192: This might be appropriate if suitable habitat was present for these species, but the project area is developed or regularly disturbed, and protocol surveys are not warranted.

Reply: Ground squirrels occupy the Greystar site, which means burrowing owls might also occur there. Many bird nests occur on site, which means multiple special-status species of birds might occur there. Substantial evidence warrants the implementation of detection surveys.

Response L4.193: The City disagrees. The Focus Area Plan Area is entirely developed except for the Greystar site, which is 13.3 acres of non-native grassland that is disked annually. Redevelopment of the site will provide similar urban habitat for the wildlife that is adapted to that habitat. Compensatory mitigation for lost wildlife habitat is not warranted.

Reply: Renderings of the Greystar project indicate post-construction conditions will be nothing like current existing conditions. Instead of open space with annual grassland, there would be several multi-story buildings with expansive windows posing collision threats to birds. The many large, mature trees that currently occupy the rest of the site would be removed along with all of the nest substrate they provide. Compensatory mitigation should be included.

Response L4.194: The City concludes this suggestion is not warranted to comply with CEQA. Please see the response to L4.74.

Reply: According to CEQA Guidelines §21002.1, "The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided."

Response L4.195 and L4.196: Please see the response to L4.74. The City has standard conditions of approval for bird safety that are similar to the guidelines cited by the commenter.

Reply: Better guidelines are available than the City's, and they are summarized in my comment. But anyhow, renderings of the buildings proposed for the Greystar site indicate little intention of adhering to the guidelines.

Response L4.197: Comment noted, but the impact is found to be less than significant, and no mitigation is warranted. Please see the response to L4.74 regarding the less than significant finding.

Reply: Response noted.

Thank you for your attention,

Shawn Smallwood, Ph.D.

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Curriculum Vitae

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Born May 3, 1963 in Sacramento, California.
Married, father of two.

Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities;
- Wildlife monitoring and field study using GPS, thermal imaging, behavior surveys;
- Using systems analysis and experimental design principles to identify meaningful ecological patterns that inform management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 480 professional publications, including:
- 83 peer reviewed publications
- 24 in non-reviewed proceedings
- 371 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results

Editing for scientific journals: Guest Editor, *Wildlife Society Bulletin*, 2012-2013, of invited papers representing international views on the impacts of wind energy on wildlife and how to mitigate the impacts. Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007. Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004. Associate Editor, *Biological Conservation*, 9/1994 to 9/1995.

Member, Alameda County Scientific Review Committee (SRC), August 2006 to April 2011. The five-member committee investigated causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and recommended mitigation and monitoring measures. The SRC

reviewed the science underlying the Alameda County Avian Protection Program, and advised the County on how to reduce wildlife fatalities.

Consulting Ecologist, 2004-2007, California Energy Commission (CEC). Provided consulting services as needed to the CEC on renewable energy impacts, monitoring and research, and produced several reports. Also collaborated with Lawrence-Livermore National Lab on research to understand and reduce wind turbine impacts on wildlife.

Consulting Ecologist, 1999-2013, U.S. Navy. Performed endangered species surveys, hazardous waste site monitoring, and habitat restoration for the endangered San Joaquin kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, salt marsh harvest mouse, and other species at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon; and, Naval Outlying Landing Field Imperial Beach.

Part-time Lecturer, 1998-2005, California State University, Sacramento. Instructed Mammalogy, Behavioral Ecology, and Ornithology Lab, Contemporary Environmental Issues, Natural Resources Conservation.

Senior Ecologist, 1999-2005, BioResource Consultants. Designed and implemented research and monitoring studies related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. Prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1995-2000, Institute for Sustainable Development. Headed ISD's program on integrated resources management. Developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. Worked with Shu Geng and Mingua Zhang on several studies related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

Lead Scientist, 1996-1999, National Endangered Species Network. Informed academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws. Testified at public hearings on endangered species issues.

Ecologist, 1997-1998, Western Foundation of Vertebrate Zoology. Conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 1994-1995, EIP Associates, Sacramento, California. Provided consulting services in environmental planning, and quantitative assessment of land units for their

conservation and restoration opportunities basedon ecological resource requirements of 29 special-status species. Developed ecological indicators for prioritizing areas within Yolo County to receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 1990-1994, Department of Agronomy and Range Science, *U.C. Davis*. Under Dr. Shu Geng's mentorship, studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. Managed and analyzed a data base of energy use in California agriculture. Assisted with landscape (GIS) study of groundwater contamination across Tulare County, California.

Work experience in graduate school: Co-taught Conservation Biology with Dr. Christine Schonewald, 1991 & 1993, UC Davis Graduate Group in Ecology; Reader for Dr. Richard Coss's course on Psychobiology in 1990, UC Davis Department of Psychology; Research Assistant to Dr. Walter E. Howard, 1988-1990, UC Davis Department of Wildlife and Fisheries Biology, testing durable baits for pocket gopher management in forest clearcuts; Research Assistant to Dr. Terrell P. Salmon, 1987-1988, UC Wildlife Extension, Department of Wildlife and Fisheries Biology, developing empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental and human health hazards in California. Student Assistant to Dr. E. Lee Fitzhugh, 1985-1987, UC Cooperative Extension, Department of Wildlife and Fisheries Biology, developing and implementing statewide mountain lion track count for long-term monitoring.

Fulbright Research Fellow, Indonesia, 1988. Tested use of new sampling methods for numerical monitoring of Sumatran tiger and six other species of endemic felids, and evaluated methods used by other researchers.

Projects

Repowering wind energy projects through careful siting of new wind turbines using map-based collision hazard models to minimize impacts to volant wildlife. Funded by wind companies (principally NextEra Renewable Energy, Inc.), California Energy Commission and East Bay Regional Park District, I have collaborated with a GIS analyst and managed a crew of five field biologists performing golden eagle behavior surveys and nocturnal surveys on bats and owls. The goal is to quantify flight patterns for development of predictive models to more carefully site new wind turbines in repowering projects. Focused behavior surveys began May 2012 and continue. Collision hazard models have been prepared for seven wind projects, three of which were built. Planning for additional repowering projects is underway.

Test avian safety of new mixer-ejector wind turbine (MEWT). Designed and implemented a before-after, control-impact experimental design to test the avian safety of a new, shrouded wind turbine developed by Ogin Inc. (formerly known as FloDesign Wind Turbine Corporation). Supported by a $718,000 grant from the California Energy Commission's Public Interest Energy Research program and a 20% match share contribution from Ogin, I managed a crew of seven field biologists who performed periodic fatality searches and behavior surveys, carcass detection trials, nocturnal behavior surveys using a thermal camera, and spatial analyses with the collaboration of a GIS

analyst. Field work began 1 April 2012 and ended 30 March 2015 without Ogin installing its MEWTs, but we still achieved multiple important scientific advances.

Reduce avian mortality due to wind turbines at Altamont Pass. Studied wildlife impacts caused by 5,400 wind turbines at the world's most notorious wind resource area. Studied how impacts are perceived by monitoring and how they are affected by terrain, wind patterns, food resources, range management practices, wind turbine operations, seasonal patterns, population cycles, infrastructure management such as electric distribution, animal behavior and social interactions.

Reduce avian mortality on electric distribution poles. Directed research toward reducing bird electrocutions on electric distribution poles, 2000-2007. Oversaw 5 founds of fatality searches at 10,000 poles from Orange County to Glenn County, California, and produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). Provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. Provided expert reports based on four site visits and an extensive document review of burrowing animals. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury. After appeals the award was increased to two billion dollars.

Hanford Nuclear Reservation Litigation. Provided expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. Provided three expert reports based on three site visits and extensive document review. Predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals.

Expert testimony and declarations on proposed residential and commercial developments, gas-fired power plants, wind, solar and geothermal projects, water transfers and water transfer delivery systems, endangered species recovery plans, Habitat Conservation Plans and Natural Communities Conservation Programs. Testified before multiple government agencies, Tribunals, Boards of Supervisors and City Councils, and participated with press conferences and depositions. Prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level surveys for special-status species. Used California Department of Fish and Wildlife and US Fish and Wildlife Service protocols to search for California red-legged frog, California tiger salamander, arroyo southwestern toad, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, San Joaquin kangaroo rat, San Joaquin kit fox, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and other special-status species.

Conservation of San Joaquin kangaroo rat. Performed research to identify factors responsible for the decline of this endangered species at Lemoore Naval Air Station, 2000-2013, and implemented habitat enhancements designed to reverse the trend and expand the population.

Impact of West Nile Virus on yellow-billed magpies. Funded by Sacramento-Yolo Mosquito and Vector Control District, 2005-2008, compared survey results pre- and post-West Nile Virus epidemic for multiple bird species in the Sacramento Valley, particularly on yellow-billed magpie and American crow due to susceptibility to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. Used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. Monitored the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both sites. Also used GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley in Colusa County and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. Assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. Also measured habitat variables in streams.

Opposition to proposed No Surprises rule. Wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a “properly functioning HCP.” Submitted 188 signatures of scientists and environmental professionals concerned about No Surprises rule US Fish and Wildlife Service, National Marine Fisheries Service, all US Senators.

Natomas Basin Habitat Conservation Plan alternative. Designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson’s hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessments of agricultural production system and environmental technology transfer to China. Twice visited China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China.

Yolo County Habitat Conservation Plan. Conducted landscape ecology study of Yolo County to spatially prioritize allocation of mitigation efforts to improve ecosystem functionality within the

County from the perspective of 29 special-status species of wildlife and plants. Used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. Derived GIS maps to help guide the conservation area design, and then developed implementation strategies.

Mountain lion track count. Developed and conducted a carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. Track survey transect was established on dusty, dirt roads within randomly selected quadrats.

Sumatran tiger and other felids. Upon award of Fulbright Research Fellowship, I designed and initiated track counts for seven species of wild cats in Sumatra, including Sumatran tiger, fishing cat, and golden cat. Spent four months on Sumatra and Java in 1988, and learned Bahasa Indonesia, the official Indonesian language.

Wildlife in agriculture. Beginning as post-graduate research, I studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect since 1989 with a hiatus of 1996-2004. The data are analyzed using GIS and methods from landscape ecology, and the results published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural energy use and Tulare County groundwater study. Developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket gopher damage in forest clear-cuts. Developed gopher sampling methods and tested various poison baits and baiting regimes in the largest-ever field study of pocket gopher management in forest plantations, involving 68 research plots in 55 clear-cuts among 6 National Forests in northern California.

Risk assessment of exotic species in North America. Developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

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Comments on Environmental Documents

I was retained or commissioned to comment on environmental planning and review documents, including:

- The Villages of Lakeview EIR (2017; 28 pp);
- Notes on Proposed Study Options for Trail Impacts on Northern Spotted Owl (2017; 4 pp);
- San Gorgonio Crossings EIR (2017; 22 pp);
- Replies to responses on Jupiter Project IS and MND (2017; 12 pp);
- MacArthur Transit Village Project Modified 2016 CEQA Analysis (2017; 12 pp);
- Central SoMa Plan DEIR (2017; 14 pp);
- Colony Commerce Center Specific Plan DEIR (2016; 16 pp);
- Fairway Trails Improvements MND (2016; 13 pp);
- Review of Avian-Solar Science Plan (2016; 28 pp);
- Replies to responses on Initial Study for Pyramid Asphalt (2016; 5 pp);
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- Agua Mansa Distribution Warehouse Project Initial Study (2016; 14 pp);
- Santa Anita Warehouse IS and MND (2016; 12 pp);
- CapRock Distribution Center III DEIR (2016: 12 pp);
- Orange Show Logistics Center Initial Study and MND (2016; 9 pp);
- City of Palmdale Oasis Medical Village Project IS and MND (2016; 7 pp);
- Comments on proposed rule for incidental eagle take (2016, 49 pp);
- Grapevine Specific and Community Plan FEIR (2016; 25 pp);
- Grapevine Specific and Community Plan DEIR (2016; 15 pp);
- Clinton County Zoning Ordinance for Wind Turbine siting (2016);
- Hallmark at Shenandoah Warehouse Project Initial Study (2016; 6 pp);
- Tri-City Industrial Complex Initial Study (2016; 5 pp);
- Hidden Canyon Industrial Park Plot Plan 16-PP-02 (2016; 12 pp);
- Kimball Business Park DEIR (2016; 10 pp);
- Jupiter Project IS and MND (2016; 9 pp);
- Revised Draft Giant Garter Snake Recovery Plan of 2015 (2016, 18 pp);
- Palo Verde Mesa Solar Project Draft Environmental Impact Report (2016; 27 pp);

- Reply Witness Statement on Fairview Wind Project, Ontario, Canada (2016; 14 pp);
- Fairview Wind Project, Ontario, Canada (2016; 41 pp);
- Supplementary Reply Witness Statement Amherst Island Wind Farm, Ontario (2015, 38 pp);
- Witness Statement on Amherst Island Wind Farm, Ontario (2015, 31 pp);
- Second Reply Witness Statement on White Pines Wind Farm, Ontario (2015, 6 pp);
- Reply Witness Statement on White Pines Wind Farm, Ontario (2015, 10 pp);
- Witness Statement on White Pines Wind Farm, Ontario (2015, 9 pp);
- Proposed Section 24 Specific Plan Agua Caliente Band of Cahuilla Indians DEIS (2015, 9 pp);
- Replies to comments 24 Specific Plan Agua Caliente Band of Cahuilla Indians FEIS (2015, 6 pp);
- Willow Springs Solar Photovoltaic Project DEIR (2015; 28 pp);
- Sierra Lakes Commerce Center Project DEIR (2015, 9 pp);
- Columbia Business Center MND (2015; 8 pp);
- West Valley Logistics Center Specific Plan DEIR (2015, 10 pp);
- World Logistic Center Specific Plan FEIR (2015, 12 pp);
- Bay Delta Conservation Plan EIR/EIS (2014, 21 pp);
- Addison Wind Energy Project DEIR (2014, 32 pp);
- Response to Comments on the Addison Wind Energy Project DEIR (2014, 15 pp);
- Addison and Rising Tree Wind Energy Project FEIR (2014, 12 pp);
- Alta East Wind Energy Project FEIS (2013, 23 pp);
- Blythe Solar Power Project Staff Assessment, California Energy Commission (2013, 16 pp);
- Clearwater and Yakima Solar Projects DEIR (2013, 9 pp);
- Cuyama Solar Project DEIR (2014, 19 pp);
- Draft Desert Renewable Energy Conservation Plan (DRECP) EIR/EIS (2015, 49 pp);
- Kingbird Solar Photovoltaic Project EIR (2013, 19 pp);
- Lucerne Valley Solar Project Initial Study & Mitigated Negative Declaration (2013, 12 pp);
- Palen Solar Electric Generating System Final Staff Assessment of California Energy Commission, (2014, 20 pp);
- Rebuttal testimony on Palen Solar Energy Generating System (2014, 9 pp);
- Rising Tree Wind Energy Project DEIR (2014, 32 pp);
- Response to Comments on the Rising Tree Wind Energy Project DEIR (2014, 15 pp);
- Soitec Solar Development Project Draft PEIR (2014, 18 pp);
- Comment on the Biological Opinion (08ESMF-00-2012-F-0387) of Oakland Zoo expansion on Alameda whipsnake and California red-legged frog (2014; 3 pp);
- West Antelope Solar Energy Project Initial Study and Negative Declaration (2013, 18 pp);
- Willow Springs Solar Photovoltaic Project DEIR (2015, 28 pp);
- Alameda Creek Bridge Replacement Project DEIR (2015, 10 pp);
- Declaration on Tule Wind project FEIR/FEIS (2013; 24 pp);
- Sunlight Partners LANDPRO Solar Project Mitigated Negative Declaration (2013; 11 pp);
- Declaration in opposition to BLM fracking (2013; 5 pp);
- Rosamond Solar Project Addendum EIR (2013; 13 pp);
- Pioneer Green Solar Project EIR (2013; 13 pp);
- Reply to Staff Responses to Comments on Soccer Center Solar Project Mitigated Negative

Declaration (2013; 6 pp);

- Soccer Center Solar Project Mitigated Negative Declaration (2013; 10 pp);
- Plainview Solar Works Mitigated Negative Declaration (2013; 10 pp);
- Reply to the County Staff's Responses on comments to Imperial Valley Solar Company 2 Project (2013; 10 pp);
- Imperial Valley Solar Company 2 Project (2013; 13 pp);
- FRV Orion Solar Project DEIR (PP12232) (2013; 9 pp);
- Casa Diablo IV Geothermal Development Project (3013; 6 pp);
- Reply to Staff Responses to Comments on Casa Diablo IV Geothermal Development Project (2013; 8 pp);
- FEIS prepared for Alta East Wind Project (2013; 23 pp);
- Metropolitan Air Park DEIR, City of San Diego (2013;);
- Davidon Homes Tentative Subdivision Map and Rezoning Project DEIR (2013; 9 pp);
- Analysis of Biological Assessment of Oakland Zoo Expansion Impacts on Alameda Whipsnake (2013; 10 pp);
- Declaration on Campo Verde Solar project FEIR (2013; 11pp);
- Neg Dec comments on Davis Sewer Trunk Rehabilitation (2013; 8 pp);
- Declaration on North Steens Transmission Line FEIS (2012; 62 pp);
- City of Lancaster Revised Initial Study for Conditional Use Permits 12-08 and 12-09, Summer Solar and Springtime Solar Projects (2012; 8 pp);
- J&J Ranch, 24 Adobe Lane Environmental Review (2012; 14 pp);
- Reply to the County Staff's Responses on comments to Hudson Ranch Power II Geothermal Project and the Simbol Calipatria Plant II (2012; 8 pp);
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- Desert Harvest Solar Project EIS (2012; 15 pp);
- Solar Gen 2 Array Project DEIR (2012; 16 pp);
- Ocotillo Sol Project EIS (2012; 4 pp);
- Beacon Photovoltaic Project DEIR (2012; 5 pp);
- Declaration on Initial Study and Proposed Negative Declaration for the Butte Water District 2012 Water Transfer Program (2012; 11 pp);
- Mount Signal and Calexico Solar Farm Projects DEIR (2011; 16 pp);
- City of Elk Grove Sphere of Influence EIR (2011; 28 pp);
- Comment on Sutter Landing Park Solar Photovoltaic Project MND (2011; 9 pp);
- Statement of Shawn Smallwood, Ph.D. Regarding Proposed Rabik/Gudath Project, 22611 Coleman Valley Road, Bodega Bay (CPN 10-0002) (2011; 4 pp);
- Declaration of K. Shawn Smallwood on Biological Impacts of the Ivanpah Solar Electric Generating System (ISEGS) (2011; 9 pp);
- Comments on Draft Eagle Conservation Plan Guidance (2011; 13 pp);
- Comments on Draft EIR/EA for Niles Canyon Safety Improvement Project (2011; 16 pp);
- Declaration of K. Shawn Smallwood, Ph.D., on Biological Impacts of the Route 84 Safety Improvement Project (2011; 7 pp);
- Rebuttal Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of Intervenors Friends of The Columbia Gorge & Save Our Scenic Area (2010; 6 pp);
- Prefiled Direct Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of

Intervenors Friends of the Columbia Gorge & Save Our Scenic Area. Comments on Whistling Ridge Wind Energy Power Project DEIS, Skamania County, Washington (2010; 41 pp);

- Evaluation of Klickitat County's Decisions on the Windy Flats West Wind Energy Project (2010; 17 pp);
- St. John's Church Project Draft Environmental Impact Report (2010; 14 pp.);
- Initial Study/Mitigated Negative Declaration for Results Radio Zone File #2009-001 (2010; 20 pp);
- Rio del Oro Specific Plan Project Final Environmental Impact Report (2010;12 pp);
- Answers to Questions on 33% RPS Implementation Analysis Preliminary Results Report (2009: 9 pp);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Second Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Dec 2008; 17 pp);
- Comments on Draft 1A Summary Report to CAISO (2008; 10 pp);
- County of Placer's Categorical Exemption of Hilton Manor Project (2009; 9 pp);
- Protest of CARE to Amendment to the Power Purchase and Sale Agreement for Procurement of Eligible Renewable Energy Resources Between Hatchet Ridge Wind LLC and PG&E (2009; 3 pp);
- Tehachapi Renewable Transmission Project EIR/EIS (2009; 142 pp);
- Delta Shores Project EIR, south Sacramento (2009; 11 pp + addendum 2 pp);
- Declaration of Shawn Smallwood in Support of Care's Petition to Modify D.07-09-040 (2008; 3 pp);
- The Public Utility Commission's Implementation Analysis December 16 Workshop for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 9 pp);
- The Public Utility Commission's Implementation Analysis Draft Work Plan for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 11 pp);
- Draft 1A Summary Report to California Independent System Operator for Planning Reserve Margins (PRM) Study (2008; 7 pp.);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Sep 2008; 16 pp);
- California Energy Commission's Preliminary Staff Assessment of the Colusa Generating Station (2007; 24 pp);
- Rio del Oro Specific Plan Project Recirculated Draft Environmental Impact Report (2008: 66 pp);
- Replies to Response to Comments Re: Regional University Specific Plan Environmental Impact Report (2008; 20 pp);
- Regional University Specific Plan Environmental Impact Report (2008: 33 pp.);
- Clark Precast, LLC's "Sugarland" project, Negative Declaration (2008: 15 pp.);
- Cape Wind Project Draft Environmental Impact Statement (2008; 157 pp.);
- Yuba Highlands Specific Plan (or Area Plan) Environmental Impact Report (2006; 37 pp.);
- Replies to responses to comments on Mitigated Negative Declaration of the proposed

Mining Permit (MIN 04-01) and Modification of Use Permit 96-02 at North Table Mountain (2006; 5 pp);

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- Windy Point Wind Farm Environmental Review and EIS (2006; 14 pp and 36 Powerpoint slides in reply to responses to comments);
- Shiloh I Wind Power Project EIR (2005; 18 pp);
- Buena Vista Wind Energy Project Notice of Preparation of EIR (2004; 15 pp);
- Negative Declaration of the proposed Callahan Estates Subdivision (2004; 11 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 9 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 13 pp);
- Negative Declaration of the proposed Creekside Highlands Project, Tract 7270 (2004; 21 pp);
- On the petition California Fish and Game Commission to list the Burrowing Owl as threatened or endangered (2003; 10 pp);
- Conditional Use Permit renewals from Alameda County for wind turbine operations in the Altamont Pass Wind Resource Area (2003; 41 pp);
- UC Davis Long Range Development Plan of 2003, particularly with regard to the Neighborhood Master Plan (2003; 23 pp);
- Anderson Marketplace Draft Environmental Impact Report (2003: 18 pp + 3 plates of photos);
- Negative Declaration of the proposed expansion of Temple B'nai Tikyah (2003: 6 pp);
- Antonio Mountain Ranch Specific Plan Public Draft EIR (2002: 23 pp);
- Response to testimony of experts at the East Altamont Energy Center evidentiary hearing on biological resources (2002: 9 pp);
- Revised Draft Environmental Impact Report, The Promenade (2002: 7 pp);
- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002: 3 pp);
- UC Merced -- Declaration of Dr. Shawn Smallwood in support of petitioner's application for temporary restraining order and preliminary injunction (2002: 5 pp);
- Replies to response to comments in Final Environmental Impact Report, Atwood Ranch Unit III Subdivision (2003: 22 pp);
- Draft Environmental Impact Report, Atwood Ranch Unit III Subdivision (2002: 19 pp + 8 photos on 4 plates);
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002: 17 pp + 3 photos; follow-up report of 3 pp);
- Initial Study and Negative Declaration, Silver Bend Apartments, Placer County (2002: 13 pp);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001: 26 pp);
- Initial Study, Colusa County Power Plant (2001: 6 pp);
- Comments on Proposed Dog Park at Catlin Park, Folsom, California (2001: 5 pp + 4 photos);
- Pacific Lumber Co. (Headwaters) Habitat Conservation Plan and Environmental Impact Report (1998: 28 pp);
- Final Environmental Impact Report/Statement for Issuance of Take authorization for listed

species within the MSCP planning area in San Diego County, California (Fed. Reg. 62 (60): 14938, San Diego Multi-Species Conservation Program) (1997: 10 pp);

- Permit (PRT-823773) Amendment for the Natomas Basin Habitat Conservation Plan, Sacramento, CA (Fed. Reg. 63 (101): 29020-29021) (1998);
- Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). (Fed. Reg. 64(176): 49497-49498) (1999: 8 pp);
- Review of the Draft Recovery Plan for the Arroyo Southwestern Toad (*Bufo microscaphus californicus*) (1998);
- Ballona West Bluffs Project Environmental Impact Report (1999: oral presentation);
- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Negative Declaration for the Sunset Skyranch Airport Use Permit (1999);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000: 10 pp);
- California Energy Commission's Final Staff Assessment of the proposed Metcalf Energy Center (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000: 4 pp);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11 pp);
- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7 pp);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9 pp).

Comments on other Environmental Review Documents:

- Proposed Regulation for California Fish and Game Code Section 3503.5 (2015: 12 pp);
- Statement of Overriding Considerations related to extending Altamont Winds, Inc.'s Conditional Use Permit PLN2014-00028 (2015; 8 pp);
- Draft Program Level EIR for Covell Village (2005; 19 pp);
- Bureau of Land Management Wind Energy Programmatic EIS Scoping document (2003: 7 pp.);
- NEPA Environmental Analysis for Biosafety Level 4 National Biocontainment Laboratory (NBL) at UC Davis (2003: 7 pp);
- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8 pp.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35 pp.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2 pp.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7 pp.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10 pp.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7 pp.);

- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);
- Davis General Plan Update EIR (2000);
- Turn of the Century EIR (1999: 10 pp);
- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999; 2 pp + attachments);
- Covell Center Project EIR and EIR Supplement (1997).

Position Statements I prepared the following position statements for the Western Section of The Wildlife Society, and one for nearly 200 scientists:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No. 103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Posters at Professional Meetings

Leyvas, E. and K. S. Smallwood. 2015. Rehabilitating injured animals to offset and rectify wind project impacts. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S., J. Mount, S. Standish, E. Leyvas, D. Bell, E. Walther, B. Karas. 2015. Integrated detection trials to improve the accuracy of fatality rate estimates at wind projects. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S. and C. G. Thelander. 2005. Lessons learned from five years of avian mortality research in the Altamont Pass WRA. AWEA conference, Denver, May 2005.

Neher, L., L. Wilder, J. Woo, L. Spiegel, D. Yen-Nakafugi, and K.S. Smallwood. 2005. Bird's eye view on California wind. AWEA conference, Denver, May 2005.

Smallwood, K. S., C. G. Thelander and L. Spiegel. 2003. Toward a predictive model of avian

fatalities in the Altamont Pass Wind Resource Area. Windpower 2003 Conference and Convention, Austin, Texas.

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Presentations at Professional Meetings and Seminars

Repowering the Altamont Pass. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area, 1999-2007. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Conservation and recovery of burrowing owls in Santa Clara Valley. Santa Clara Valley Habitat Agency, Newark, California, 3 February 2017.

Mitigation of Raptor Fatalities in the Altamont Pass Wind Resource Area. Raptor Research Foundation Meeting, Sacramento, California, 6 November 2015.

From burrows to behavior: Research and management for burrowing owls in a diverse landscape. California Burrowing Owl Consortium meeting, 24 October 2015, San Jose, California.

The Challenges of repowering. Keynote presentation at Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 10 March 2015.

Research Highlights Altamont Pass 2011-2015. Scientific Review Committee, Oakland, California, 8 July 2015.

Siting wind turbines to minimize raptor collisions: Altamont Pass Wind Resource Area. US Fish and Wildlife Service Golden Eagle Working Group, Sacramento, California, 8 January 2015.

Evaluation of nest boxes as a burrowing owl conservation strategy. Sacramento Chapter of the Western Section, The Wildlife Society. Sacramento, California, 26 August 2013.

Predicting collision hazard zones to guide repowering of the Altamont Pass. Conference on wind

power and environmental impacts. Stockholm, Sweden, 5-7 February 2013.

Impacts of Wind Turbines on Wildlife. California Council for Wildlife Rehabilitators, Yosemite, California, 12 November 2012.

Impacts of Wind Turbines on Birds and Bats. Madrone Audubon Society, Santa Rosa, California, 20 February 2012.

Comparing Wind Turbine Impacts across North America. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Alameda County Scientific Review Committee meeting, 17 February 2011

Comparing Wind Turbine Impacts across North America. Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 3 May 2011.

Update on Wildlife Impacts in the Altamont Pass Wind Resource Area. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Raptor Symposium, The Wildlife Society - Western Section, Riverside, California, February 2011.

Wildlife mortality caused by wind turbine collisions. Ecological Society of America, Pittsburgh, Pennsylvania, 6 August 2010.

Map-based repowering and reorganization of a wind farm to minimize burrowing owl fatalities. California burrowing Owl Consortium Meeting, Livermore, California, 6 February 2010.

Environmental barriers to wind power. Getting Real About Renewables: Economic and Environmental Barriers to Biofuels and Wind Energy. A symposium sponsored by the Environmental & Energy Law & Policy Journal, University of Houston Law Center, Houston, 23 February 2007.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Meeting with Japan Ministry of the Environment and Japan Ministry of the Economy, Wild Bird Society of Japan, and other NGOs Tokyo, Japan, 9 November 2006.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Symposium on bird collisions with wind turbines. Wild Bird Society of Japan, Tokyo, Japan, 4 November 2006.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. California Society for Ecological Restoration (SERCAL) 13th Annual Conference, UC Santa

Barbara, 27 October 2006.

Fatality associations as the basis for predictive models of fatalities in the Altamont Pass Wind Resource Area. EEI/APLIC/PIER Workshop, 2006 Biologist Task Force and Avian Interaction with Electric Facilities Meeting, Pleasanton, California, 28 April 2006.

Burrowing owl burrows and wind turbine collisions in the Altamont Pass Wind Resource Area. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, February 8, 2006.

Mitigation at wind farms. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Incorporating data from the California Wildlife Habitat Relationships (CWHR) system into an impact assessment tool for birds near wind farms. Shawn Smallwood, Kevin Hunting, Marcus Yee, Linda Spiegel, Monica Parisi. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Toward indicating threats to birds by California's new wind farms. California Energy Commission, Sacramento, May 26, 2005.

Avian collisions in the Altamont Pass. California Energy Commission, Sacramento, May 26, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. EPRI Environmental Sector Council, Monterey, California, February 17, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Associations between avian fatalities and attributes of electric distribution poles in California. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Minimizing avian mortality in the Altamont Pass Wind Resources Area. UC Davis Wind Energy Collaborative Forum, Palm Springs, California, December 14, 2004.

Selecting electric distribution poles for priority retrofitting to reduce raptor mortality. Raptor Research Foundation Meeting, Bakersfield, California, November 10, 2004.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. Annual Meeting of the Society for Ecological Restoration, South Lake Tahoe, California, October 16, 2004.

Lessons learned from five years of avian mortality research at the Altamont Pass Wind Resources Area in California. The Wildlife Society Annual Meeting, Calgary, Canada, September 2004.

The ecology and impacts of power generation at Altamont Pass. Sacramento Petroleum Association,

Sacramento, California, August 18, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Consortium meeting, Hayward, California, February 7, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Symposium, Sacramento, November 2, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. National Wind Coordinating Committee, Washington, D.C., November 17, 2003.

Raptor Behavior at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. National Wind Coordinating Committee, Carmel, California, May, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

“No Surprises” -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion; Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Berlin, Germany, March 2015.

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Stockholm, Sweden, February 2013.

- Workshop co-presenter at Birds & Wind Energy Specialist Group (BAWESG) Information sharing week, Bird specialist studies for proposed wind energy facilities in South Africa, Endangered Wildlife Trust, Darling, South Africa, 3-7 October 2011.

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 2-5 May 2011.

- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.

- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.

- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Printed Mass Media

Smallwood, K.S., D. Mooney, and M. McGuinness. 2003. We must stop the UCD biolab now. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2002. Spring Lake threatens Davis. Op-Ed to the Davis Enterprise.

Smallwood, K.S. Summer, 2001. Mitigation of habitation. The Flatlander, Davis, California.

Entrikan, R.K. and K.S. Smallwood. 2000. Measure O: Flawed law would lock in new taxes. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2000. Davis delegation lobbies Congress for Wildlife conservation. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 1998. Davis Visions. The Flatlander, Davis, California.

Smallwood, K.S. 1997. Last grab for Yolo's land and water. The Flatlander, Davis, California.

Smallwood, K.S. 1997. The Yolo County HCP. Op-Ed to the Davis Enterprise.

Radio/Television

PBS News Hour,

FOX News, Energy in America: Dead Birds Unintended Consequence of Wind Power Development, August 2011.

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Mountain lion attacks (with guest Professor Richard Coss). 23 April 2009;

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Wind farm Rio Vista Renewable Power. 4 September 2008;

KQED QUEST Episode #111. Bird collisions with wind turbines. 2007;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. December 27, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. May 3, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. February 8, 2001;

KDVS Speaking in Tongues (host Ron Glick & Shawn Smallwood), California Energy Crisis: 1 hour. Jan. 25, 2001;

KDVS Speaking in Tongues (host Ron Glick), Headwaters Forest HCP: 1 hour. 1998;

Davis Cable Channel (host Gerald Heffernon), Burrowing owls in Davis: half hour. June, 2000;

Davis Cable Channel (hosted by Davis League of Women Voters), Measure O debate: 1 hour. October, 2000;

KXTV 10, In Your Interest, The Endangered Species Act: half hour. 1997.

Reviews of Journal Papers (Scientific journals for whom I've provided peer review)

Journal	**Journal**
American Naturalist	Journal of Animal Ecology
Journal of Wildlife Management	Western North American Naturalist
Auk	Journal of Raptor Research
Biological Conservation	National Renewable Energy Lab reports
Canadian Journal of Zoology	Oikos
Ecosystem Health	The Prairie Naturalist
Environmental Conservation	Restoration Ecology
Environmental Management	Southwestern Naturalist
Functional Ecology	The Wildlife Society--Western Section Trans.
Journal of Zoology (London)	Proc. Int. Congress on Managing for Ecosystem Health
Journal of Applied Ecology	Transactions in GIS
Ecology	Tropical Ecology
Wildlife Society Bulletin	Peer J
Biological Control	The Condor

Committees

- Scientific Review Committee, Alameda County, Altamont Pass Wind Resource Area
- Ph.D. Thesis Committee, Steve Anderson, University of California, Davis
- MS Thesis Committee, Marcus Yee, California State University, Sacramento

Other Professional Activities or Products

Testified in Federal Court in Denver during 2005 over the fate of radio-nuclides in the soil at Rocky Flats Plant after exposure to burrowing animals. My clients won a judgment of $553,000,000. I have also testified in many other cases of litigation under CEQA, NEPA, the Warren-Alquist Act, and other environmental laws. My clients won most of the cases for which I testified.

Testified before Environmental Review Tribunals in Ontario, Canada regarding proposed White Pines, Amherst Island, and Fairview Wind Energy projects.

Testified in Skamania County Hearing in 2009 on the potential impacts of zoning the County for development of wind farms and hazardous waste facilities.

Testified in deposition in 2007 in the case of O'Dell et al. vs. FPL Energy in Houston, Texas.

Testified in Klickitat County Hearing in 2006 on the potential impacts of the Windy Point Wind Farm.

Memberships in Professional Societies

The Wildlife Society
Raptor Research Foundation

Honors and Awards

Fulbright Research Fellowship to Indonesia, 1987
J.G. Boswell Full Academic Scholarship, 1981 college of choice
Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001
Northern California Athletic Association Most Valuable Cross Country Runner, 1984
American Legion Award, Corcoran High School, 1981, and John Muir Junior High, 1977
CIF Section Champion, Cross Country in 1978
CIF Section Champion, Track & Field 2 mile run in 1981
National Junior Record, 20 kilometer run, 1982
National Age Group Record, 1500 meter run, 1978

Community Activities

District 64 Little League Umpire, 2003-2007
Dixon Little League Umpire, 2006-07
Davis Little League Chief Umpire and Board member, 2004-2005
Davis Little League Safety Officer, 2004-2005
Davis Little League Certified Umpire, 2002-2004
Davis Little League Scorekeeper, 2002
Davis Visioning Group member
Petitioner for Writ of Mandate under the California Environmental Quality Act against City of Woodland decision to approve the Spring Lake Specific Plan, 2002
Served on campaign committees for City Council candidates

Representative Clients/Funders

Law Offices of Stephan C. Volker
Blum Collins, LLP
Eric K. Gillespie Professional Corporation
Law Offices of Berger & Montague
Lozeau | Drury LLP
Law Offices of Roy Haber
Law Offices of Edward MacDonald
Law Office of John Gabrielli
Law Office of Bill Kopper
Law Office of Donald B. Mooney
Law Office of Veneruso & Moncharsh
Law Office of Steven Thompson
Law Office of Brian Gaffney
California Wildlife Federation
Defenders of Wildlife
Sierra Club
National Endangered Species Network
Spirit of the Sage Council
The Humane Society
Hagens Berman LLP
Environmental Protection Information Center
Goldberg, Kamin & Garvin, Attorneys at Law
Californians for Renewable Energy (CARE)
Seatuck Environmental Association
Friends of the Columbia Gorge, Inc.
Save Our Scenic Area
Alliance to Protect Nantucket Sound
Friends of the Swainson's Hawk
Alameda Creek Alliance
Center for Biological Diversity
California Native Plant Society
Endangered Wildlife Trust
and BirdLife South Africa
AquAlliance
Oregon Natural Desert Association
Save Our Sound
G3 Energy and Pattern Energy
Emerald Farms
Pacific Gas & Electric Co.
Southern California Edison Co.
Georgia-Pacific Timber Co.
Northern Territories Inc.
David Magney Environmental Consulting
Wildlife History Foundation
NextEra Energy Resources, LLC
Ogin, Inc.
EDF Renewables
National Renewable Energy Lab
Altamont Winds LLC
Salka Energy
Comstocks Business (magazine)
BioResource Consultants
Tierra Data
Black and Veatch
Terry Preston, Wildlife Ecology Research Center
EcoStat, Inc.
US Navy
US Department of Agriculture
US Forest Service
US Fish & Wildlife Service
US Department of Justice
California Energy Commission
California Office of the Attorney General
California Department of Fish & Wildlife
California Department of Transportation
California Department of Forestry
California Department of Food & Agriculture
Ventura County Counsel
County of Yolo
Tahoe Regional Planning Agency
Sustainable Agriculture Research & Education Program
Sacramento-Yolo Mosquito and Vector Control District
East Bay Regional Park District
County of Alameda
Don & LaNelle Silverstien
Seventh Day Adventist Church
Escuela de la Raza Unida
Susan Pelican and Howard Beeman
Residents Against Inconsistent Development, Inc.
Bob Sarvey
Mike Boyd
Hillcroft Neighborhood Fund
Joint Labor Management Committee, Retail Food Industry
Lisa Rocca
Kevin Jackson
Dawn Stover and Jay Letto
Nancy Havassy
Catherine Portman (for Brenda Cedarblade)
Ventus Environmental Solutions, Inc.
Panorama Environmental, Inc.
Adams Broadwell Professional Corporation

Representative special-status species experience

Common name	Species name	Description
Field experience		
California red-legged frog	*Rana aurora draytonii*	Protocol searches; Many detections
Foothill yellow-legged frog	*Rana boylii*	Presence surveys; Many detections
Western spadefoot	*Spea hammondii*	Presence surveys; Few detections
California tiger salamander	*Ambystoma californiense*	Protocol searches; Many detections
Coast range newt	*Taricha torosa torosa*	Searches and multiple detections
Blunt-nosed leopard lizard	*Gambelia sila*	Detected in San Luis Obispo County
California horned lizard	*Phrynosoma coronatum frontale*	Searches; Many detections
Western pond turtle	*Clemmys marmorata*	Searches; Many detections
San Joaquin kit fox	*Vulpes macrotis mutica*	Protocol searches; detections
Sumatran tiger	*Panthera tigris*	Track surveys in Sumatra
Mountain lion	*Puma concolor californicus*	Research and publications
Point Arena mountain beaver	*Aplodontia rufa nigra*	Remote camera operation
Giant kangaroo rat	*Dipodomys ingens*	Detected in Cholame Valley
San Joaquin kangaroo rat	*Dipodomys nitratoides*	Monitoring & habitat restoration
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*	Non-target captures and mapping of dens
Salt marsh harvest mouse	*Reithrodontomys raviventris*	Habitat assessment, monitoring
Salinas harvest mouse	*Reithrodontomys megalotus distichlus*	Captures; habitat assessment
Bats		Thermal imaging surveys
California clapper rail	*Rallus longirostris*	Surveys and detections
Golden eagle	*Aquila chrysaetos*	Numerical & behavioral surveys
Swainson's hawk	*Buteo swainsoni*	Numerical & behavioral surveys
Northern harrier	*Circus cyaeneus*	Numerical & behavioral surveys
White-tailed kite	*Elanus leucurus*	Numerical & behavioral surveys
Loggerhead shrike	*Lanius ludovicianus*	Large area surveys
Least Bell's vireo	*Vireo bellii pusillus*	Detected in Monterey County
Willow flycatcher	*Empidonax traillii extimus*	Research at Sierra Nevada breeding sites
Burrowing owl	*Athene cunicularia hypugia*	Numerical & behavioral surveys
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Monitored success of relocation and habitat restoration
Analytical		
Arroyo southwestern toad	*Bufo microscaphus californicus*	Research and report.
Giant garter snake	*Thamnophis gigas*	Research and publication
Northern goshawk	*Accipiter gentilis*	Research and publication
Northern spotted owl	*Strix occidentalis*	Research and reports
Alameda whipsnake	*Masticophis lateralis euryxanthus*	Expert testimony