



Jan 19, 2026

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Re: Proposed Housing Development Project “Dexter Village” on Dexter Ave.

Dear Lake Elsinore Planning Commission,

The California Housing Defense Fund (“CalHDF”) submits this letter to remind the City of its obligation to abide by all relevant state laws when evaluating the proposed 451-unit housing development project at Dexter Avenue Between Second Street and Third Street, which includes 22 very low-income units. These laws include the Housing Accountability Act (“HAA”), and the Density Bonus Law (“DBL”).

The HAA provides the project legal protections. It requires approval of zoning and general plan compliant housing development projects unless findings can be made regarding specific, objective, written health and safety hazards. (Gov. Code, § 65589.5, subd. (j).) The HAA also bars cities from imposing conditions on the approval of such projects that would reduce the project’s density unless, again, such written findings are made. (*Ibid.*) As a development with at least two-thirds of its area devoted to residential uses, the project falls within the HAA’s ambit, and it complies with local zoning code and the City’s general plan. Increased density, concessions, and waivers that a project is entitled to under the DBL (Gov. Code, § 65915) do not render the project noncompliant with the zoning code or general plan, for purposes of the HAA (Gov. Code, § 65589.5, subd. (j)(3)). The HAA’s protections therefore apply, and the City may not reject the project except based on health and safety standards, as outlined above. Furthermore, if the City rejects the project or impairs its feasibility, it must conduct “a thorough analysis of the economic, social, and environmental effects of the action.” (*Id.* at subd. (b).)

CalHDF also writes to emphasize that the DBL offers the proposed development certain protections. The City must respect these protections. In addition to granting the increase in residential units allowed by the DBL, the City must not deny the project the proposed waivers and concessions with respect to parking including parking setbacks, drive aisle width, block wall height, separation between single-family structures, location of trash enclosures for apartments, privacy, and minimum lot area. If the City wishes to deny requested waivers, Government Code section 65915, subdivision (e)(1) requires findings that the waivers would have a specific, adverse impact upon health or safety, and for which there is no feasible method to satisfactorily mitigate or avoid the specific adverse impact. If the City wishes to deny requested concessions, Government Code section 65915, subdivision (d)(1) requires findings that the concessions would not result in identifiable and actual cost reductions, that the concessions would have a specific, adverse impact on public health or safety, or that the concessions are contrary to state or federal law. The City, if it makes any such findings, bears the burden of proof. (Gov. Code, § 65915, subd. (d)(4).) Of note, the DBL specifically allows for a reduction in required accessory parking in addition to the allowable waivers and concessions. (*Id.* at subd. (p).) Additionally, the California Court of Appeal has ruled that when an applicant has requested one or more waivers and/or concessions pursuant to the DBL, the City “may not apply any development standard that would physically preclude construction of that project as designed, even if the building includes ‘amenities’ beyond the bare minimum of building components.” (*Bankers Hill 150 v. City of San Diego* (2022) 74 Cal.App.5th 755, 775.)

The Commission should be aware that should the City deny the project, and face a lawsuit, it may bear a severe financial burden pursuant to the HAA and DBL. If the City is found to have violated the HAA, it will be liable for attorney’s fees and cost of suit (See Gov. Code, § 65589.5, subd. (k)(1)(A)(ii)) in addition to other penalties. (See *id.* at subd. (k)(1)(B).) If a court finds that the City wrongfully denied requested waivers and concessions pursuant to the DBL, it will be liable for attorney’s fees and costs of suit pursuant to Government Code section 65915, subdivisions (d)(3) and (e)(1). As an example, the City of Berkeley was recently [forced to pay](#) \$4 million after wrongfully denying a housing development project.

In addition to the provisions cited above, the HAA allows housing organizations like CalHDF to bring an enforcement suit. (Gov. Code, § 65589.5, subd. (k)(2).) If an enforcement lawsuit brought by a housing organization is successful, the locality must pay the organization’s attorney’s fees and costs. (*Ibid.*)

As you are well aware, California remains in the throes of a statewide crisis-level housing shortage. New housing such as this is a public benefit: by providing affordable housing, it will mitigate the state’s homelessness crisis; it will increase the city’s tax base; it will bring new customers to local businesses; and it will reduce displacement of existing residents by reducing competition for existing housing. While no one project will solve the statewide

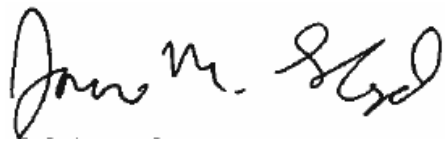
housing crisis, the proposed development is a step in the right direction. CalHDF urges the City to approve it, consistent with its obligations under state law.

CalHDF is a 501(c)(3) non-profit corporation whose mission includes advocating for increased access to housing for Californians at all income levels, including low-income households. You may learn more about CalHDF at www.calhdf.org.

Sincerely,



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January 16, 2026

Via Email

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**Re: SAFER Comment on Mitigated Negative Declaration
Dexter Village Project (Application No. 2024-15)
Planning Commission Agenda Item 6.5 (Jan. 20, 2026)**

To Chair Gray and Honorable Planning Commissioners:

This comment is submitted on behalf of Supporters Alliance For Environmental Responsibility (“SAFER”) regarding the mitigated negative declaration (“MND”), consisting of the Draft MND released in September 2025 and the Final MND released in October 2025, prepared for the Dexter Village Project (Application No. 2024-15) (“Project”) to be heard as Agenda Item 6.5 at the Planning Commission’s January 20, 2026 meeting.

SAFER is concerned that approval of the Project and MND will violate the California Environmental Quality Act (“CEQA”) by failing to prepare a full environmental impact report (“EIR”) despite a fair argument that the Project may result in significant impacts to biological resources, human health, and air quality. Furthermore, the MND fails to provide substantial evidence that the above impacts will be less than significant.

SAFER’s review of the MND was assisted by expert ecologist Dr. Shawn Smallwood,

Ph.D., air quality expert Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise (“SWAPE”). The written comments and CVs of Dr. Smallwood and Dr. Rosenfeld are attached hereto as **Exhibit A** and **Exhibit B**, respectively.

CEQA requires that an EIR be prepared instead of an MND if there is any substantial evidence that the Project may result in a significant impact, even if there is other contrary evidence. As discussed below, SAFER, with the assistance of the experts listed above, have roundly met that threshold. For that reason, SAFER respectfully requests that the Planning Commission refrain from recommending approval of the Project and MND to the City Council at this time and, instead, direct staff to prepare an EIR prior to further consideration of this Project.

PROJECT DESCRIPTION

The Dexter Village Project proposes a 451-unit residential development with 137 single-family units, 230 apartment units, and 84 townhomes on a 23.05-acre property located along Dexter Avenue between Second Street and Third Street in Lake Elsinore. on a 77.3 gross acre (66.3 net acre) site located south of Frank Sinatra Drive and west of Portola Avenue at Assessor Parcel Number (APN) 620-170-009. The Project site is undeveloped and surrounded by commercial retail and vacant land to the north, undeveloped land to the east and west, and an RV park to the south. Interstate 15 is located approximately 550 feet to the west and State Route 74 is approximately 1,300 feet to the north.

The Project requires a Tentative Tract Map (TTM-2024-05), Conditional Use Permit (CUP-2024-08), and Residential Design Review (RDR-2024-07). TTM-2024-05 would subdivide the 23.05-acre project site into separate lots for single-family and multi-family residential development. Development would occur in two phases. The first phase consists of the single-family residential development on 16.40 acres on the central and southern portions of the site. The second phase consists of the multi-family residential development on 6.65 acres on the northern portion of the site.

LEGAL STANDARD FOR NEGATIVE DECLARATIONS

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

Env't v. Cal. Res. Agency (2002) 103 Cal.App.4th 98, 109.)

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

An EIR is required if “there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment.” (PRC § 21080(d); see also *Pocket Protectors, supra*, 124 Cal.App.4th at 927.) An MND instead of an EIR is proper only if project revisions would avoid or mitigate the potentially significant effects identified in the initial study “to a point where clearly no significant effect on the environment would occur, and . . . there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.” (*Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 331 [quoting PRC §§ 21064.5, 21080(c)(2)].) In that context, “may” means a reasonable possibility of a significant effect on the environment. (PRC §§ 21082.2(a), 21100, 21151(a); *Pocket Protectors, supra*, 124 Cal.App.4th at 927; *League for Protection of Oakland's etc. Historic Res. v. City of Oakland* (1997) 52 Cal.App.4th 896, 904-05.)

An EIR must be prepared rather than an MND “whenever it can be fairly argued on the basis of substantial evidence that the project may have a significant environmental impact.” (*No Oil, Inc. v City of Los Angeles* (1974) 13 Cal.3d 68, 75.) Under this “fair argument” standard, an EIR is required if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency’s decision. (14 CCR § 15064(f)(1); *Pocket Protectors, supra*, 124 Cal.App.4th at 931; *Stanislaus Audubon Society v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150-51; *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1602.) The “fair argument” standard creates a “low threshold” favoring environmental review through an EIR rather than through issuance of negative declarations or notices of exemption from CEQA. (*Pocket Protectors, supra*, 124 Cal.App.4th at 928.)

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

This ‘fair argument’ standard is very different from the standard normally followed by public agencies in making administrative determinations.

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

(Kostka & Zishcke, *Practice Under CEQA*, §6.29, pp. 273-74.) The Courts have explained that “it is a question of law, not fact, whether a fair argument exists, and the courts owe no deference to the lead agency’s determination. Review is de novo, with a preference for resolving doubts in favor of environmental review.” (*Pocket Protectors, supra*, 124 Cal.App.4th at 928.)

DISCUSSION

I. An EIR is Required Due to a Fair Argument that the Project May Result in Significant Impacts to Biological Resources.

Expert wildlife biologist Dr. Shawn Smallwood, Ph.D., found several deficiencies in the MND’s analysis of the Project’s impacts to biological resources. Dr. Smallwood’s comment and CV are attached as **Exhibit A**. As discussed below, Dr. Smallwood concluded: (1) the MND failed to accurately assess baseline conditions for wildlife at the Project site; (2) the MND failed to assess or mitigate the Project’s potentially significant impacts to wildlife from habitat loss, movement impacts, traffic-wildlife collisions, house cat predation, bird-window collisions, and cumulative impacts; and (3) the MND’s mitigation measures are inadequate.

A. The MND fails to adequately assess the baseline conditions for biological resources on the Project site.

Dr. Smallwood’s associate, Noriko Smallwood, a wildlife biologist with an M.S. degree from California State University Los Angeles, visited the Project site to survey wildlife during daytime and evening on November 28 and December 2, 2025 (Ex. A, p. 2.) During those visits, Ms. Smallwood “walked the site’s perimeter where accessible, stopping to scan for wildlife with use of binoculars. At night, [she] strapped a Pettersson M500 acoustic bat detector to a 10-foot pole, and cabled the detector to her computer, which ran Sonobat Live.” (*Id.*)

Ms. Smallwood detected thirty-three (33) different vertebrate species, eight (8) of which Dr. Smallwood has determined are “special status” species. (Ex. A, p. 3.) These special status species include: (1) Allen’s hummingbird (USFWS Bird of Conservation Concern); (2) Red-tailed hawk (Bird of Prey); (3) American kestrel (Bird of Prey); (4) Nuttall’s woodpecker (USFWS Bird of Conservation Concern), and (5) California horned lark (MSHCP; CDFW

Watch List). Ms. Smallwood also detected a canyon bat (Western Bat Working Group-Moderate) and potentially a hoary bat (Western Bat Working Group- Moderate). (*Id.*, pp. 8-9.)

In contrast, the surveys conducted for the MND detected only thirteen (13) species total, none of which the MND found to be “special status.” (Ex. A, p. 13.) The fact that the MND’s surveys detected a fraction of the species detected by Ms. Smallwood underscores the inadequacy of the MND’s analysis and the need for an EIR with more robust surveys. (See *id.*, pp. 13-16.) Indeed, Dr. Smallwood calculated that more thorough site visits would reveal an even greater diversity of wildlife. (*Id.*, pp. 9-12.) Given more time to survey the site, Dr. Smallwood’s predicts that upwards of 111 species of wildlife, including 21 special-status wildlife species, would be observed on site. (*Id.*, p. 11.) Based on his review of the MND and the site visits, Dr. Smallwood concluded, “the project site is indicative of a relatively species-rich wildlife community that warrants a serious survey effort.” (*Id.*)

In addition to the MND’s inadequate wildlife surveys, the MND’s review of available wildlife databases to identify which species are known to have occurred at or near the Project site was inadequate. (Ex. A, pp. 17-19.) The MND relied on the California Natural Diversity Data Base (“CNDDDB”) to determine which species have potential to occur in the Project area. (*Id.*, p. 17.) However, as Dr. Smallwood explains:

[T]he CNDDDB is interested only in the findings of special-status species, which means that species more recently assigned special status will have been reported many fewer times to the CNDDDB than were species assigned special status since the inception of the CNDDDB. Therefore, occurrence records in the CNDDDB are most abundant for species assigned special status decades ago, but fewest for species only recently assigned special status. And because negative findings are not reported to the CNDDDB, the CNDDDB is also inappropriate as a basis for weighting occurrence likelihoods such as absent, not expected, unlikely, low, moderate or high. Whereas the CNDDDB can be confirmatory of species presence, it cannot support absence determinations or assignments of low likelihood of occurrence. And again, the screening out of a species due to lack of occurrence records in the CNDDDB is the same as an absence determination, and this step is being taken without adequate support of field surveys.

(*Id.*, p. 18.)

Based on available databases (including CNDDDB, iNaturalist, and eBird) and site visits, Dr. Smallwood found that “152 special-status species of wildlife are known to occur near enough to the site to warrant analysis of occurrence potential.” (Ex. A, p. 18.) The MND’s Biological Report only analyzed the occurrence potential for 33 special-status species, which amounts to only 22% of the special-status species identified by Dr. Smallwood. (*Id.*) Therefore, the MND screened out 118 of the special-status species known to occur at or near the Project site from further review. (*Id.*) For the 33 special-status species that were analyzed, the MND claims that all

but three have low/no potential to occur on site, even though eight of those species “have been recorded within 1.5 miles of the site, and another three species have been recorded within 1.5 and 4 miles of the site.” (*Id.*, p. 19.) Further analysis is needed in a revised MND or EIR to address possible impacts to those species before determining that the Project will not result in significant impacts.

B. The MND failed to disclose and mitigate the Project’s impacts on habitat loss, wildlife movement, traffic-wildlife collisions, cat predation, bird-window collisions, and cumulative impact.

Dr. Smallwood found that the MND failed to adequately discuss numerous significant impacts that the Project may have on biological resources, including habitat loss, wildlife movement, traffic-wildlife collisions, cat predation, bird-window collisions, and cumulative impacts. (Ex. A, pp. 28-42.) Dr. Smallwood’s analysis of the impacts to wildlife constitutes a fair argument that the Project may have significant unmitigated impacts. As such, an EIR is required prior to approval of the Project.

1. Habitat loss and fragmentation

The MND failed to account for the reduction in productive capacity for wildlife that will result from habitat loss. As Dr. Smallwood explains, “The site is proven to serve as habitat to at least 35 species of vertebrate wildlife.” (Ex. A, p. 29.) Dr. Smallwood calculates that the Project site contains approximately 214 nest sites for birds. (*Id.*)

As a result of habitat loss and fragmentation from the Project, Dr. Smallwood predicts that the loss of 214 nest sites corresponds to 861 fewer fledglings per year and an overall loss of 968 birds per year, most of which are protected by the federal Migratory Bird Treaty Act and California’s Migratory Bird Protection Act. (Ex. B, p. 29.) Dr. Smallwood concludes that “[t]he loss of 968 birds would easily qualify as an unmitigated significant impact.” (*Id.*) Dr. Smallwood’s analysis establishes a fair argument that an EIR is required for the Project, not an MND.

2. Wildlife Movement

The MND failed to adequately assess the Project’s impacts on wildlife movement. (Ex. A, p. 30) The MND admits that “[g]iven the location of Lake Elsinore within the City, there are a variety of birds that migrate seasonally through the City on the Pacific Flyway.” (MND, p. 36.) As Dr. Smallwood further explains, “The project site is situated within a valley feature that channels migratory birds along the Pacific Flyway, and to boot it is located near an important migratory destination in Lake Elsinore.” (Ex. A, p. 30.)

Despite the wildlife known to move through the area, the MND claims that impacts to wildlife movement will be less than significant because “[n]o known linkages or other potential

wildlife movement corridors or travel routes occur within the project area.” (MND, p. 38.) By focusing on known linkages or corridors, the MND ignores that “ the CEQA standard applies to all types of movement and not just the movement channeled by corridors .” (Ex. A, p. 30.) By focusing on “the red-herring question of whether the site occurs within a movement corridor,” the MND ignores that the species detected on the project site had at some point moved to the site or that, at a minimum, the Project site provides wildlife with stopover opportunities during migration or dispersal of young. (*Id.*)

Furthermore, the MND did not include any study design or specific field method to quantify or characterize wildlife movement across the project site. (Ex. A, p. 30.) Dr. Smallwood explains:

A simple program of observation, for example, would have been to perform timed surveys on stations located at intervals across the site, and to have had observers plot wildlife travel paths on handheld maps. Another would be to use a thermal-imaging camera to track and record animal movements at night, including terrestrial mammals, birds and bats. But [the MND] reports nothing like these types of observations, and its analysis of wildlife movement and whether the project would interfere with it is therefore limited to speculation. Speculation is an unsound basis for making important determinations.

(*Id.*) By failing to properly assess the Project’s impacts on wildlife movement, the MND “is incomplete, unsound, and misleading.” (*Id.*) As a result, the MND lacks substantial evidence to conclude that movement impacts will be less than significant.

3. Traffic-Wildlife Collisions

The MND fails to address the impacts to wildlife from collisions with traffic generated by the Project. This omission is important because, as Dr. Smallwood explains,

Vehicle collisions have accounted for the deaths of many thousands of amphibian, reptile, mammal, bird, and arthropod fauna, and the impacts have often been found to be significant at the population level (Forman et al. 2003). Across North America traffic impacts have taken devastating tolls on wildlife (Forman et al. 2003). In Canada, 3,562 birds were estimated killed per 100 km of road per year (Bishop and Brogan 2013), and the US estimate of avian mortality on roads is 2,200 to 8,405 deaths per 100 km per year, or 89 million to 340 million total per year (Loss et al. 2014). Local impacts can be more intense than nationally.

(Ex. A, p. 28.) According to the MND, the Project would result in 4,295,513 annual vehicle miles traveled (“VMT”). (*Id.*, p. 33.) Based on the Project’s annual VMT, Dr. Smallwood estimates that traffic from the Project will kill at least 1,827 vertebrates annually. (*Id.*) Especially due to the special-status species occurring and likely to occur at or near the Project, these collisions

represent a significant impact to wildlife that must be addressed, discussed, and mitigated in a revised MND or EIR.

4. House Cat Predation

The MND fails to account for the impact to wildlife from the introduction of domestic cats to the area. As Dr. Smallwood explains:

In 2012 there were 0.44 house cats per human in the USA, and 122 vertebrate animals were killed per cat, free-ranging members of which killed disproportionately larger numbers of vertebrate wildlife. The IS/MND predicts 1,660 new residents, but assuming the population is distributed proportional to square feet of floor space, then 36.7% (609) of new residents would dwell in apartments, and 1,051 would dwell in townhomes and single-family homes. This is important because Ma and McLeod (2023) found that only 15% of apartment owners allow their cats to roam free. The above rates of cat ownership applied to numbers of new residents who would allow their cats to roam free would predict 503 new free-ranging cats, which based on the findings of Loss et al. (2013) would kill 61,366 vertebrate wildlife per year.

(Ex. A, p. 35.)

Furthermore, cats introduce *Toxoplasma gondii*, which is “a parasite that can infect virtually all warm-blooded animals.” (Ex. A, p. 36.) *Toxoplasma gondii* can cause toxoplasmosis, which in severe cases can damage the brain, eyes, or other organs. (Center For Disease Control, About Toxoplasmosis, <https://www.cdc.gov/toxoplasmosis/about/index.html>.) Additionally, “[i]nfants infected [by *Toxoplasma gondii*] while still in the womb often have no symptoms at birth but can develop symptoms later in life.” (*Id.*)

Dr. Smallwood concludes that “[i]mpacts to wildlife from the introduction of house cats into the environment would be highly significant, and yet these impacts are not considered in the IS/MND.” (Ex. B, p. 36.) An EIR should be prepared that addresses this impact and to consider whether mitigating this impact is feasible through requirements on future residents constraining house cat ownership by, for example, requiring cats to remain indoors. (*Id.*)

5. Bird-Window Collisions.

The MND fails to account for the impact to bird species from collisions with the Project’s glass windows. The impacts from window collisions are important because such collisions “are often characterized as either the second or third largest source or human-caused bird mortality.” (Ex. A, p. 36.) Dr. Smallwood calculated that the Project would result in **757 bird deaths per year** due to collisions with the Project’s windows. (*Id.*, pp. 38-39.) Dr. Smallwood concludes, “Given the predicted level of bird-window collision mortality, and the lack of any proposed

mitigation, it is my opinion that the proposed project would result in potentially significant adverse biological impacts, including the unmitigated take of both terrestrial and aerial habitat of birds and other sensitive species.” (*Id.*, p. 39.) Dr. Smallwood’s analysis constitutes a fair argument that the City must prepare an EIR for this Project, not an MND.

6. Cumulative Impacts

The MND’s analysis of cumulative impacts to biological resources is flawed. The MND claims that cumulative impact will be rendered less than significant “through compliance with applicable permits (pursuant to the federal Clean Water Act, MBTA, federal Endangered Species Act, and California Endangered Species Act). . . .” (MND, p. 91.) However, the MND but it provides no explanation of how compliance with these permits would actually reduce impacts. Similarly, the MND claims that cumulative impacts will be reduced due to other projects also complying with general regulatory requirements. (*Id.*) However, “all previous projects that underwent CEQA review and which were subsequently developed presumably also obtained all their required permits, yet wildlife continued to decline . . . If the [MND]’s argument was sound, then there would be no purpose to the CEQA’s requirement for cumulative impacts analysis.” (*Id.*, pp. 39-40.) Indeed, Dr. Smallwood concludes that the MND’s logic “has been soundly refuted. (*Id.*, p. 40.)

Additionally, the MND makes the error of relying on the Western Riverside County MSHCP to conclude that cumulative impacts would be less than significant. (MND, p. 91.) However, the MND’s reliance on the MSHCP is not justified. The MND offers no explanation of how the MSHCP would reduce the specific cumulative impacts of this Project. Furthermore, the MND does not discuss any evidence of the effectiveness of the MSHCP at meeting its conservation goals. As of 2023, the MSHCP had fallen well short of its conservation goals, conserving only 44% of the goal acreage. (Ex. A, p. 41.) Furthermore, “[t]he evidence shows a dismal failure of the MSHCP to conserve burrowing owls, as the documented breeding population was 20 (16.67% of the target) in 2022 and 14 (11.67% of the target) in 2023, and only one (20%) Core Area contained at least five pairs in either year.” (*Id.*) In short, “[t]he MSHCP is not achieving its conservation goals for covered species of wildlife . . . [and] it is especially deficient in its conservation of species that lack coverage.” (*Id.*)

Because the MND’s cumulative impact analysis relies on unsound reliance on regulatory compliance and the MSHCP, it cannot be relied up to conclude that the Project’s cumulative impacts will be less than significant.

D. The MND’s proposed mitigation measures for biological resources are inadequate.

The MND’s mitigation measures are inadequate to ensure that the Project’s impacts to biological resources will be less than significant. First, as noted above, reliance on the MSHCP is misplaced due to the MSHCP current failure to meet its conservation goals. Second, Mitigation

Measure BIO-1 (pre-construction focused surveys for burrowing owl) is premature because, according to CDFW, “the preconstruction survey needs to follow breeding season-surveys, and the breeding-season surveys need to be completed prior to the public circulation of the CEQA review document.” (Ex. A, p. 43.) Third, Mitigation Measure BIO-2 (pre-construction nesting bird surveys) is inadequate because it only requires that construction during the nesting season be avoided “to the greatest extent feasible.” (MND, p. 37.) Furthermore, MM BIO-2 requires that surveys be taken within three days prior to construction, which “ would be too brief for detecting all avian nest sites.” (Ex. A, p. 44.)

Dr. Smallwood also suggests additional mitigation measures that must be applied to this Project to ensure that impacts to biological resources are minimized to the extent possible. (Ex. A, pp. 45-47.) These measures include: (1) compensatory habitat protection; (2) biological monitoring during construction; (3) compensatory monetary mitigation for house cat predation, vehicle-wildlife collisions, and bird injuries ; (4) adherence to available Bird-Safe Guidelines, such as those prepared by American Bird Conservancy New York, and San Francisco, and compensatory monetary mitigation for wildlife rehabilitation; and (5) native landscaping. (*Id.*)

II. An EIR is Required Due to a Fair Argument that the Project May Result in Significant Health Impacts from Emissions of Diesel Particulate Matter.

Air quality expert Dr. Paul E. Rosenfeld, Ph.D., reviewed the Project’s impacts to human health due to emissions of diesel particulate matter (“DPM”). Dr. Rosenfeld’s comment and CV are attached as **Exhibit B**. Dr. Rosenfeld concluded that the MND failed to identify a significant impact from emissions of DPM. Due to this fair argument that the Project may result in significant health impacts, CEQA requires the preparation of an EIR, rather than an MND, prior to approval of the Project.

The MND’s analysis of the cancer risk posed by emissions of DPM was inadequate. Although the MND compared the Project’s emissions to the SCAQMD localized significance thresholds (“LSTs”) established by the South Coast Air Quality Management District (“SCAQMD”), LSTs do not address DPM emissions and the increased cancer risk resulting from DPM emissions. (See MND, pp. 32-33.) The MND fails to include a quantified health risk assessment (“HRA”) to measure the increased cancer risk to nearby sensitive receptors from construction and operation of the Project. Instead, the MND relies entirely on a qualitative analysis of DPM, claiming that DPM emissions will not be significant because construction-related exposures are short term the Project is not located within 500 feet of I-10. (MND, pp. 33-34.) As noted by Dr. Rosenfeld, CEQA requires that that the MND “correlate Project-generated emissions with potential adverse impacts on human health.” (Ex. B, p. 6) However, such an analysis is not possible without a quantified HRA.

Dr. Rosenfeld prepared a screening-level HRA to evaluate potential impacts to human health from DPM during construction of the Project using AERSCREEN, a leading screening-level air quality dispersion model. (Ex. B, p. 6.) According to the MND’s air quality modeling

data, construction of the Project would result in 481 pounds of DPM over the total 788-day construction period. (*Id.*, p. 7) Using that value, Dr. Rosenfeld conducted an HRA to calculate the increased cancer risk resulting from those DPM emissions to the Maximally Exposed Individual Receptor located approximately 225 meters downwind of the Project site. (*Id.*) The HRA also utilized age sensitivity factors in order to account for the increased sensitivity to carcinogens during early-in-life exposure and to assess the risk for susceptible subpopulations such as children. (*Id.*, p. 8.)

Dr. Rosenfeld's HRA found that increased cancer risk to infants during construction of the Project would be 52.7 in one million. (Ex. B, pp. 9-10.) Additionally, the increased cancer risk for a 30-year residential lifetime would be 55 in one million. (*Id.*) Each of the above increased cancer risks exceed SCAQMD's CEQA significance threshold of 10 in one million and, thus, establishes a fair argument that the Project may result in significant, unmitigated impacts. (*Id.*, p. 10.) Due to this fair argument, CEQA requires that the City prepare an EIR, rather than an MND, prior to approval of the Project.

III. An EIR is Required Due to a Fair Argument that the Project May Result in Significant Emissions of ROG's.

Dr. Rosenfeld found that the MND underestimated the Project's emissions and therefore cannot be relied upon to determine the significance of the Project's air quality impacts. (Ex. B, pp. 1-5.) To estimate the Project's emissions, the MND utilized the California Emissions Estimator Model ("CalEEMod"). (MND, p. 29.) CalEEMod relies on recommended default values based on site specific information related to a number of factors. CEQA requires that any changes to the default values must be justified by substantial evidence.

Dr. Rosenfeld reviewed the Project's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the MND, resulting in an underestimation of the Project's emissions. (Ex. B, pp. 1-5.) As a result, the MND lacks substantial evidence to conclude that impacts will be less than significant.

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

1. Unsubstantiated changes to land use size (Ex. B, pp. 1-3.)
2. Unsubstantiated changes to construction phase lengths (Ex. B, pp. 3-5.)

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

In an effort to accurately determine the Project's construction-related, Dr. Rosenfeld prepared an updated CalEEMod that proportionately altered the individual construction phase lengths to match the proposed 18-month and 14-month construction durations. (Ex. B, p. 5.) Dr.

SAFER Comment
Dexter Village Project
PC Agenda Item 6.5 (Jan. 20, 2026)
January 16, 2026
Page 12

Rosenfeld's updated analysis found that the Phase 1 of the Project would result in 111 pounds per day of construction-related ROG emissions, exceeding the 75 pounds per day significance threshold set by SCAQMD. (Ex. B, p. 6.)

Because Dr. Rosenfeld's analysis finds that construction-related ROG emissions will exceed SCAQMD's significance threshold, there is a fair argument that the Project may result in significant, unmitigated impacts. Due to this fair argument, CEQA requires that the City prepare an EIR, rather than an MND, prior to approval of the Project.

CONCLUSION

SAFER and its experts have established a fair argument that the Project may have significant impacts to biological resources, human health, and air quality. Furthermore, the MND failed to provide substantial evidence to support its conclusions regarding the Project's impacts to biological resources, human health, and air quality. For those reasons, SAFER respectfully requests that the Planning Commission refrain from recommending approval of the project to the City Council and, instead, direct planning staff to prepare an EIR prior to further consideration of this Project.

Sincerely,



Brian B. Flynn
Lozeau Drury LLP

EXHIBIT A

Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

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

4 January 2025

RE: Dexter Village IS/MND

Dear Mr. Flynn,

I write to comment on potential impacts to biological resources that would result from development of the proposed Dexter Village Project. I understand the project would add 84 townhomes, 137 single-family homes, and 230 apartments, and a 1,270-sf recreation building on 23.44 acres at the east corner of Dexter Ave and 3rd Street in Lake Elsinore, California. My comments that follow address my concerns that the Initial Study/Mitigated Negative Declaration (IS/MND), supported by Cadre Environmental (Cadre 2025), mischaracterizes the existing environmental setting, and that its impacts analysis is flawed and its mitigation measures are inadequate.

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

THE WILDLIFE COMMUNITY AS A BIOLOGICAL RESOURCE

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

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

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

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

SITE VISIT

On my behalf, Noriko Smallwood, a wildlife biologist with a Master of Science Degree from California State University Los Angeles, visited the site of the proposed project for 1.65 hours of daytime survey from 15:01 to 16:40 hours, and for 2 hours of evening survey from 16:40 to 18:40 hours on 28 November 2025, and for 2.67 hours of daytime survey from 06:49 to 09:29 hours on 2 December 2025. During daylight, Noriko walked the site’s perimeter where accessible, stopping to scan for wildlife with use of binoculars. At night, Noriko affixed a Pettersson M500 acoustic bat detector to a 20-foot pole, and cabled the detector to her computer, which ran Sonobat Live. Sonobat Live identifies bats to species based on the bats’ sonograms that are detected by the M500. Noriko recorded all species of vertebrate wildlife she detected, including those whose members flew over the site or were seen just off the site. Animals of uncertain species identity were either recorded to the Genus or higher taxonomic level.

On 28 November 2025, conditions were sunny with 4 MPH west wind and temperatures of 74-67° F during the daytime survey, and clear with no wind and temperatures of 67-60° F during the evening survey. On 2 December 2025, conditions were sunny with no wind and temperatures of 42-55° F. The site is primarily annual grassland with multiple scattered mature trees (Photos 1 and 2).

Noriko saw red-tailed hawk and common raven (Photos 3-5), American kestrel and Nuttall’s woodpecker (Photos 6 and 7), mourning dove (Photo 8), northern mockingbird and Cassin’s kingbird (Photos 9 and 10), black phoebe and Say’s phoebe (Photos 11 and 12), California towhee and house finch (Photos 13 and 14), mountain bluebird and California ground squirrel (Photos 15 and 16), canyon bat (Photo 17), among the other species listed in Table 1. Noriko detected 33 species of vertebrate wildlife at or adjacent to the project site, including 8 species with special status, one of which is covered by the Western Riverside County Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) (Table 1).



Photos 1 and 2. Views of the project site, 28 November and 2 December 2025. Photos by Noriko Smallwood.



Photo 3. Red-tailed hawks on the project site, 2 December 2025. Photo by Noriko Smallwood.



Photos 4 and 5. Common raven with a bone (left), and red-tailed hawk with the same bone shortly after (right) on the project site, 2 December 2025. Photos by Noriko Smallwood.



Photos 6 and 7. American kestrel (left), and Nuttall's woodpecker (right) on the project site, 2 December and 28 November 2025. Photos by Noriko Smallwood.



Photo 8. Mourning doves on the project site, 2 December 2025. Photo by Noriko Smallwood.



Photos 9 and 10. Northern mockingbird (left), and Cassin's kingbird (right) on the project site, 2 December 2025. Photos by Noriko Smallwood.



Photos 11 and 12. Black phoebe (left), and Say's phoebe (right) on the project site, 2 December 2025. Photos by Noriko Smallwood.



Photos 13 and 14. California towhee (left), and house finch (right) on the project site, 2 December 2025. Photos by Noriko Smallwood.



Photos 15 and 16. Mountain bluebird (left), and California ground squirrel (right) on the project site, 2 December 2025. Photos by Noriko Smallwood.

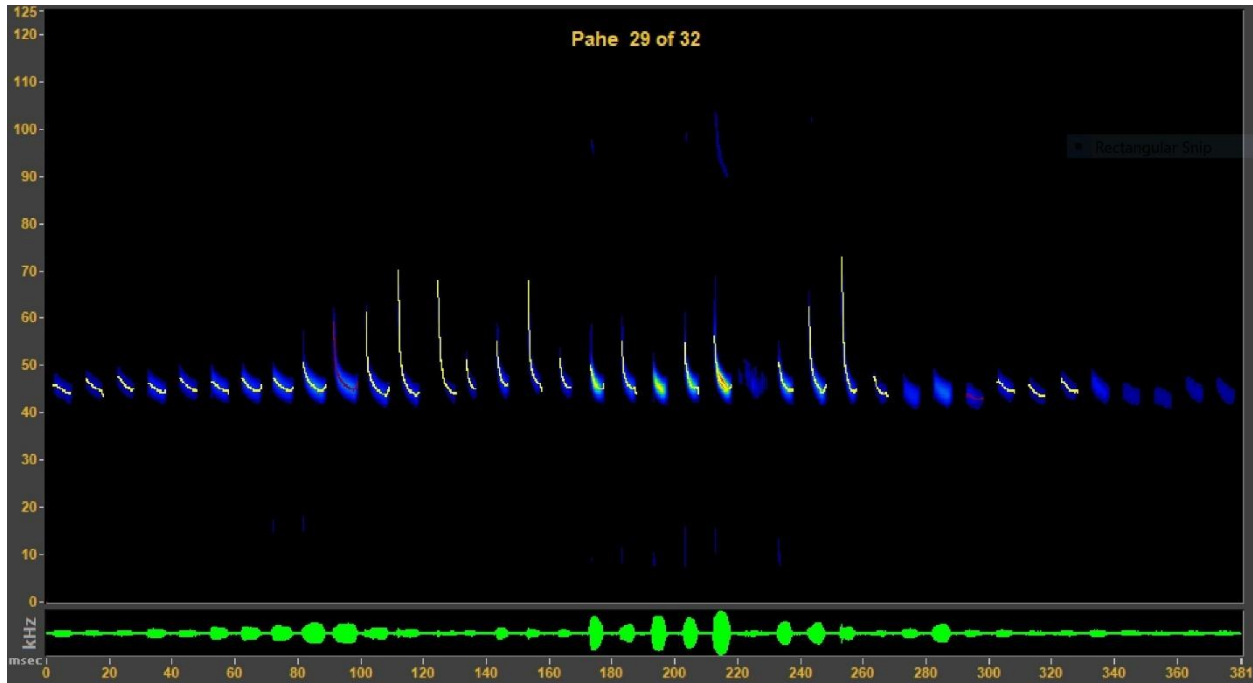


Photo 17. Sonogram of canyon bat detected on site using Sonobat Live and a Pettersson M500, 28 November 2025.

Table 1. Species of wildlife Noriko observed during 1.65 hours of daytime and 2 hours of evening survey on 28 November 2025, and during 2.67 hours of daytime survey on 2 December 2025.

Common name	Species name	Status ¹	Notes
Rock pigeon	<i>Columba livia</i>	Non-native	
Eurasian collared-dove	<i>Streptopelia decaocto</i>	Non-native	
Mourning dove	<i>Zenaida macroura</i>		Many, perched in trees
Anna's hummingbird	<i>Calypte anna</i>		Foraged, territorial
Allen's hummingbird	<i>Selasphorus sasin</i>	BCC	Territorial
Ring-billed gull	<i>Larus delawarensis</i>		Flew over
Turkey vulture	<i>Cathartes aura</i>	BOP	Flew over
Red-tailed hawk	<i>Buteo jamaicensis</i>	BOP	Perched in trees, socialized
Nuttall's woodpecker	<i>Picoides nuttallii</i>	BCC	Perched in trees, called
American kestrel	<i>Falco sparverius</i>	BOP	Perched, foraged
Cassin's kingbird	<i>Tyrannus vociferans</i>		
Black phoebe	<i>Sayornis nigricans</i>		Foraged
Say's phoebe	<i>Sayornis saya</i>		Foraged
American crow	<i>Corvus brachyrhynchos</i>		Many
Common raven	<i>Corvus corax</i>		Many
California horned lark	<i>Eremophila alpestris actia</i>	WL, MSHCP	Flew over, called
Bushtit	<i>Psaltriparus minimus</i>		Flock foraged
Ruby-crowned kinglet	<i>Regulus calendula</i>		
Northern mockingbird	<i>Mimus polyglottos</i>		
European starling	<i>Sturnus vulgaris</i>	Non-native	

Common name	Species name	Status ¹	Notes
Mountain bluebird	<i>Sialia currucoides</i>		Flock foraged
House sparrow	<i>Passer domesticus</i>	Non-native	
House finch	<i>Haemorphous mexicanus</i>		
Lesser goldfinch	<i>Spinus psaltria</i>		
White-crowned sparrow	<i>Zonotrichia leucophrys</i>		Just off site
California towhee	<i>Melozone crissalis</i>		Foraged
Yellow-rumped warbler	<i>Setophaga coronata</i>		Foraged
Canyon bat	<i>Parastrellus hesperus</i>	WBWG:M	
Mexican free-tailed bat or hoary bat	<i>Tadarida brasiliensis</i> or <i>Lasiurus cinereus</i>	WBWG:L or M	
Desert cottontail	<i>Sylvilagus audubonii</i>		Scat
California ground squirrel	<i>Otospermophilus beecheyi</i>		2 observed, likely more on site
Coyote	<i>Canis latrans</i>		Scat
Botta's pocket gopher	<i>Thomomys bottae</i>		Burrows

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

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



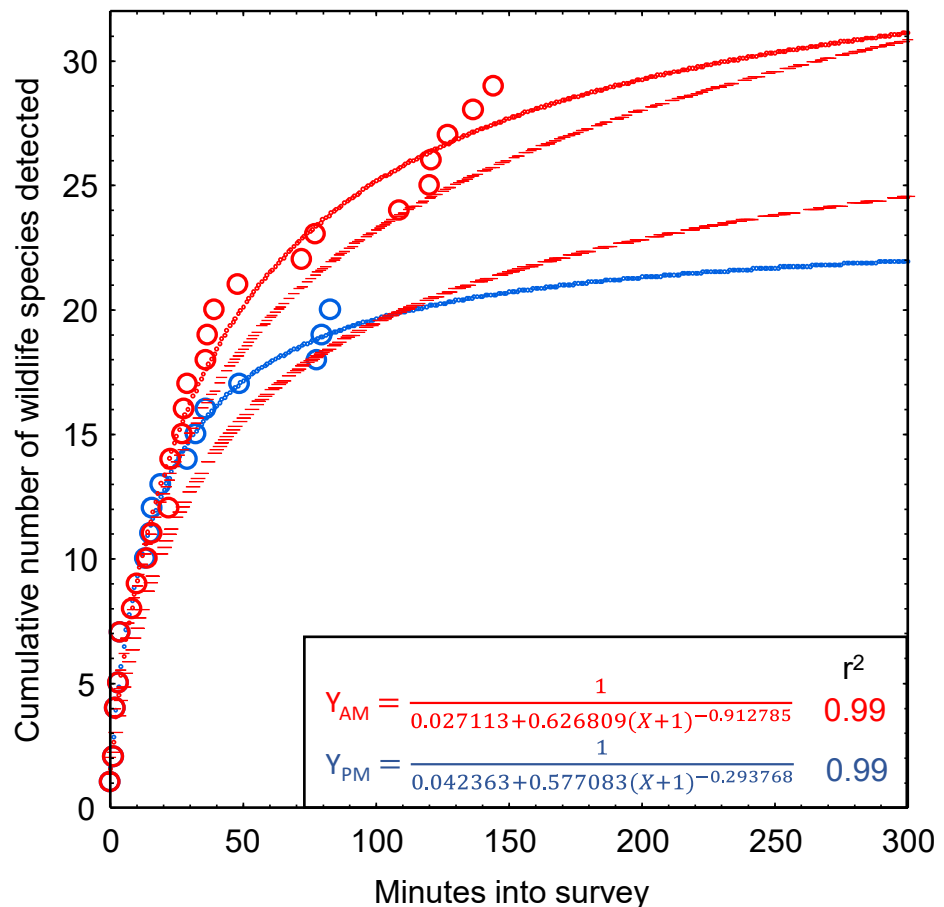
 Noriko Smallwood

ANALYSIS OF RECONNAISSANCE SURVEY DATA

Noriko detected 33 species of vertebrate willdife, which was a large number for the brevity of her survey effort. All the species in Table 1 would lose habitat as the result of the project and its replacement of natural ground covers with impervious surfaces. Smallwood and Smallwood (2023) confirmed this habitat loss by measuring the impacts of similar developments on species richness and the abundances of wildlife. Smallwood and Smallwood (2023) directly compared the species and the numbers of animals observed prior to development to the those observed after development, while they did the same at control sites. The measured losses of these species resulting from development is indicative of habitat loss, because habitat is defined as that portion of the environment that is used for survival and reproduction by members of a species (Hall et al. 1997), and this use is inferred by observations of the presence of a species (Smallwood 2002).

However, the species of wildlife Noriko detected at the project site were not the only species that were present during her surveys, as there are always species that are not detected. To demonstrate this, I fit nonlinear regression models to Noriko's cumulative numbers of vertebrate species detected with time into her daytime surveys to predict the number of species that she would have detected with longer surveys or perhaps with additional biologists available to assist her. The type of model is a logistic growth model, which reaches an asymptote that corresponds with the theoretical maximum number of vertebrate wildlife species that could have been detected during the survey. The model fit to Noriko's survey data from the morning of 2 December predicts 37 species of vertebrate wildlife were available to be detected, or 10 more species than she detected that morning (Figure 1). The rate of species detections in the morning survey exceeded the upper bound of the 95% confidence interval estimated from many other morning surveys we have completed in the region. Despite the disturbed nature of the site, it supports a high species richness.

Figure 1. Actual and predicted relationships between the numbers of vertebrate wildlife species detected and the elapsed survey time based on Noriko's visual-scan surveys on 28 November and 2 December 2025. Note the confidence interval applies only to the morning survey (red line).



Unknown are the identities of the species Noriko missed, but the species that Noriko did and did not detect on 28 November and 2 December 2025 composed only a fraction of the species that would occur at the project site over the period of a year or longer. This is because many species are seasonal in their occurrence, some require more survey effort because they are highly cryptic, and the members of other species would visit the site only periodically while patrolling large home ranges. Surveys on only two days cannot possibly detect all of the species of the local wildlife community.

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

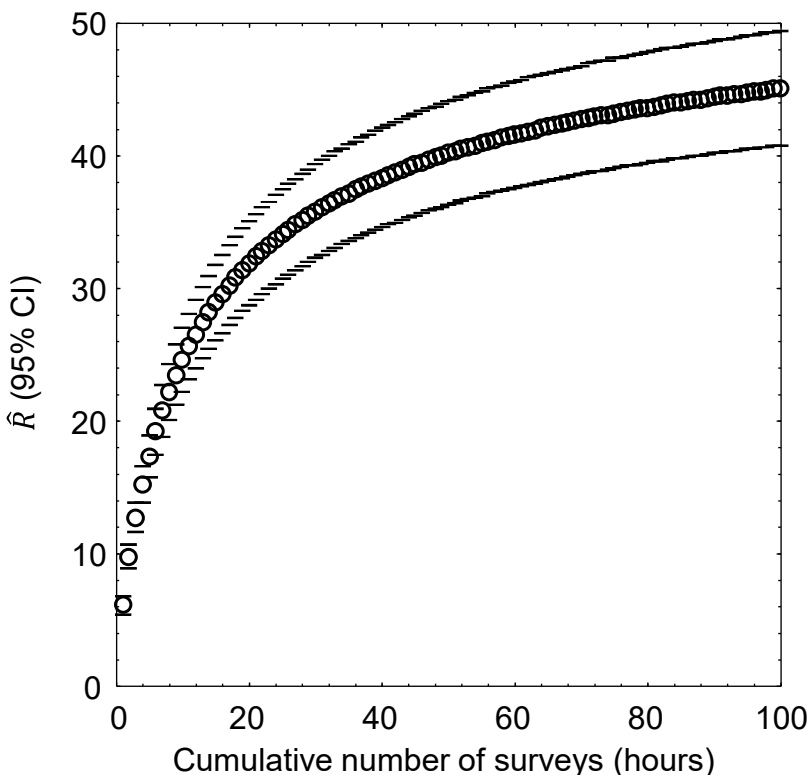
As part of my research, I completed a much larger survey effort across 167 km² of annual grasslands of the Altamont Pass Wind Resource Area, where from 2015 through 2019 I performed 721 1-hour visual-scan surveys, or 721 hours of surveys, at 46 stations. I used binoculars and otherwise the methods were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

I projected the predictions of each model to thousands of hours to find predicted asymptotes of wildlife species richness. The mean model-predicted asymptote of species richness was 57 after 11,857 hours of visual-scan surveys among the 46 stations of my research site. I also averaged model predictions of species richness at each incremental increase of number of surveys, i.e., number of hours (Figure 2). On average I would have detected 15.9 species over my first 4.32 hours of diurnal surveys at my research site in the Altamont Pass (4.32 hours to match the 4.32 hours Noriko surveyed during daylight hours at the project site), which composed 27.9% of the predicted total number of species I would detect with a much larger survey effort at the research site. Given the example illustrated in Figure 2, the 31 diurnally active species Noriko detected after her 4.32 hours of daylight survey at the project site likely represented 27.9% of the species to be detected after many more visual-scan surveys over another year or longer. With many more repeat surveys through the year, Noriko would likely detect $31/0.279 = 111$ species of diurnally active vertebrate wildlife at the site. Assuming Noriko's ratio of special-status to non-special-status species was to hold through the detections of all 111

predicted species, then continued surveys would eventually detect 21 special-status species of diurnally active vertebrate wildlife.

Because my prediction of 111 species of vertebrate wildlife, including 21 special-status species, is derived from daytime visual-scan surveys, and would detect few nocturnal mammals such as bats, the true number of species composing the wildlife community of the site must be larger. In fact, in only two hours of survey and the least active time of year for bats, Noriko detected one and possibly two special-status species of bats. Noriko's reconnaissance surveys should serve only as a starting point toward characterization of the site's wildlife community, but they certainly cannot alone inform of the inventory of species that use the site. More surveys are needed than her two surveys to produce an inventory the project site's wildlife community. Nevertheless, the large number of species I predict at the project site is indicative of a relatively species-rich wildlife community that warrants a serious survey effort.

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



EXISTING ENVIRONMENTAL SETTING

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

first step typically include (1) surveys of the site for biological resources, and (2) reviews of literature, databases and local experts for documented occurrences of special-status species. In the case of the proposed project, these steps were taken, though not with sufficient rigor, and not interpreted in furtherance of an accurate characterization of the wildlife community.

Environmental Setting informed by Field Surveys

To the CEQA's primary objective to disclose potential environmental impacts of a proposed project, the analysis should be informed of which biological species are known to occur at the proposed project site, which special-status species are likely to occur, as well as the limitations of the survey effort directed to the site. Analysts need this information to characterize the environmental setting as a basis for opining on, or predicting, potential project impacts to biological resources. In the case of this project, however, more surveys were needed, as were more appropriate interpretations of the survey findings.

According to Cadre (2025:5), "General wildlife surveys were not conducted during the general biological habitat assessment," which was on 10 June 2022. No explanation is given for why the 10 June survey did not include wildlife detections. No start time or duration is reported for this survey, which was reportedly to direct special attention "toward sensitive resources or those habitats potentially supporting sensitive flora or fauna that would be essential to efficiently implementing the terms and conditions of the Western Riverside County MSHCP," serve as a burrowing owl habitat assessment, and to map vegetation. Some wildlife species are considered sensitive, so again it is strange that Cadre would not record wildlife detected during this survey.

Considering that Cadre did not record species detected during its 10 June 2022 reconnaissance survey, the 13 species of wildlife reportedly detected by Cadre (2025) were presumably detected during the four burrowing owl detection surveys on 11, 13, 17 and 19 June 2022. The word "inventory" is used in section headings, which implies that surveys were intended to inventory the wildlife and plant communities on the site. Indeed, the IS/MND (p. 36) regards the survey results as representative of all the species to be found by these surveys: "...no sensitive wildlife species were observed or detected during biological surveys, so impacts to sensitive amphibian and mammalian species would be considered less than significant." In fact, the results of Cadre's surveys could not have qualified as inventories of wildlife and plant communities, and therefore the IS/MND's interpretation of Cadre's findings are unsupported and misleading. A simple refutation of the notion that Cadre's brief survey effort did not produce a species inventory is to be found in Noriko's survey findings, in which she found 2.5 times the number of species of vertebrate wildlife than were found by Cadre, or 22 species of vertebrate wildlife that Cadre did not detect.

Beyond this simple refutation, I predict 111 diurnally active species of vertebrate wildlife occur on the project site over the period of a year or longer. I estimate a minimum of another 40 species of wildlife occur on the site, which are nocturnal, periodic in their occurrences, fossorial, or highly cryptic, so the total number of species of vertebrate

wildlife is more like 151 species. Cadre (2025) detected about 8% of the species of wildlife that use the project site, so its species findings are not inventories nor even close to inventories.

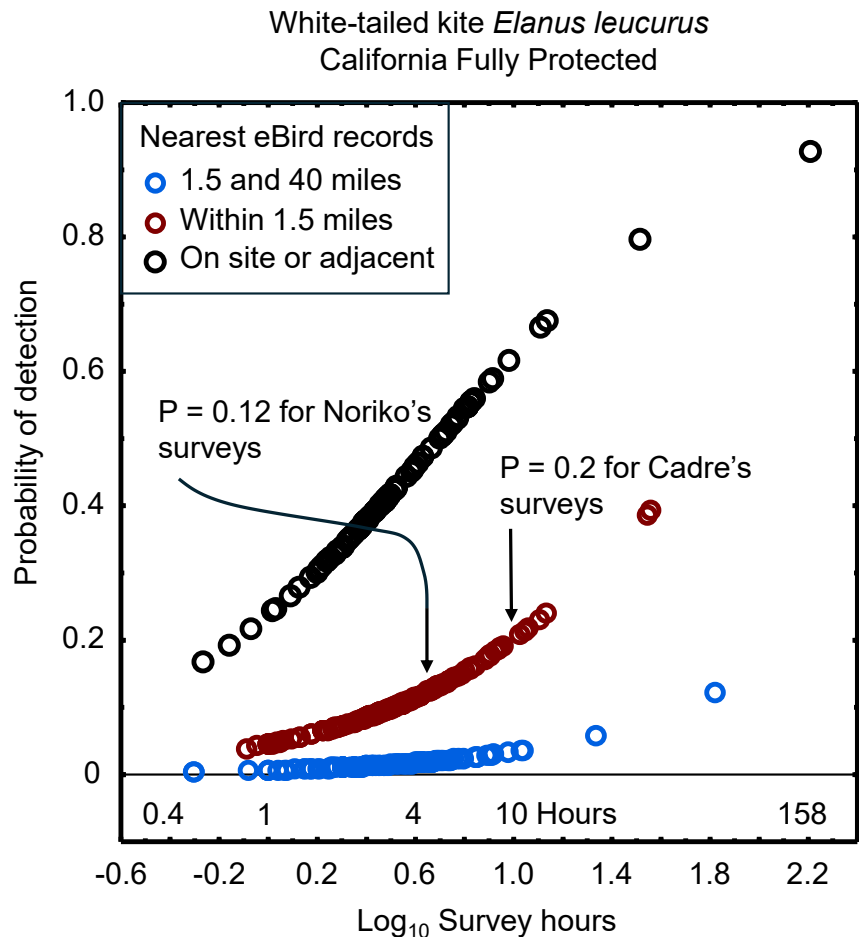
Furthermore, sensitive species tend to be more difficult to detect than species lacking special status. It is for this reason that protocol-level detection surveys have been formulated for many special-status species. It is well established that one or a few reconnaissance surveys is insufficient for detecting most special-status species. It is also well established that a focused survey for one special-status species such as burrowing owl is insufficient for detecting other special-status species. Both Cadre (2025) and the IS/MND fail to put Cadre's survey findings into context, such as the context of the detection probabilities associated with each special-status species. As an example of the need to consider the detection probabilities of special-status species, consider the California Fully Protected white-tailed kite, which was not detected on the project site by either Cadre or Noriko. Is this failure to detect white-tailed kite sufficient evidence that white-tailed kites are absent from the project site? Absolutely not. The likelihood of detection of white-tailed kite at a given site is a function of both the proximity of documented occurrence records and survey effort, based on hundreds of reconnaissance surveys conducted by me and Noriko (Figure 3). Knowing that occurrence records exist of white-tailed kites within 1.5 miles of the project site, Noriko's survey effort afforded her a 12% likelihood of detection of white-tailed kite, whereas Cadre's survey effort afforded it a 20% likelihood of detection of white-tailed kite, but only if Cadre had been conducting reconnaissance surveys instead of focused burrowing owl surveys. Many more hours of reconnaissance surveys at the site would be needed to achieve a >50% chance of detecting white-tailed kite. As it stands, the basis does not exist for determining that white-tailed kites are absent from the project site. The same lack of survey basis applies to most special-status species that could conceivably occur on the project site.

The flaw noted above repeats on p. 36 of the IS/MND where it states, "Stephens' Kangaroo Rat (*Dipodomys stephensi*) ... was not observed on or adjacent to the site during biological surveys..." The fact that Stephens' kangaroo rat was not observed means nothing without considering its detection probability during surveys focused on detecting burrowing owls. The most effective way to detect Stephens' kangaroo rat is by live-trapping, but certainly not by walking transects for burrowing owls.

Regarding the burrowing owl, the IS/MND (p. 36) reports that focused surveys were conducted, and based on the findings of these surveys, the burrowing owl "is currently presumed absent from the study area." However, the surveys were again insufficient for the purpose of determining that burrowing owls are absent from the project site. The surveys mostly met the minimum standards of the County of Riverside's (2006) survey guidelines, but it is well established that these guidelines are inadequate for supporting an absence determination. The CDFW (2012) survey guidelines are deemed adequate, and my own experience studying burrowing owls gives me confidence that the CDFW (2012) guidelines are indeed adequate for supporting an absence determination based on negative findings. Completing all four surveys within the space of one week, as was done by Cadre (2025), fails to meet the most essential of CDFW's (2012) survey

guidelines. Whereas Cadre and the City of Lake Elsinore can accurately state that Cadre’s surveys met the minimum standards of County of Riverside (2006), they cannot defend an absence determination based on these surveys, at least not scientifically.

Figure 3. Probability of detection of white-tailed kite as a function of survey effort and proximity of occurrence records to a project site.



Moreover, it has been nearly four years since Cadre’s surveys, so the survey results are outdated. If burrowing owls were truly absent in 2022, they might be present by now. Cadre’s (2025) photos of the project site show that it had been recently disked. In fact, Google Earth Historical Imagery shows that the project site had been disked repeatedly from 2009 through at least August 2021, and with Cadre’s photos the evidence shows it was disked through the time of Cadre’s surveys in June 2022. In April 2023 and thereafter, however, Google Earth’s Historical Imagery shows that the project site has been covered in grassland, which is burrowing owl habitat. The project site support has supported annual grassland and California ground squirrels over the last several years, and therefore needs to be surveyed for burrowing owls.

Another flaw of the IS/MND is its neglect of the comparative method, which is essential to environmental review. For example, Cadre (2025) identifies the species it detected in paragraph form, totaling 13 species of vertebrate wildlife, and the IS/MND treats these species as the definitive wildlife community, which it is not. No attempt is made to compare Cadre’s findings on the project site to findings made elsewhere, either by Cadre

or anyone else. There is no evidence presented that Cadre's findings are typical or atypical, or that they include fewer or more species detections than usual. No evidence is presented that relative to the survey effort, the findings were above or below the average, and no evidence is presented that the survey effort itself was above or below average.

In the course of my experience as a preparer of expert testimony, I have encountered a few other survey efforts by Cadre, though I am sure Cadre has completed many more surveys than the few I have encountered. Nonetheless, I have records of six of Cadre's survey efforts at four project sites inclusive of the Dexter Village site. The species that Cadre detected were not reported for two of the survey efforts, and Cadre detected six species as a result of one survey effort, and 13 species as results of three other survey efforts inclusive of Dexter Village. Overall, Cadre detected the same species among its reported survey efforts, totaling 19 species altogether. Noriko happened to have surveyed these same project sites, but always from the site's perimeters. Despite her constraint to the sidelines, Noriko tallied 61 vertebrate wildlife species detected among these project sites, or 3.2 times the number of species detected by Cadre. She also tallied 16 special-status species among these sites, or 5.3 times the number of special-status species detected by Cadre. Among the special-status species detected by Noriko but not by Cadre were golden eagle, peregrine falcon, merlin, northern harrier burrowing owl, white-faced ibis, and silver-haired bat, and others. The only special-status species detected by Cadre at these same project sites were red-tailed hawk, turkey vulture, and at the Dexter Village site Allen's hummingbird (Cadre did not report that Allen's hummingbird is a US Fish and Wildlife Service Bird of Conservation Concern). A simple application of the comparative method reveals that Cadre detects nearly the same small suite of wildlife species from survey to survey, and it detects many fewer special-status species that does Noriko.

The comparative method can and should be extended to account for differences in survey outcomes among sites proposed for projects as compared to sites that are more pristine and sites that have already been developed. After all, this type of comparison is essential to environmental review; it is essential to disclose not only an accurate representation of the environmental setting but also the project's potential impacts. But I add to the comparison survey outcomes from more pristine sites, and I do this because in my experience, sites proposed for projects are often degraded by disking or mowing or dumping. Considering these three types of environments, Figure 4 puts into context Noriko's survey findings at the Dexter Village project site. Like many other project sites, the Dexter Village site had been disked many times, and so its species richness is intermediate between more pristine reference sites and fully developed sites. Unrepresented in Figure 4 is the disproportionate loss of special-status species and the shift to synanthropic species that would occur with development (Smallwood and Smallwood 2023).

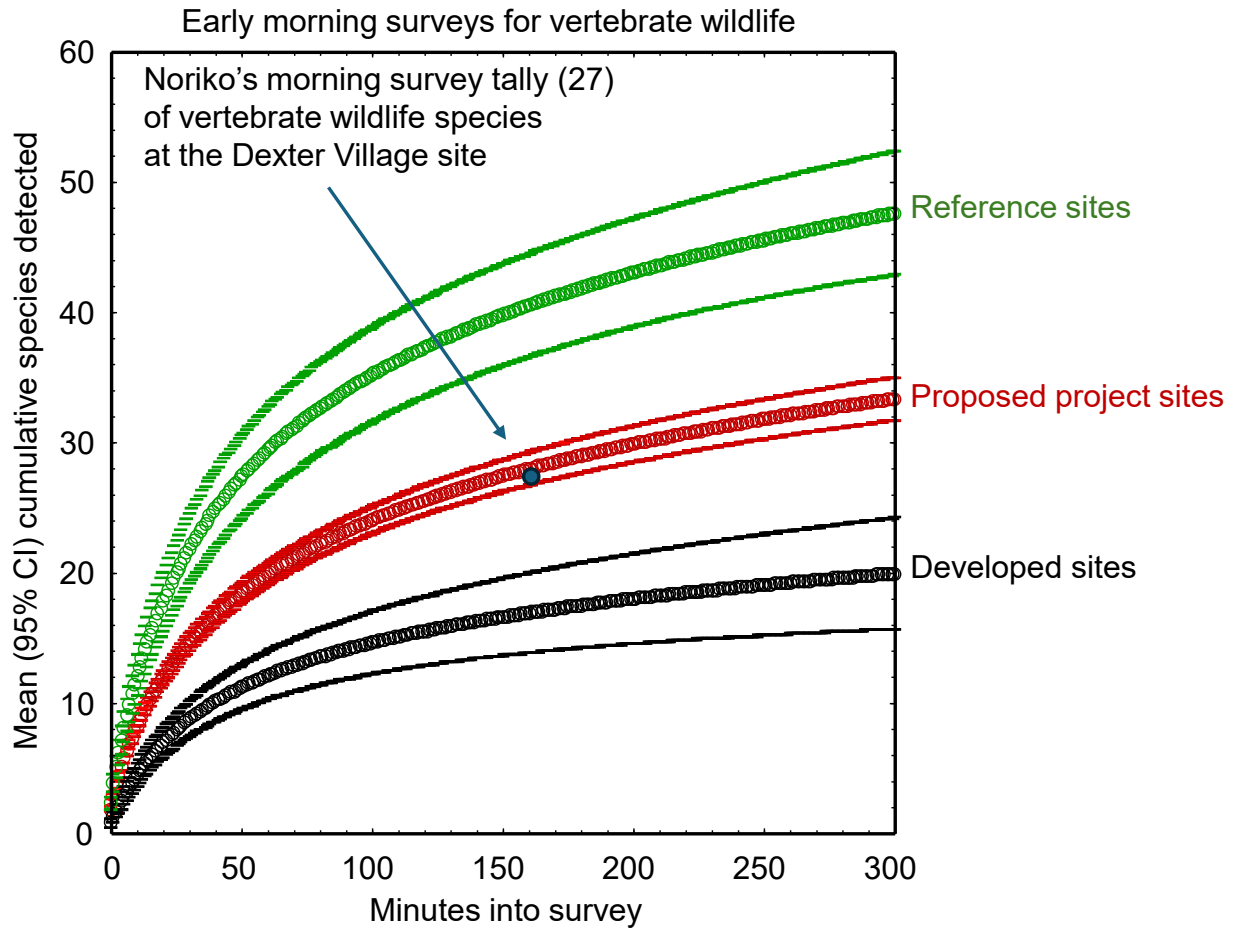


Figure 4. *Noriko Smallwood's survey findings at the Dexter Village project site relative to our survey findings at other project sites (red), at developed sites (black), and at more pristine sites that is labeled here as reference sites (green). Noriko's findings are typical of what we find at project sites, falling within the 95% confidence interval based on the results of hundreds of surveys.*

Environmental Setting informed by Desktop Review

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

In its reporting of how it established the pool of special-status species for assessment of occurrence likelihoods, Cadre (2025:4) claims “the sources reviewed provided an excellent baseline from which to assess the biological resources potentially occurring in the area.” However, a positive-sightings baseline is far from excellent, especially after omitting iNaturalist and eBird from the review. Even had iNaturalist and

eBird been used for this purpose, it would have been inappropriate to rule out species based on absences of occurrence records. Positive-sighting databases are useful for confirming presence, but not for confirming absence of species because such databases are not designed for this purpose. As noted by the CNDDDB, *“The CNDDDB is a positive sighting database. It does not predict where something may be found. We map occurrences only where we have documentation that the species was found at the site. There are many areas of the state where no surveys have been conducted and therefore there is nothing on the map. That does not mean that there are no special status species present.”* Cadre (2025a) and hence the IS/MND misuse the CNDDDB.

The CNDDDB relies entirely on volunteer reporting from biologists who were allowed access to whatever properties they report from. Many properties have never been surveyed by biologists. Many properties have been surveyed, but the survey outcomes never reported to the CNDDDB. Many properties have been surveyed multiple times, but not all survey outcomes reported to the CNDDDB. Furthermore, the CNDDDB is interested only in the findings of special-status species, which means that species more recently assigned special status will have been reported many fewer times to the CNDDDB than were species assigned special status since the inception of the CNDDDB. Therefore, occurrence records in the CNDDDB are most abundant for species assigned special status decades ago, but fewest for species only recently assigned special status. And because negative findings are not reported to the CNDDDB, the CNDDDB is also inappropriate as a basis for weighting occurrence likelihoods such as absent, not expected, unlikely, low, moderate or high. Whereas the CNDDDB can be confirmatory of species presence, it cannot support absence determinations or assignments of low likelihood of occurrence. And again, the screening out of a species due to lack of occurrence records in the CNDDDB is the same as an absence determination, and this step is being taken without adequate support of field surveys.

In my assessment based on a database review and site visits, 152 special-status species of wildlife are known to occur near enough to the site to warrant analysis of occurrence potential (Table 2). Not all these species should be expected to occur at the project site, but each of them should be given a closer look to determine occurrence likelihoods and whether additional surveys are needed, or implementation of detection surveys, or whether it would be reasonable to assume presence. Of these 151 species, 9 were recorded on or just off the project site, and another 67 (44%) species have been documented within 1.5 miles of the site (Very close), another 15 (10%) between 1.5 and 4 miles (Nearby), and another 52 (34%) between 4 to 30 miles (In region). Almost two thirds (60%) of the species in Table 2 have been reportedly seen within 4 miles of the project site. The site therefore supports at least nine special-status species of wildlife, and it carries the potential for supporting many more special-status species of wildlife based on the proximities of recorded occurrences. Evidence certainly suggests that habitat assessments are needed for these species.

Cadre (2023) considers the occurrence likelihoods of only 33 (22%) of the special-status species listed in Table 2, which means that 118 (78%) of the special-status species in Table 2 were screened out of the analysis in the first step of the desktop review. Of the 33 species assessed, Cadre (2023) determines all but three of them have “No potential”

or “low potential” to occur on the project site. However, eight species given occurrence likelihoods of “Low” or “No potential” have been recorded within 1.5 miles of the site, and another three species have been recorded within 1.5 and 4 miles of the site. Of the 118 species omitted from further analysis by Cadre (2025), 8 have been documented on the project site, and 58 have been documented within 1.5 miles of the project site. In summary, Cadre’s determinations of occurrence likelihoods comport only poorly with survey results and with available occurrence records in the region.

Mischaracterization of the Wildlife Community

Cadre (2025) reports on field surveys and desktop review having been performed, but the field survey results are interpreted without any context to survey results from elsewhere, and the desktop review starts with an inappropriately small pool of special-status species after misusing the CNDDDB and having not used eBird and iNaturalist. Cadre (2025) often resorts to speculation in its analyses of occurrence likelihoods, having not completed surveys appropriate to bats and fossorial small mammals or even to species more detectable in daytime reconnaissance surveys, and having committed too little survey effort overall. Speculated habitat assessments are highly uncertain, which is inappropriate for precious or rare resources such as special-status species (National Research Council 1986). The true wildlife community remains to be described. Without a more accurate characterization of the wildlife community, the basis is inadequate for predicting impacts and formulating appropriate mitigation strategies.

At least a fair argument can be made for the need to prepare and EIR to accurately characterize the wildlife community of the projects site as a suitable baseline from which to predict project impacts and to formulate an appropriate mitigation strategy.

BIOLOGICAL IMPACTS ASSESSMENT

The impacts analysis in CEQA review involves prediction. Predictions are necessary because measuring a project’s impacts directly could not happen until after the impacts occur, and the timing of this type of measurement would come too late for the formulations of avoidance and minimization mitigation strategies that are prioritized by the CEQA. Impact predictions are necessary as part of the environmental review. The accuracy of the predictions of impacts and their significance ultimately relies on the degree of accuracy in the characterization of the existing environmental setting (Figure 5).

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

Common name	Species name	Status ¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT		No potential	In region
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE			In region
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	FE		No potential	In region
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE	Yes	No potential	In region
Monarch	<i>Danaus plexippus</i>	FC			Very close
Crotch’s bumble bee	<i>Bombus crotchii</i>	CCE		No potential	Nearby
Western spadefoot	<i>Spea hammondi</i>	FC, SSC	Yes	No potential	In region
Southwestern pond turtle	<i>Actinemys pallida</i>	FC, SSC	Yes	No potential	In region
Granite spiny lizard	<i>Sceloporus orcutti</i>		Yes		Very close
Blainville’s horned lizard	<i>Phrynosoma blainvillii</i>	SSC	Yes	Low potential	In region
Orange-throated whiptail	<i>Aspidoscelis hyperythra</i>	WL	Yes	No potential	In region
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	SSC	Yes	Low potential	In region
San Diegan legless lizard	<i>Anniella stebbinsi</i>	SSC			In region
San Diego banded gecko	<i>Coleonyx variegatus abbotti</i>	SSC	Yes		In region
California glossy snake	<i>Arizona elegans occidentalis</i>	SSC			In region
Coast patch-nosed snake	<i>Salvadora hexalepis virgultea</i>	SSC			In region
Two-striped gartersnake	<i>Thamnophis hammondi</i>	SSC			In region
South coast gartersnake	<i>Thamnophis sirtalis pop. 1</i>	SSC			In region
Red-diamond rattlesnake	<i>Crotalus ruber</i>	SSC	Yes	No potential	Very close
Brant	<i>Branta bernicla</i>	SSC ₂			Very close
Cackling goose (Aleutian)	<i>Branta hutchinsii leucopareia</i>	WL			Nearby
Redhead	<i>Aythya americana</i>	SSC ₂			Very close
Western grebe	<i>Aechmophorus occidentalis</i>	BCC			Very close
Clark’s grebe	<i>Aechmophorus clarkii</i>	BCC			Very close

Common name	Species name	Status¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FT, CE	Yes		In region
Black swift	<i>Cypseloides niger</i>	SSC3, BCC	Yes		Nearby
Vaux's swift	<i>Chaetura vauxi</i>	SSC2			Very close
Calliope hummingbird	<i>Selasphorus calliope</i>	BCC			In region
Rufous hummingbird	<i>Selasphorus rufus</i>	BCC			Nearby
Allen's hummingbird	<i>Selasphorus sasin</i>	BCC			Very close/ On site
Mountain plover	<i>Charadrius montanus</i>	SSC2, BCC	Yes	No potential	In region
Snowy plover	<i>Charadrius nivosus</i>	BCC			Very close
Western snowy plover	<i>Charadrius nivosus nivosus</i>	FT, SSC			In region
Long-billed curlew	<i>Numenius americanus</i>	WL			Very close
Marbled godwit	<i>Limosa fedoa</i>	BCC			Very close
Red knot (Pacific)	<i>Calidris canutus</i>	BCC			In region
Pectoral sandpiper	<i>Calidris melanotos</i>	BCC			Very close
Short-billed dowitcher	<i>Limnodromus griseus</i>	BCC			Very close
Lesser yellowlegs	<i>Tringa flavipes</i>	BCC			Very close
Willet	<i>Tringa semipalmata</i>	BCC			Very close
Laughing gull	<i>Leucophaeus atricilla</i>	WL			In region
Franklin's gull	<i>Leucophaeus pipixcan</i>	BCC			In region
Heermann's gull	<i>Larus heermanni</i>	BCC			Very close
Western gull	<i>Larus occidentalis</i>	BCC			Very close
California gull	<i>Larus californicus</i>	BCC, WL			Very close
California least tern	<i>Sternula antillarum browni</i>	FE, CE, CFP			Very close
Black tern	<i>Chlidonias niger</i>	SSC2, BCC			Very close
Elegant tern	<i>Thalasseus elegans</i>	BCC, WL			Nearby
Black skimmer	<i>Rynchops niger</i>	BCC, SSC3			Very close
Common loon	<i>Gavia immer</i>	SSC			Nearby
Double-crested cormorant	<i>Phalacrocorax auritus</i>	WL	Yes		Very close

Common name	Species name	Status ¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
American white pelican	<i>Pelicanus erythrorhynchos</i>	SSC1			Very close
Least bittern	<i>Ixobrychus exilis</i>	SSC2			Very close
American bittern	<i>Botaurus lentiginosus</i>		Yes		Very close
White-faced ibis	<i>Plegadis chihi</i>	WL	Yes	Low potential	Very close
Black-crowned night heron	<i>Nycticorax nycticorax</i>		Yes		Very close
Great blue heron	<i>Ardea herodias</i>		Yes		Very close
Turkey vulture	<i>Cathartes aura</i>	BOP	Yes		On site/ On site
Osprey	<i>Pandion haliaetus</i>	WL, BOP	Yes		Very close
White-tailed kite	<i>Elanus luecurus</i>	CFP, BOP	Yes	Low potential	Very close
Golden eagle	<i>Aquila chrysaetos</i>	BGEPA, CFP, BOP, WL	Yes		Very close
Northern harrier	<i>Circus cyaneus</i>	BCC, SSC3, BOP	Yes		Very close
Sharp-shinned hawk	<i>Accipiter striatus</i>	WL, BOP	Yes		Very close
Cooper's hawk	<i>Accipiter cooperii</i>	WL, BOP	Yes	Low potential	Very close
Bald eagle	<i>Haliaeetus leucocephalus</i>	CE, BGEPA, BOP	Yes		Very close
Red-shouldered hawk	<i>Buteo lineatus</i>	BOP			Very close
Swainson's hawk	<i>Buteo swainsoni</i>	CT, BOP	Yes		Very close
Red-tailed hawk	<i>Buteo jamaicensis</i>	BOP			On site/ On site
Ferruginous hawk	<i>Buteo regalis</i>	WL, BOP	Yes		Very close
Zone-tailed hawk	<i>Buteo albonotatus</i>	BOP			In region
Harris' hawk	<i>Parabuteo unicinctus</i>	WL, BOP			In region
Rough-legged hawk	<i>Buteo lagopus</i>	BOP			In region
American barn owl	<i>Tyto furcata</i>	BOP			Very close
Western screech-owl	<i>Megascops kennicotti</i>	BOP			Nearby
Great horned owl	<i>Bubo virginianus</i>	BOP			Very close

Common name	Species name	Status ¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
Burrowing owl	<i>Athene cunicularia</i>	BCC, CCE, SSC2, BOP	Yes	Potential	Nearby
Long-eared owl	<i>Asio otus</i>	BCC, SSC3, BOP			In region
Short-eared owl	<i>Asia flammeus</i>	BCC, SSC3, BOP			In region
Lewis's woodpecker	<i>Melanerpes lewis</i>	BCC			Nearby
Downy woodpecker	<i>Dryobates pubescens</i>		Yes		Very close
Nuttall's woodpecker	<i>Picoides nuttallii</i>	BCC			Very close/ On site
American kestrel	<i>Falco sparverius</i>	BOP			On site/On site
Merlin	<i>Falco columbarius</i>	WL, BOP	Yes		Very close
Peregrine falcon	<i>Falco peregrinus</i>	BOP	Yes		Very close
Prairie falcon	<i>Falco mexicanus</i>	WL, BOP	Yes		Very close
Olive-sided flycatcher	<i>Contopus cooperi</i>	BCC, SSC2			Nearby
Willow flycatcher	<i>Empidonax trailii</i>	CE			Very close
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, CE	Yes	No potential	In region
Vermilion flycatcher	<i>Pyrocephalus rubinus</i>	SSC2			Very close
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE, CE	Yes	No potential	Very close
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC2	Yes	Moderate potential	Very close
Oak titmouse	<i>Baeolophus inornatus</i>	BCC			Very close
California horned lark	<i>Eremophila alpestris actia</i>	WL	Yes	Moderate potential	Very close/ On site
Bank swallow	<i>Riparia riparia</i>	CT			Very close
Tree swallow	<i>Tachycineta bicolor</i>		Yes		On site
Purple martin	<i>Progne subis</i>	SSC2	Yes		Very close
Wrentit	<i>Chamaea fasciata</i>	BCC			Very close

Common name	Species name	Status¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
California gnatcatcher	<i>Polioptila c. californica</i>	FT, SSC2	Yes	No potential	Very close
California thrasher	<i>Toxostoma redivivum</i>	BCC			Very close
Cassin's finch	<i>Haemorhous cassinii</i>	BCC			In region
Lawrence's goldfinch	<i>Spinus lawrencei</i>	BCC			Very close
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC2	Yes		Nearby
Black-chinned sparrow	<i>Spizella atrogularis</i>	BCC			Nearby
Gray-headed junco	<i>Junco hyemalis caniceps</i>	WL			In region
Bell's sparrow	<i>Amphispiza b. belli</i>	WL	Yes	No potential	Very close
Lincoln's sparrow	<i>Melospiza lincolni</i>		Yes		Very close
Oregon vesper sparrow	<i>Pooecetes gramineus affinis</i>	SSC2			In range
Southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	WL	Yes	Low potential	Very close
Yellow-breasted chat	<i>Icteria virens</i>	SSC3	Yes		Very close
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC3			Very close
Bullock's oriole	<i>Icterus bullockii</i>	BCC			Very close
Tricolored blackbird	<i>Agelaius tricolor</i>	CT, BCC, SSC1	Yes		Very close
Lucy's warbler	<i>Leiothlypis luciae</i>	SSC3			In region
Nashville warbler	<i>Vermivora ruficapilla</i>		Yes		Very close
Virginia's warbler	<i>Leiothlypis virginiae</i>	WL, BCC			In region
MacGillivray's warbler	<i>Geothlypis tolmiei</i>		Yes		Nearby
Northern yellow warbler	<i>Setophaga aestiva</i>	SSC2	Yes		Very close
Prairie warbler	<i>Setophaga discolor</i>	BCC			In region
Wilson's warbler	<i>Cardellina pusilla</i>		Yes		Very close
Summer tanager	<i>Piranga rubra</i>	SSC1			Very close
Little brown bat	<i>Myotis lucifugus</i>	WBWG: M			In region
Yuma myotis	<i>Myotis yumanensis</i>	WBWG: LM			In region
Long-eared myotis	<i>Myotis evotis</i>	WBWG: M			In region
Fringed myotis	<i>Myotis thysanodes</i>	WBWG: H			In region

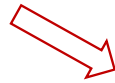
Common name	Species name	Status¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
Long-legged myotis	<i>Myotis volans</i>	WBWG: H			In region
California myotis	<i>Myotis californicus</i>	WBWG: L			In region
Small-footed myotis	<i>Myotis ciliolabrum</i>	WBWG: M			In range
Canyon bat	<i>Parastrellus hesperus</i>	WBWG: M			Nearby/ On site
Big brown bat	<i>Episticus fuscus</i>	WBWG: L			In region
Silver-haired bat	<i>Lasionycteris noctivagans</i>	WBWG: M			In range
Hoary bat	<i>Lasiurus cinereus</i>	WBWG: M			In region/ Possible on site
Western red bat	<i>Lasiurus blossevillii</i>	SSC, WBWG: H			In region
Western yellow bat	<i>Lasiurus xanthinus</i>	SSC, WBWG: H		No potential	In region
Spotted bat	<i>Euderma maculatum</i>	SSC, WBWG: H			In range
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SSC, WBWG: H			In region
Pallid bat	<i>Antrozous pallidus</i>	SSC, WBWG: H			In region
Mexican free-tailed bat	<i>Tadarida brasiliensis</i>	WBWG: L			In region/ Possible on site
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	SSC, WBWG: M		No potential	In range
Western mastiff bat	<i>Eumops perotis</i>	SSC, WBWG: H		No potential	In range
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	SSC	Yes	Low potential	In region
Bobcat	<i>Lynx rufus</i>		Yes	No potential	Nearby
Coyote	<i>Canis latrans</i>		Yes		Very close
Long-tailed weasel	<i>Mustela frenata</i>		Yes		In region
Northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	SSC	Yes	No potential	In region
Pallid San Diego pocket mouse	<i>Chaetodipus fallax pallidus</i>	SSC			In range
Dulzura kangaroo rat	<i>Dipodomys simulans</i>		Yes		In region

Common name	Species name	Status¹	MSHCP	Cadre (2023)	Occurrences in data base records, Site visits
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	FT, CT	Yes	No potential	In region
Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	SSC	Yes	No potential	In region
San Diego Bryant's woodrat	<i>Neotoma bryanti</i>	SSC	Yes	No potential	Nearby
Southern grasshopper mouse	<i>Onychomys torridus ramona</i>	SSC		No potential	In range
American badger	<i>Taxidea taxus</i>	SSC		No potential	In region

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

Assess species occurrence likelihoods

1. Desktop review
 - a. Species geographic range overlap or database occurrence records
 - b. Crosswalk habitat associations with mapped ground cover
2. Reconnaissance survey/Habitat assessment
3. Detection surveys for special-status species



Characterize wildlife community

4. Lists of species detected and of those expected but not yet detected, and any known trends



Outcomes

5. Predict impacts
6. Formulate mitigation strategy
7. Determine significance of impacts

Note: Impact predictions and significance determinations have been of unknown accuracy in the absence of experimental measurement

Figure 5. General flow of information from the gathering stage through the characterization of the existing environment to predictions of impacts and their significance.

Impact predictions can derive from speculation or from experience (Figure 6). Speculation is repeatedly discouraged in the CEQA Guidelines, because speculation is an inconclusive guess or ponderance on a phenomenon without the benefit of data. Prediction accuracy improves with experience, though the experience that can be brought to bear on impact predictions ranges from anecdotes to careful use of scientific inference. Inference is a conclusion derived logically from data that are available about a phenomenon. Any type of experience is usually better than relying on speculation, but careful scientific inference, especially inference drawn from experiments, has proven most effective. An analogy would be predicting the boiling temperature of water at a certain place with a known atmospheric pressure after having measured it hundreds of times at other places under various atmospheric pressures. The experience of measuring the boiling temperature at all these other places would certainly result in a more accurate prediction of the boiling point as compared to a speculative prediction. We know that use of inference in this example is *certainly* more predictive, and not *potentially* more predictive, because we have a long successful history with the application of this type of experimentation to draw predictive inference.

The many projects that have undergone CEQA review provide a comparative basis for drawing inferences needed to predict the impacts of the next proposed project (Figure 6). Reconnaissance survey results that are not compared to survey results from other project sites miss the opportunity to interpret the results for the purpose of predicting impacts. The same is true of CDNNB occurrence records. For example, it would be helpful to know how often a species lacking CNDDDB occurrence records on a site is nevertheless detected onsite by reconnaissance survey(s). It would be helpful to know how often the impact predictions of other projects are proven accurate, and how often

the required mitigation measures are proven effective. The comparative method enables the use of scientific inference over speculation and the blind confidence of simply repeating impact conclusions of unknown accuracy and mitigation strategies of unknown efficacy.

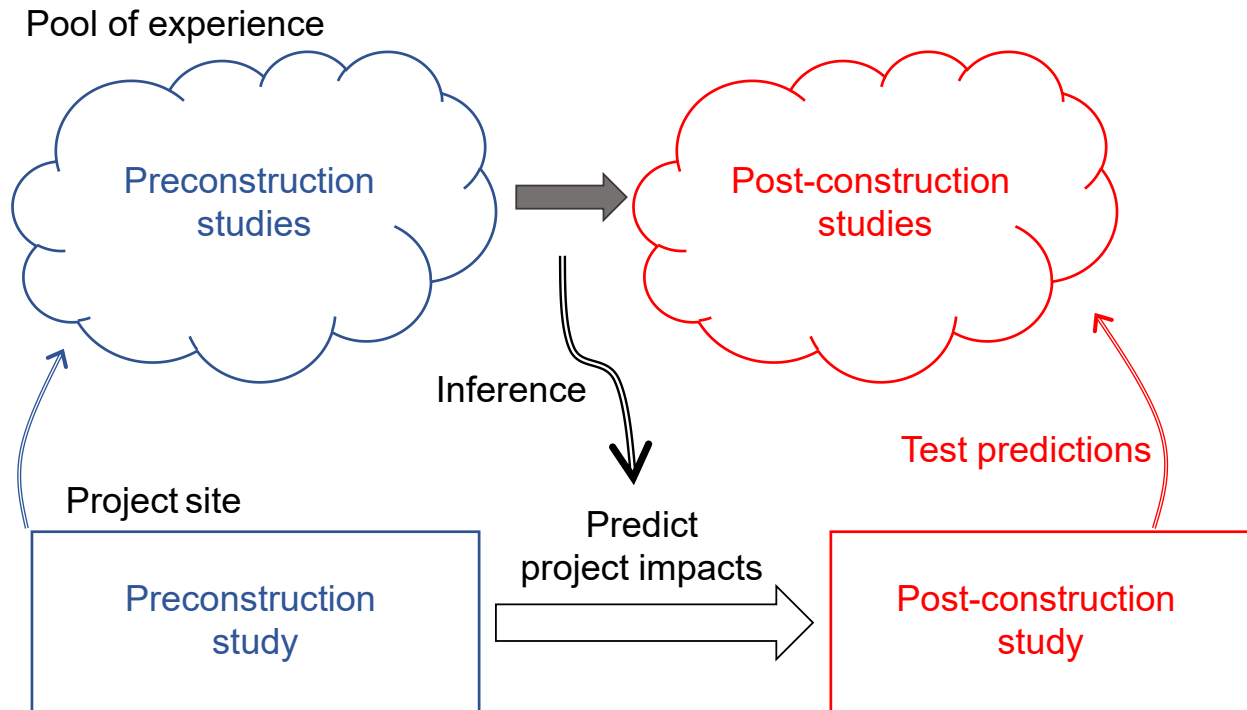


Figure 6. A framework for arriving at predicted project impacts based on experience with other project sites. Ideally, there is a pool of similar projects in similar circumstances where predicted impacts were compared to realized impacts, and into which the proposed project can also contribute to experience.

In the following, I analyze several types of impacts likely to result from the project, none of which are analyzed adequately in the IS/MND, and some of which are not analyzed at all.

UNQUALIFIED IMPACT PREDICTIONS

The IS/MND reports impact predictions that fail to follow logically from a sound premise. For example, at p. 36, the IS/MND reports, “The project site does not occur within a predetermined Survey Area for MSHCP criteria area or narrow endemic plant species and no sensitive plant species were observed during biological surveys. Thus, the project would not result in impacts to sensitive plant species.” And on p. 38, “The site is not located within an MSHCP designated core, extension of existing core, non-contiguous habitat block, constrained linkage, or linkage area. Therefore, the project will not significantly impact wildlife movement or impede the use of native wildlife nursery sites.” However, whether the project is located within or adjacent to a Criteria Cell or an existing core or anything related to the MSHCP is irrelevant to the CEQA

Guidelines' Appendix G, Environmental Checklist Form question IV a. whether the project would have a substantial effect on any special-status species that are identified in a regional plan (e.g., the MSHCP). The standard CEQA question does not specify that an impact is substantial only if it occurs within or adjacent to an MSHCP Criteria Cell or existing core or constrained linkage, etc. Most of the special-status species at risk of harm by the project are not even covered by the MSHCP.

REDUCED PRODUCTIVE CAPACITY FROM HABITAT LOSS

Habitat loss results in a reduced productive capacity of affected wildlife species. The site is proven to serve as habitat to at least 35 species of vertebrate wildlife which Noriko and Cadre's biologist(s) observed on the site, but the number of avian nest sites remains unknown. Because Noriko's surveys were only reconnaissance surveys conducted outside the breeding season, and therefore unsuitable for detecting all bird nests on the site, estimating total nest density of birds was not possible. The alternative method would be to infer productive capacity from estimates of total nest density elsewhere. Noriko has completed several studies to estimate total avian nest density in similar environments in the local area.

Noriko estimated 5.56 nests/acre on a 3.6-acre site of ruderal grassland bordering a woodland strip in Murrieta, and 12.73 nests/acre on a 0.55-acre oak woodland site in Murietta. Assuming the average of the above two estimates most accurately represents the nest density at the Dexter Village site, then the predicted density is 9.15 nests/acre. This density applied to the 23.44 acres of the project site would predict 214 nest sites. Assuming 1.39 broods per nest site based on a review of 322 North American bird species, which averaged 1.39 broods per year, then I estimate 297 nest attempts per year on the project site. Assuming Young's (1948) study site typifies bird productivity of 2.9 fledged birds per nest attempt, then I predict 861 fledglings/year at the project site.

The loss of 214 nest sites and 297 nest attempts per year would qualify as significant impacts that have not been analyzed in the IS/MND. But the impacts would not end with the immediate loss of nest sites. The reproductive capacity of the site would be lost. The project would prevent the production of 861 fledglings per year. Assuming an average bird generation time of 4 years, the lost capacity of both breeders and annual fledgling production can be estimated from an equation in Smallwood (2022): $\{(nests/year \times chicks/nest \times number\ of\ years) + (2\ adults/nest \times nests/year) \times (number\ of\ years \div years/generation)\} \div (number\ of\ years) = 968\ birds\ per\ year\ denied\ to\ California.$

The loss of 968 birds per year would be a loss of significant habitat value that is currently provided by the project site. Most if not all these birds are protected by the federal Migratory Bird Treaty Act and by California's Migratory Bird Protection Act, both of which are intended to most strongly protect breeding migratory birds. The loss of 968 birds would easily qualify as an unmitigated significant impact.

INTERFERENCE WITH WILDLIFE MOVEMENT

One of CEQA's principal concerns regarding potential project impacts is whether a proposed project would interfere with wildlife movement in the region. Unfortunately, this concern has not motivated any serious analysis of whether or how the project would interfere with wildlife movement in the region. According to Cadre (2025:11): "The Project Site does not represent a regional wildlife movement corridor." Additionally, "The Project Site is not located within an MSHCP designated core, extension of existing core, noncontiguous habitat block, constrained linkage, or linkage area." The IS/MND adopts this claim on p. 38, where it explains "No known linkages or other potential wildlife movement corridors or travel routes occur within the project area. The project site is an isolated parcel of non-native grassland habitat and ornamental trees and mostly surrounded by roadways and development. ... Therefore, the project will not significantly impact wildlife movement or impede the use of native wildlife nursery sites." The first problem with these conclusions is that they are inconsistent with other statements in the IS/MND, such as that in the next paragraph on p. 36 where the IS/MND states "Given the location of Lake Elsinore within the City, there are a variety of birds that migrate seasonally through the City on the Pacific Flyway ..." The project site is situated within a valley feature that channels migratory birds along the Pacific Flyway, and to boot it is located near an important migratory destination in Lake Elsinore.

The IS/MND focuses too much on the red-herring question of whether the project site occurs within a movement corridor, even though it obviously does. Nevertheless, the question is a red herring because the CEQA standard applies to all types of movement and not just the movement channeled by corridors. Some of the birds and all the bats observed by Noriko were in flight, so the site is obviously of some importance to wildlife movement. Importantly, Cadre's and the IS/MND's only basis for their conclusions is speculation, as no study design or specific field method or program of observation was implemented on the project site to characterize wildlife movement across the project site or beyond. Cadre (2025) did not even identify the question of whether the project site is important to wildlife movement as a survey objective. A simple program of observation could have been to perform timed surveys on observation stations located at intervals across the site, and to have observers plot wildlife flight paths on handheld maps. Another would be to use a thermal-imaging camera to track and record animal movements at night, including terrestrial mammals, birds and bats. But Cadre (2025) reports nothing like this, and its analysis of wildlife movement and whether the project would interfere with it is therefore limited to speculation. Speculation is an unsound basis for making important determinations.

The IS/MND's analysis of whether the project would interfere with wildlife movement in the region is incomplete, unsound, and misleading. Increasingly surrounded by industrial and residential land uses, the project site is also increasingly important to wildlife movement in the region. The options for stopover and staging opportunities are diminishing as habitat is increasingly fragmented in the region.

TRAFFIC IMPACTS ON WILDLIFE

The IS/MND neglects to address one of the project's most obvious, substantial impacts to wildlife, and that is wildlife mortality and injuries caused by project-generated traffic. Project-generated traffic would endanger wildlife that must, for various reasons, cross roads used by the project's traffic (Photos 18–21), including along roads far from the project footprint but which would nevertheless be traversed by automobiles head to or from the project's building. Vehicle collisions have accounted for the deaths of many thousands of amphibian, reptile, mammal, bird, and arthropod fauna, and the impacts have often been found to be significant at the population level (Forman et al. 2003). Across North America traffic impacts have taken devastating tolls on wildlife (Forman et al. 2003). In Canada, 3,562 birds were estimated killed per 100 km of road per year (Bishop and Brogan 2013), and the US estimate of avian mortality on roads is 2,200 to 8,405 deaths per 100 km per year, or 89 million to 340 million total per year (Loss et al. 2014). Local impacts can be more intense than nationally.



Photo 18. *A desert cottontail runs across the road just in Murietta, California. Such road crossings are usually successful, but too often prove fatal to the animal.*



Photo 19. *A great-tailed grackle crosses a road in the Imperial Valley.*



Photos 20 and 21. *Raccoon killed on Road 31 just east of Highway 505 in Solano County (left; photo taken on 10 November 2018), and California kingsnake killed by a vehicle on a rural road in El Dorado County in 2024.*

The nearest study of traffic-caused wildlife mortality was performed along a 2.5-mile stretch of Vasco Road in Contra Costa County, California. Fatality searches in this study found 1,275 carcasses of 49 species of mammals, birds, amphibians and reptiles over 15 months of searches (Mendelsohn et al. 2009). This fatality number needs to be adjusted for the proportion of fatalities that were not found due to scavenger removal and searcher error. This adjustment is typically made by placing carcasses for searchers to

find (or not find) during their routine periodic fatality searches. This step was not taken at Vasco Road (Mendelsohn et al. 2009), but it was taken as part of another study next to Vasco Road (Brown et al. 2016). Brown et al.'s (2016) adjustment factors for carcass persistence resembled those of Santos et al. (2011). Also applying searcher detection rates from Brown et al. (2016), the adjusted total number of fatalities was estimated at 9,462 animals killed by traffic on the road. This fatality number projected over 1.25 years and 2.5 miles of road translates to 3,028 wild animals per mile per year. In terms comparable to the national estimates, the estimates from the Mendelsohn et al. (2009) study would translate to 188,191 animals killed per 100 km of road per year, or 22 times that of Loss et al.'s (2014) upper bound estimate and 53 times the Canadian estimate. An analysis is needed of whether increased traffic generated by the project site would similarly result in local impacts on wildlife.

For wildlife vulnerable to front-end collisions and crushing under tires, road mortality can be predicted from the study of Mendelsohn et al. (2009) as a basis, although it would be helpful to have the availability of more studies like that of Mendelsohn et al. (2009) at additional locations. My analysis of the Mendelsohn et al. (2009) data resulted in an estimated 3,028 animals killed per mile along a county road in Contra Costa County. The estimated numbers of fatalities were 1.75% birds, 26.4% mammals (many mice and pocket mice, but also ground squirrels, desert cottontails, striped skunks, American badgers, raccoons, and others), 67.4% amphibians (large numbers of California tiger salamanders and California red-legged frogs, but also Sierran treefrogs, western toads, arboreal salamanders, slender salamanders and others), and 4.4% reptiles (many western fence lizards, but also skinks, alligator lizards, and snakes of various species). VMT is useful for predicting wildlife mortality because I was able to quantify miles traveled along the studied reach of Vasco Road during the time period of the Mendelsohn et al. (2009), hence enabling a rate of fatalities per VMT that can be projected to other sites, assuming similar collision fatality rates.

Predicting project-generated traffic impacts on wildlife

Information reported in Table 17 of the IS/MND leads me to predict 4,295,513 annual VMT would be generated by the project. During the Mendelsohn et al. (2009) study, 19,500 cars traveled Vasco Road in Contra Costa County daily, so the vehicle miles that contributed to my estimate of non-volant fatalities was $19,500 \text{ cars and trucks} \times 2.5 \text{ miles} \times 365 \text{ days/year} \times 1.25 \text{ years} = 22,242,187.5 \text{ vehicle miles}$ per 9,462 wildlife fatalities, or 2,351 vehicle miles per fatality. This rate divided into the predicted annual VMT would predict 1,827 vertebrate wildlife fatalities per year due to project-generated traffic. However, some might argue that this prediction relies too much on a study along a road through less-disturbed rangeland that likely supports more non-volant wildlife that is more vulnerable to collision mortality. To address this argument, I recently completed my own study of wildlife mortality caused by automobiles along roads that were urban and interfaced between urban and agricultural land uses.

I completed one year of daily pedestrian surveys along 2.7 km (1.713 miles) of local, collector and minor arterial roads in north Davis, California, where I tallied 314 fatalities of 40 species of vertebrate wildlife. Most of the fatalities were small-bodied animals

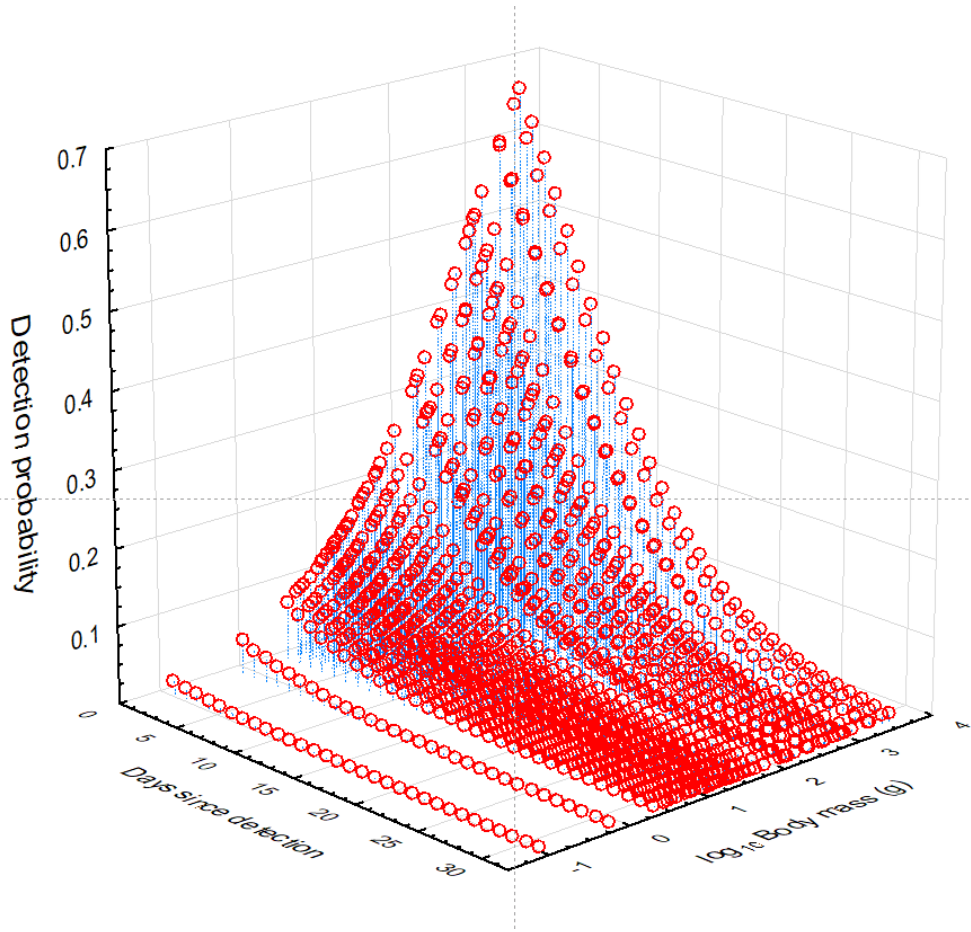
such as Sierran treefrogs, western toads, western fence lizards, 10” - to 16”-long juvenile Pacific gophersnakes, valley gartersnakes and California kingsnakes, as well as bushtits, yellow-rumped warblers, deer mice and California ground squirrels. Most of the animals I found would never have been detected from a moving vehicle, which is why people often underestimate how many wild animals are killed by vehicle traffic.

The animals I found in my study did not include all the animals killed by vehicles on the roads I searched. Many had been removed by scavengers before I could find and count them. (American crows patrol the roads every morning, and so does a large flock of wild turkeys.) Some of the animals are knocked off the road in places where I could never find them, and some were undoubtedly caught and carried away in the grills of vehicles or in tire treads. Most of the Sierran treefrogs disappeared from where I found them within several hours, so daily searches missed many of the fatalities. To adjust for these undetected fatalities, I fit a logit regression model to my fatality finds, all of which transitioned to carcass detection trials after I initially found them. Starting with the first day after each detection, I monitored the carcass trials for 30 days, and I assigned each a body mass estimate based on typical body mass reported in the literature. Predictor variables were days since detection and \log_{10} body mass. The relationship between carcass detection probability and the predictor variables is depicted in Figure 7. My fatality finds adjusted by the model results in an estimate of 2,126 vertebrate wildlife fatalities over 1.713 miles of roads in one year, or 1,241 vertebrate wildlife fatalities/mile/year. This rate is 40.9% of the rate measured at Vasco Road, or an estimated 5,748 vehicle miles per fatality. Applying this urban fatality rate to the VMT that is predicted for the project would predict 747 vertebrate wildlife fatalities per year in the area around the project that is traveled by project-generated traffic.

A reasonable range of predicted mortality is therefore 747 to 1,827 vertebrate wildlife fatalities/year due to project-generated traffic.

Based on my analysis, the project-generated traffic would cause substantial, significant impacts on wildlife. The IS/MND does not address this potential impact, let alone propose to mitigate it. Mitigation measures to improve wildlife safety along roads are available and are feasible, and they need exploration for their suitability with the proposed project. Given the predicted level of project-generated traffic-caused mortality, and the lack of any proposed mitigation, it is my opinion that the proposed project would result in potentially significant adverse biological impacts, and that these impacts would be unmitigated.

Figure 7.
Wildlife carcass detection probability is a function of the number of days since discovery and \log_{10} body mass.



WILDLIFE DEPREDATION BY HOUSE CATS

Considering national trends, it is safe to assume that house cats would be introduced to the project area by residents of the proposed residential units. This is significant because house cats serve as one of the largest sources of avian mortality in North America (Dauphiné and Cooper 2009, Blancher 2013, Loss et al. 2013, Loyd et al. 2017). Loss et al. (2013) estimated 139 million cats in the USA in 2013 (range 114 to 164 million), which killed an estimated 16.95 billion vertebrate wildlife annually (range 7.6 to 26.3 billion). In 2012 there were 0.44 house cats per human in the USA, and 122 vertebrate animals were killed per cat, free-ranging members of which killed disproportionately larger numbers of vertebrate wildlife. The IS/MND predicts 1,660 new residents, but assuming the population is distributed proportional to square feet of floor space, then 36.7% (609) of new residents would dwell in apartments, and 1,051 would dwell in townhomes and single-family homes. This is important because Ma and McLeod (2023) found that only 15% of apartment owners allow their cats to roam free. The above rates of cat ownership applied to numbers of new residents who would allow their cats to roam free would predict 503 new free-ranging cats, which based on the findings of Loss et al. (2013) would kill 61,366 vertebrate wildlife per year.

House cats also contribute to downstream loading of *Toxoplasma gondii*. According to a UC Davis wildlife health research program, “*Toxoplasma gondii* is a parasite that can infect virtually all warm-blooded animals, but the only known definitive hosts are cats – domesticated and feral house cats included. Cats catch the parasite through hunting rodents and birds and they offload it into the environment through their feces... and ...rain that falls on cement creates more runoff than rain that falls on natural earth, which contributes to increased runoff that can carry fecal pathogens to the sea” (The original link is no longer active, but the quote came from the program described at: <https://whc.vetmed.ucdavis.edu/programs-projects/ca-conservation/sea-otter>).

Impacts to wildlife from the introduction of house cats into the environment would be highly significant, and yet these impacts are not considered in the IS/MND. An obvious mitigation measure would be to constrain house cat ownership such as requiring cats to remain indoors.

BIRD-WINDOW COLLISION MORTALITY

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

Many special-status species of birds have been recorded at or near the aerosphere of the project site. My database review and our site visits indicate there are 101 special-status species of birds with potential to use the site’s aerosphere (Table 2). All the birds represented in Table 2 can quickly fly from wherever they have been documented to the project site, so they would all be within brief flights to the proposed project’s windows. We confirmed birds of 31 species on the project site, many of them flying across the site.

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

Glass-façades of buildings intercept and kill many birds, but they are differentially hazardous to birds based on spatial extent, contiguity, orientation, and other factors. At Washington State University, Johnson and Hudson (1976) found 266 bird fatalities of 41 species within 73 months of monitoring of a three-story glass walkway (no fatality adjustments attempted). Prior to marking the windows to warn birds of the collision hazard, the collision rate was 84.7 per year. At that rate, and by not attempting to adjust

the fatality estimate for the proportion of fatalities not found, 4,574 birds were likely killed over the 54 years since the start of their study, and that's at a relatively small building façade. Accounting for the proportion of fatalities not found in searches, the number of birds killed by this walkway over the last 54 years would have been about 14,270. And this is just for one 3-story, glass-sided walkway between two college campus buildings.

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

By the time Loss et al. (2014) performed their effort to estimate annual USA bird-window fatalities, many more fatality monitoring studies had been reported or were underway. Loss et al. (2014) incorporated many more fatality rates based on scientific monitoring, and they were more careful about which fatality rates to include. However, they included estimates based on fatality monitoring by homeowners, which in one study were found to detect only 38% of the available window fatalities (Bracey et al. 2016). Loss et al. (2014) excluded all fatality records lacking a dead bird in hand, such as injured birds or feather or blood spots on windows. Loss et al.'s (2014) fatality metric was the number of fatalities per building (where in this context a building can include a house, low-rise, or high-rise structure), but they assumed that this metric was based on window collisions. Because most of the bird-window collision studies were limited to migration seasons, Loss et al. (2014) developed an admittedly assumption-laden correction factor for making annual estimates. Also, only two of the studies included adjustments for carcass persistence and searcher detection error, and it was unclear how and to what degree fatality rates were adjusted for these factors. Although Loss et al. (2014) attempted to account for some biases as well as for large sources of uncertainty mostly resulting from an opportunistic rather than systematic sampling data source, their estimated annual fatality rate across the USA was highly uncertain and vulnerable to multiple biases, most of which would have resulted in fatality estimates biased low.

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

fatality searcher from detecting these fatalities. Adjusting fatality rates for these factors – search radius bias, searcher detection error, and carcass persistence rates – would greatly increase nationwide estimates of bird-window collision fatalities.

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

Project Impact Prediction: By the time of these comments, I had reviewed and processed results of bird collision monitoring at 213 buildings and façades for which bird collisions per m² of glass per year could be calculated and averaged (Johnson and Hudson 1976, O’Connell 2001, Somerlot 2003, Hager et al. 2008, Borden et al. 2010, Hager et al. 2013, Porter and Huang 2015, Parkins et al. 2015, Kahle et al. 2016, Ocampo-Peñuela et al. 2016, Sabo et al. 2016, Barton et al. 2017, Gomez-Moreno et al. 2018, Schneider et al. 2018, Loss et al. 2019, Brown et al. 2020, City of Portland Bureau of Environmental Services and Portland Audubon 2020, Riding et al. 2020). These study results averaged 0.073 bird deaths per m² of glass per year (95% CI: 0.042-0.102). This average and its 95% confidence interval provide a robust basis for predicting fatality rates at a proposed new project.

With the estimated average bird collision mortality above, all I need are estimates of window extents in the project. Based on the square-footages of buildings composing each type of proposed development in the project, I compared the average m² of exterior glass windows relative to the sf of floor space that I have maintained in a database of other development projects for which I have been able to measure window extents in

renderings provided in the environmental review documents (Table 3). The extents of windows multiplied against the above-reported average bird collision deaths per m² of glass per year predicts 757 (95% CI: 444–1,051) bird collision fatalities per year.

Table 3. Summary of the amount of exterior glass that is predictable for each type of development, and the annual bird-window collision mortality that is predicted from each.

Development	Square feet	Extent of exterior glass		Bird collision fatalities/year
		m ² /sf ^a	m ²	
Townhomes	114,744	0.03491	4006	293 (95% CI: 174–412)
Single-family homes	234,941	0.01591	3738	273 (95% CI: 162–384)
Apartments ^b	202,875	0.01158	2349	172 (95% CI: 102–241)
Recreation building	5,577	0.02331	130	410 (95% CI: 6–13)
Total	558,137		10,223	757 (95% CI: 444–1,051)

^a Based on mean ratios of window extents relative to floor space in renderings of buildings in environmental review documents I have reviewed (K. S. Smallwood unpublished data); the exception is the recreation building, for which I applied the mean from office buildings.

^b I assumed 1,014 sf for 2-bedroom apartments.

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

CUMULATIVE IMPACTS

The IS/MND’s cumulative impacts analysis is flawed. The first flaw is the claim that mitigation measures BIO-1 and BIO-2 would reduce project-specific impacts on wildlife to less than significant levels, because they would not (see comments under Flawed Mitigation Strategy, below). This flaw is followed by the implied notion that reducing project-specific impacts also reduces project contributions to cumulative impacts to less than significant levels. This notion is inconsistent with the CEQA’s definition of cumulative effects, and if it was true, then there would be no purpose to CEQA’s requirement for cumulative impacts analysis.

The IS/MND (p. 91) further claims that “potentially significant impacts would be reduced to a level of less than significant through compliance with applicable permits (pursuant to the federal Clean Water Act, MBTA, federal Endangered Species Act, and California Endangered Species Act)...,” but it provides no explanation of how compliance with these permits would reduce the impacts. The IS/MND (p. 91) extends the same claim to other projects that might have contributed to cumulative impacts: “Other development in the project area also would be required to comply with

applicable environmental laws and mitigation requirements.” However, all previous projects that underwent CEQA review and which were subsequently developed presumably also obtained all their required permits, yet wildlife continued to decline (e.g., Rosenberg et al. 2019, Miller 2024). If the IS/MND’s argument was sound, then there would be no purpose to the CEQA’s requirement for cumulative impacts analysis.

Noriko and I performed an experiment to measure the effects – including cumulative effects – of projects that had to comply with permits, existing regulations, and required project mitigation. We revisited the project sites we had earlier surveyed as experts to repeat the survey methods at the same time of year, the same start time in the day, and the same methods and survey duration to measure the effects of mitigated development on wildlife. We structured the experiment in a before-after, control-impact experimental design, as some of the sites had been developed since our initial survey and some had remained undeveloped. All the developed sites had included mitigation measures to avoid, minimize or compensate for impacts on wildlife. Nevertheless, we found that mitigated development resulted in a 66% loss of species on site, and 48% loss of species in the project area. Counts of vertebrate animals declined 90%. We reported that “Development impacts measured by the mean number of species detected per survey were greatest for amphibians (-100%), followed by mammals (-86%), grassland birds (-75%), raptors (-53%), special-status species (-49%), all birds as a group (-48%), non-native birds (-44%), and synanthropic birds (-28%). Our results indicated that urban development substantially reduced vertebrate species richness and numerical abundance, even after richness and abundance had likely already been depleted by the cumulative effects of loss, fragmentation, and degradation of habitat in the urbanizing environment,” and despite all the mitigation measures, permits, policies, regulations, and habitat plans. The IS/MND’s claim that project compliance with permits and required mitigation measures would avoid cumulative impacts on wildlife has been soundly refuted.

Another flaw, which is related to that commented on above, is the claim that the MSHCP would avoid cumulative impacts because it was formulated to anticipate such impacts. According to Cadre (2025:43), “...the MSHCP was developed to address the comprehensive regional planning effort and anticipated growth in the City of Lake Elsinore.” And according to the IS/MND (p. 91) “The Western Riverside County MSHCP, which has been adopted by local jurisdictions and approved by the wildlife agencies, is largely designed to address potential cumulative impacts to sensitive biological resources resulting from development in the western portion of the County through assembly of a comprehensive reserve system. Based on the project-specific mitigation measures that would be implemented and on the existence of an approved region-wide conservation plan, the proposed project would not incrementally contribute to a significant cumulative biological resources impact.” But again, the IS/MND does not explain how the MSHCP would avoid cumulative impacts, other than to vaguely suggest that the MSHBP’s reserve system would somehow accomplish this. The IS/MND could have, but did not, cite evidence of the MSHCP’s progress toward meeting its conservation goals and objectives.

The evidence indicates the MSHCP is failing to meet its conservation goals and objectives while at the same time frontloading development. The biological goal of the MSHCP is to “...conserve covered species and their habitats...” by acquiring 153,000 acres of additional reserve land and meeting species-specific numerical thresholds of abundance. According to the 2023 annual report, additional acreage acquired through 2023 totaled 68,100 acres, or 44.5% of the goal. Only 47,056 acres were managed under Regional Conservation Authority (RCA), or 31% of the goal. Over the same time period, habitat losses totaled 101,214 acres, of which 19,104 acres (19%) were inside Criteria Cells. The MSHCP is failing to meet goals and objectives.

The MSHCP also fails to achieve its conservation goals for focal species such as the burrowing owl. The 2023 Annual Report of the MSHCP (p. 8-8) states, “The species objectives for Burrowing Owl (*Athene cunicularia hypugaea*) require the conservation of five Core Areas, plus interconnecting linkages, containing a breeding population of 120 Burrowing Owls with no fewer than five pairs in any one Core Area.” (<https://www.wrc-rca.org/document-library/annual-reports/>) In 2022, there were 7 pairs in one Core Area, 4 of which produced a total 4 fledglings (1 fledgling per successful nest attempt). In 2023, this Core Area was down to 5 pairs, of which one succeeded in producing a single fledgling. Another Core area contained 3 pairs in 2022, and 3 fledglings were recorded by one of these pairs. In 2023, this Core Area was down to 2 pairs, one of which produced 5 fledglings. The evidence shows a dismal failure of the MSHCP to conserve burrowing owls, as the documented breeding population was 20 (16.67% of the target) in 2022 and 14 (11.67% of the target) in 2023, and only one (20%) Core Area contained at least five pairs in either year. The MSHCP has failed to conserve burrowing owls at target levels, and its performance is declining.

Nor was the mitigation of the MSHCP formulated in response to consideration of all the impacts I outlined in my comments. The strategy of the MSHCP is to preserve patches of habitat as mitigation for the habitat that will be lost to development. This strategy fails to consider the chronic impacts of the ecological sinks created by the projects’ habitat destruction. One such ecological sink includes road traffic, which chronically takes members of species targeted for protection in the preserved habitat. The MSHCP fails to consider that wildlife are mobile, and that wildlife cannot persist without expressing their mobility. To migrate, disperse, forage, and patrol home ranges, wildlife must cross roads, and those that are volant must fly through the airspaces that best conserve energy and avoid predators. Furthermore, the consigning of wildlife to the preserved habitat patches per the MSHCP’s strategy exposes those “preserved” wildlife to catastrophic losses from wildfire. Having worked with endangered species in small, isolated habitat patches, I have witnessed what happens when fire burns all the vegetation remaining in the patch, or when drought destroys all the forage; the species is extinguished. The MSHCP cannot alone mitigate the impacts of this or all the other projects participating with it.

The MSHCP is not achieving its conservation goals for covered species of wildlife, but as I noted earlier, it is especially deficient in its conservation of species that lack coverage. Regarding these latter species, Cadre (2025:43) reports that “Non-covered sensitive floral or faunal species were not detected or expected to occur within or adjacent to the

project and therefore the development of the Project Site would not result or contribute to a cumulative impact to non-covered species.” However, as I commented earlier, the surveys completed by Cadre were not suitable for determining that any of the species not detected by Cadre are truly absent from the site. Cadre’s conclusion of no cumulative impact on non-covered species is scientifically indefensible and readily refuted. Of the special-status species in Table 2, 62% (94) of them lack coverage under the MSHCP. Six of these species have been documented on the project site, and 35 more have been detected within 1.5 miles of the site, and another 9 have been documented between 1.5 and 4 miles of the site. Fifty special-status species of vertebrate wildlife have been documented within a 4-mile radius of the project site, and none of these have been considered in the formulation of the MSHCP.

The final flaw of the IS/MND’s analysis is that it does not extend impact predictions to the many projects it lists as potential contributors to cumulative impacts. Following my comments, for example, it could extend my predicted loss of 968 birds per year due to habitat loss by multiplying the number of birds lost per acre against the cumulative acreage of habitat loss. It could also extend my predicted 747–1,827 wild animals per year killed by project-generated traffic to the projected annual VMT among the projects identified as potential contributors to cumulative impacts. It could extend my predicted 757 (95% CI: 444-1,051) birds per year killed by the project’s glass windows to the extents of glass in projects identified as potential contributors to cumulative impacts. It could extend my predicted 61,366 vertebrate wildlife per year killed by the project’s house cats to the predicted number of house cats among the projects identified as potential contributors to cumulative impacts. The IS/MND’s cumulative impacts analysis is incomplete.

FLAWED MITIGATION STRATEGY

The mitigation strategy needs to be based on a sound understanding of the existing wildlife community. It needs to be known which species occur or are likely to occur on the project site as well as the nature of their occurrences. Are the occurrences of resident species? Migratory? For special-status species, detection surveys should have been performed to either detect the species or to obtain evidence of absence. Surveys should have been performed to understand how wildlife use the site in their movement patterns. And what was found of wildlife species needs to be carefully interpreted by comparing the findings to the findings from other survey efforts at other sites. Failures to detect species should be interpreted relative to the probabilities of their detections given the survey effort. The mitigation strategy needs to follow the steps under Assess species occurrence likelihoods and Characterize wildlife community, followed by Step 7: Predict impacts (Figure 5). However, the IS/MND’s mitigation strategy does not follow from these steps. This pointed out, my comments follow in regular font the summary of each required mitigation measure in italics.

MSHCP Participation. *The project is subject to MSHCP Local Development Mitigation fees...*

The fees need to be paid, but it needs to be understood that the MSHCP is failing to meet its conservation goals and objectives, and covered species continue to decline and are not being conserved to identified success thresholds. It also needs to be understood that most special-status species potentially adversely affected by this project are not covered by the incidental take permit of the MSHCP.

MM BIO-1: *Pre-construction Surveys for Burrowing Owl.* *A qualified biologist shall conduct pre-construction focused species surveys in accordance with the California Department of Fish and Wildlife’s (CDFW’s) Staff Report on Burrowing Owl Mitigation (CDFW 2012) within 30 days prior to commencement of construction activities. If burrowing owls are determined to occupy the site during pre-construction surveys and impacts to occupied burrows cannot be avoided, the City shall consult with the CDFW and prepare and implement a project-specific Burrowing Owl Mitigation Plan. ... To avoid take, impacted individuals shall be relocated outside of the impact area by a qualified biologist prior to initiation of construction activities using passive or active methodologies approved by CDFW. The relocation shall occur outside of the breeding season for the burrowing owl. Existing burrows shall be destroyed once they are vacated.*

The strategy is premature because breeding-season surveys for burrowing owls have not been completed to the standards of CDFW (2012), and no surveys have been completed at all since 2022. To be consistent with the CDFW (2012) survey guidelines, as the IS/MND claims it would be, the preconstruction survey needs to follow breeding season-surveys, and the breeding-season surveys need to be completed prior to the public circulation of the CEQA review document. The CDFW (2012) guidelines recommends his sequence of surveys because the breeding-season surveys are intended to disclose potential impacts, and to inform survey personnel of where they are most likely to find burrowing owls in the preconstruction survey.

As for relocation, the burrowing owl is a candidate for listing under the California Endangered Species Act, so it is unlikely that the CDFW would approve relocation. Moreover, the applicant needs to consult with the CDFW before the public circulation of the CEQA review document because the CDFW needs to be consulted prior to the breeding-season surveys.

MM BIO-2: *Pre-construction Surveys for Nesting Birds.* *... construction activities shall be avoided to the greatest extent feasible during the nesting season (generally February 1 to August 31).*

This mitigation language lacks commitment by allowing for construction activities to begin during the nesting season, and as such it is empty and unenforceable.

MM BIO-2: *Pre-construction Surveys for Nesting Birds.* *... If construction activities are to occur during the nesting season, a pre-construction nesting survey shall be conducted within three days prior to the commencement of construction. A qualified biologist shall perform the nesting survey to ascertain whether there are active raptor nests within 500 feet of the project footprint or other protected bird nests*

within 300 feet of the project footprint. If no nests are found, no further action is required. If active nests are found, An appropriate avoidance buffer ... shall be determined and demarcated by a qualified biologist. If disturbance is detected (e.g., alarm calling, flight from the nest) as determined by the qualified biologist, work in the area should halt immediately until such time as the young have left the nest of their own volition. ...

Should the project go forward, I concur with this measure, but the 3-day window for completing the preconstruction survey would be too brief for detecting all avian nest sites. Preconstruction, take-avoidance surveys consist of two steps, both of which are very difficult. First, the biologist(s) performing the survey must identify birds that are breeding. Second, the biologist(s) must locate the breeding birds' nests. The first step is typically completed by observing bird behaviors such as food deliveries and nest territory defense. To be successful, these types of observations typically require many surveys on many dates spread throughout the breeding season even for a single species. To identify and locate the birds of all species nesting on a site would require a much greater survey effort than can be accomplished in three days.

I predict the project site supports 214 nest sites in the average year, and this number does not include those that would need to be located within the defined buffer areas beyond the project site's boundary. Even assuming all these nests could be found (not likely), the mitigation measure would apply only to the breeding season of the survey. After the breeding season of the preconstruction survey, there would be no further production of birds from the project site. The project's impact on birds would be permanent and of large magnitude. The conservation benefits of this measure would be *de minimis* compared to the project's potential impacts on breeding birds.

Lastly, the mitigation language allows a single individual to make a subjective decision, outside the public's view, to determine the buffer area and buffer timing for any given species. This measure lacks objective criteria, and it is therefore unenforceable.

Stephens Kangaroo Rat HCP. *The project site falls within the Stephens' kangaroo rat (SKR) Fee Area outlined in the Riverside County SKR HCP. The project applicant is required to pay the fees pursuant to County Ordinance 663.10 for the SKR HCP Fee Assessment Area as established and implemented by the County of Riverside. With payment of the required fee, the project would not conflict with the provisions of the SKR HCP.*

The fee needs to be paid, but as I did with the MSHCP, the City of Lake Elsinore needs to assess whether the Stephens Kangaroo Rat HCP is meeting its stated conservation goals and objectives.

NEEDED MITIGATION MEASURES

Compensatory Habitat Protection: The project would destroy the productive capacity of the project site for birds. The loss of this capacity would need to be offset by compensatory mitigation as near to the site as possible. I recommend a 5:1 mitigation ratio to achieve a no net loss standard, as a 1:1 ratio would simply ensure a 50% loss of habitat between the project site and mitigation site.

The loss of burrowing owl foraging opportunities would need to be mitigated, as well. The applicant needs to consult with the CDFW to learn what mitigation ratio would be acceptable for loss of burrowing owl habitat on the project site, and whether and where habitat is available to be protected nearby.

Biological Monitoring during Construction: A qualified biologist needs to be retained to monitor construction activities to ensure maximum safety to wildlife, to transport injured wildlife to rehabilitation facilities, and to maintain publicly available reporting of all wildlife incidents and the fates of all wildlife involved.

House Cat Predation: As I commented earlier, an obvious action to minimize house cat impacts on wildlife would be to require apartment residents to keep their cats indoors. A mechanism for enforcement of this policy would also be needed. I also suggest payment of a mitigation fee to the Humane Society or another suitable organization to cover its costs of assisting the capture and neutering of free-ranging house cats.

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

New research results inform of the efficacy of marking windows. Whereas Klem (1990) found no deterrent effect from decals on windows, Johnson and Hudson (1976) reported a fatality reduction of about 69% after placing decals on windows. In an experiment of opportunity, Ocampo-Peñuela et al. (2016) found only 2 of 86 fatalities at one of 6

buildings – the only building with windows treated with a bird deterrent film. At the building with fritted glass, bird collisions were 82% lower than at other buildings with untreated windows. Kahle et al. (2016) added external window shades to some windowed façades to reduce fatalities 82% and 95%. Brown et al. (2020) reported an 84% lower collision probability among fritted glass windows and windows treated with ORNILUX R UV. City of Portland Bureau of Environmental Services and Portland Audubon (2020) reduced bird collision fatalities 94% by affixing marked Solyx window film to existing glass panels of Portland’s Columbia Building. Many external and internal glass markers have been tested experimentally, some showing no effect and some showing strong deterrent effects (Klem 1989, 1990, 2009, 2011; Klem and Saenger 2013; Rössler et al. 2015).

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

Road Mortality: Compensatory mitigation is needed for the increased wildlife mortality that would be caused by collisions with automobiles due to project-generated road traffic in the region. I suggest that this mitigation can be directed toward funding research to identify fatality patterns and effective impact reduction measures such as reduced speed limits and wildlife under-crossings or overcrossings of particularly dangerous road segments. Compensatory mitigation can also be provided in the form of donations to wildlife rehabilitation facilities (see below).

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

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

plant landscaping benefit wildlife, it requires less water and maintenance than traditional landscaping with lawn and hedges.

Thank you for your consideration,



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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

- 762 professional reports, including:
 - 90 peer reviewed publications
 - 24 in non-reviewed proceedings
- 646 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 92 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 based on 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 foudns 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 interspersed 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.

Peer Reviewed Publications

Smallwood, K. S. 2022. Utility-scale solar impacts to volant wildlife. *Journal of Wildlife Management*: e22216. <https://doi.org/10.1002/jwmg.22216>

Smallwood, K. S., and N. L. Smallwood. 2021. Breeding Density and Collision Mortality of Loggerhead Shrike (*Lanius ludovicianus*) in the Altamont Pass Wind Resource Area. *Diversity* 13, 540. <https://doi.org/10.3390/d13110540>.

Smallwood, K. S. 2020. USA wind energy-caused bat fatalities increase with shorter fatality search intervals. *Diversity* 12(98); <https://doi.org/10.3390/d12030098>

Smallwood, K. S., D. A. Bell, and S. Standish. 2020. Dogs detect larger wind energy impacts on bats and birds. *Journal of Wildlife Management* 84:852-864. DOI: 10.1002/jwmg.21863.

Smallwood, K. S., and D. A. Bell. 2020. Relating bat passage rates to wind turbine fatalities.

- Diversity 12(84); doi:10.3390/d12020084.
- Smallwood, K. S., and D. A. Bell. 2020. Effects of wind turbine curtailment on bird and bat fatalities. *Journal of Wildlife Management* 84:684-696. DOI: 10.1002/jwmg.21844
- Kitano, M., M. Ino, K. S. Smallwood, and S. Shiraki. 2020. Seasonal difference in carcass persistence rates at wind farms with snow, Hokkaido, Japan. *Ornithological Science* 19: 63 – 71.
- Smallwood, K. S. and M. L. Morrison. 2018. Nest-site selection in a high-density colony of burrowing owls. *Journal of Raptor Research* 52:454-470.
- Smallwood, K. S., D. A. Bell, E. L. Walther, E. Leyvas, S. Standish, J. Mount, B. Karas. 2018. Estimating wind turbine fatalities using integrated detection trials. *Journal of Wildlife Management* 82:1169-1184.
- Smallwood, K. S. 2017. Long search intervals under-estimate bird and bat fatalities caused by wind turbines. *Wildlife Society Bulletin* 41:224-230.
- Smallwood, K. S. 2017. The challenges of addressing wildlife impacts when repowering wind energy projects. Pages 175-187 in Köppel, J., Editor, *Wind Energy and Wildlife Impacts: Proceedings from the CWW2015 Conference*. Springer. Cham, Switzerland.
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- Smallwood, K. S. 2017. Monitoring birds. M. Perrow, Ed., *Wildlife and Wind Farms - Conflicts and Solutions*, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q
- Smallwood, K. S., L. Neher, and D. A. Bell. 2017. Turbine siting for raptors: an example from Repowering of the Altamont Pass Wind Resource Area. M. Perrow, Ed., *Wildlife and Wind Farms - Conflicts and Solutions*, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q
- Johnson, D. H., S. R. Loss, K. S. Smallwood, W. P. Erickson. 2016. Avian fatalities at wind energy facilities in North America: A comparison of recent approaches. *Human-Wildlife Interactions* 10(1):7-18.
- Sadar, M. J., D. S.-M. Guzman, A. Mete, J. Foley, N. Stephenson, K. H. Rogers, C. Grosset, K. S. Smallwood, J. Shipman, A. Wells, S. D. White, D. A. Bell, and M. G. Hawkins. 2015. Mange Caused by a novel *Micnemidocoptes* mite in a Golden Eagle (*Aquila chrysaetos*). *Journal of Avian Medicine and Surgery* 29(3):231-237.
- Smallwood, K. S. 2015. Habitat fragmentation and corridors. Pages 84-101 in M. L. Morrison and H. A. Mathewson, Eds., *Wildlife habitat conservation: concepts, challenges, and solutions*. John Hopkins University Press, Baltimore, Maryland, USA.

EXHIBIT B



Technical Consultation, Data Analysis and
Litigation Support for the Environment

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January 12, 2025

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

Subject: Comments on the Dexter Village Project (SCH No. 2025110457)

Dear Mr. Flynn,

We have reviewed the November 2025 Initial Study/Mitigated Negative Declaration (“IS/MND”) for the Dexter Village (“Project”) located in the City of Lake Elsinore (“City”). The Project proposes to construct 84 townhomes, 137 single-family homes, and 230 apartments on the 23.05-acre site.

Our review concludes that the IS/MND fails to adequately evaluate the Project’s air quality and health risk impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project may be underestimated and inadequately addressed. An Environmental Impact Report (“EIR”) should be prepared to adequately assess and mitigate the potential air quality and health risk impacts that the Project may have on the environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

When reviewing the Project’s CalEEMod output files, provided in the Air Quality, Energy, and Greenhouse Gas Emissions Impact Report (“AQ Report”) as Appendix A to the IS/MND, we identified several model inputs related to Project construction and operation that are inconsistent with information disclosed in the IS/MND. The impact of these changes is quantified in the section of this letter titled “Updated Analysis Indicates a Potentially Significant Air Quality Impact.” An EIR should be prepared to include an updated air quality analysis that provides a more detailed evaluation of the impact that the Project may have on local and regional air quality.

Unsubstantiated Changes to Land Use Size

Review of the CalEEMod output files demonstrates that the “Dexter Village Project - Phase 1 Custom Report” and “Dexter Village Project - Phase 2 Custom Report” models include 116,940-SF of

“Condo/Townhouse” space, 236,233-SF of “Single Family Housing” space, and 202,590-SF of “Apartments Mid Rise” space, respectively (see screenshots below) (Appendix A, pp. 89, 90, 163, 164).

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Condo/Townhouse	84.0	Dwelling Unit	5.25	116,940	48,737	—	271	—
Parking Lot	196	Space	1.76	0.00	0.00	—	—	SFR/Townhome Open Space + Driveway Parking
Enclosed Parking Structure	442	Space	0.00	0.00	0.00	—	—	SFR/Townhome Garage Parking
Single Family Housing	137	Dwelling Unit	9.39	236,233	0.00	—	443	—

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	230	Dwelling Unit	6.05	202,590	28,859	—	743	—
Parking Lot	214	Space	0.60	0.00	0.00	—	—	Apartments Open Parking
Enclosed Parking Structure	234	Space	0.00	93,600	0.00	—	—	Apartments Garage Parking

While the IS/MND proposes to develop 84 townhomes, 137 single-family homes, and 230 apartments, the IS/MND does not specify the square footage of the proposed building area. The IS/MND states:

“A total of 84 townhomes would be constructed in the western portion of the site, consisting of a mixture of two- and three-bedroom units ranging from 1,230 to 1,508 square feet (SF) and all with two-car garages”

and

“Homes in the 8-pack clusters would include three to four bedrooms with a standard two-car garage and range from 1,323 to 1,918 SF on lot sizes ranging from 2,225 to 2,936 SF. The 6-pack cluster would entail a grouping of six homes around a common driveway. Homes in the 6-pack cluster would encompass between 1,631 and 2,146 SF on lot sizes ranging from 1,648 to 2,379 SF with three bedrooms and a standard two-car garage. The front load condition consists of individual detached homes fronting the internal access road with access to garages provided directly by the internal access road. Homes in the front load condition would include three to four bedrooms with a standard two-car garage, ranging from 1,323 to 1,918 SF and would be located on lots that range from 1,644 to 2,878 SF” (p. 8).

The IS/MND continues, stating:

“The proposed apartments would consist of a mixture of one- to three-bedroom units (110 one-bedroom units, 95 two-bedroom units, and 25 three-bedroom units) ranging from 657 to 1,371 SF and single-car and two-car tandem garages” (p. 9).

As indicated above, the IS/MND only includes the range in square footage for the proposed residential space. The residential square footage included in the model is thus unsupported and may be underestimated.

This potential underestimation presents an issue, as the land use size feature is used throughout CalEEMod to determine default variable and emission factors that affect the model’s calculations. The square footage of each land use is used for certain calculations such as architectural coatings and energy use.¹ By potentially underestimating the size of the proposed housing, the model may underestimate the Project’s construction and operational emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that the “Dexter Village Project - Phase 1 Custom Report” and “Dexter Village Project - Phase 2 Custom Report” models include changes to the default individual construction phase lengths (see screenshot below) (Appendix A, pp. 155, 219).

Land Use	Project site is 23.05 acres. Approximately 16.4 acres would develop approximately 137 single family homes and 84 townhomes, including 638 parking spaces (442 spaces in built in garage, 148 driveway spaces, and 48 open spaces), and 48,737 sf of open space area. The parking lot acreage reflects all area covered by open space parking, driveways, and internal streets. Calculations are as follows: Single family area = 16.4 acres of total area - 5.25 acres of townhome units - 1.76 acres of parking = 9.39 acres
Construction: Construction Phases	Project would not include demolition. Construction would occur over two phases, with the single-family residential units beginning in January 2026 and occurring for 18 months, ending in July 2027. Mass grading of the entire site would occur in Phase 1 of construction.
Construction: Off-Road Equipment	Default construction equipment with Tier 2 engines.
Construction: Architectural Coatings	project would comply with SCAQMD Rule 1113 for architectural coatings
Operations: Vehicle Data	Based on the trip generation, the townhome units would generate 605 ADT and the single-family homes would generate approximately 1,292 ADT for a combined total of 3,447 ADT. Trip rate = 605 ADT/ 84 units = 7.20 1,292 ADT/ 137 units = 9.43
Operations: Hearths	Project would not include wood burning hearths or natural gas
Operations: Energy Use	project would not include natural gas

As a result of these changes, the models include the following construction schedules (see excerpt below) (Appendix A, pp. 142, 208, 209):

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/5/2026	2/20/2026	5.00	35.0	—
Grading	Grading	2/23/2026	4/10/2026	5.00	35.0	—
Building Construction	Building Construction	4/13/2026	5/7/2027	5.00	280	—
Paving	Paving	5/10/2027	5/28/2027	5.00	15.0	—
Architectural Coating	Architectural Coating	2/1/2027	7/2/2027	5.00	110	—

¹ “CalEEMod User Guide.” CAPCOA, April 2022, available at: https://www.caleemod.com/documents/user-guide/01_User%20Guide.pdf, p. 30.

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Building Construction	Building Construction	1/4/2027	1/7/2028	5.00	265	—
Paving	Paving	1/10/2028	1/28/2028	5.00	15.0	—
Architectural Coating	Architectural Coating	10/4/2027	3/3/2028	5.00	110	—

The CalEEMod User’s Guide requires any changes to model defaults be justified.² The justification provided for these changes is:

“Project would not include demolition. Construction would occur over two phases, with the apartment units beginning in January 2027 and occurring for 14 months. Mass site preparation and grading would occur during Phase 1. This analysis assumes that only building construction, paving, and architectural coating phases would occur during Phase 2” (Appendix A, pp. 155, 219).

Regarding the construction schedule, the IS/MND states:

“The project would be constructed in two phases, with the single-family residential component occurring first followed by the multi-family residential development. The entire site, however, would be mass graded during the first phase. Grading and construction of the single-family development would take approximately 18 months, and construction of the multi-family development would take approximately 14 months” (p. 11).

Additionally, the AQ Report provides the following construction schedule, citing “Compiled by LSA (May 2025)” as the source (see screenshot below) (Appendix A, p. 50, Table J):

Table J: Tentative Project Construction Schedule

Phase Number	Phase Name	Phase Start Date	Phase End Date	Number of Days/Week	Number of Days
Phase 1 Project Construction					
1	Site Preparation	1/5/2026	2/20/2026	5	35
2	Grading	2/23/2026	4/10/2026	5	35
3	Building Construction	4/13/2026	5/7/2027	5	280
4	Paving	5/10/2027	5/28/2027	5	15
5	Architectural Coating	2/1/2027	7/2/2027	5	110
Phase 2 Project Construction					
1	Building Construction	1/4/2027	1/7/2028	5	265
2	Paving	1/10/2028	1/28/2028	5	15
3	Architectural Coating	10/4/2027	3/3/2028	5	110

Source: Compiled by LSA (May 2025).

Note:

Assuming construction will start in January 2026 and end in March 2028. Architectural coating phase was extended to overlap with building construction and paving.

Although the IS/MND justifies the total construction duration of 18 months for Phase 1 and 14 months for Phase 2, the provided table and source do not adequately substantiate the individual construction

² “CalEEMod User Guide.” CAPCOA, April 2022, available at: https://www.caleemod.com/documents/user-guide/01_User%20Guide.pdf, p. 13, 14.

phase lengths. LSA is the environmental consulting firm that prepared the AQ Report and associated air modeling in CalEEMod. The construction schedule—and any changes in the CalEEMod model—should be provided the Project Applicant. The AQ Report, which reflects what is in the air modeling, or the CalEEMod output files themselves are insufficient justification. According to the CalEEMod User’s Guide:

“CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA.”³

Without a verifiable source, construction emissions may be unevenly distributed, with some phases extended over longer periods. According to the CalEEMod User’s Guide, each construction phase is associated with different emissions activities (see excerpt below).⁴

Table 3. CalEEMod Default Construction Phases^a

Phase Type	Description
NON-LINEAR LAND USE TYPES (VERTICAL CONSTRUCTION)	
Demolition	Involves removing buildings or structures.
Site Preparation	Involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
Grading	Involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
Building Construction	Involves the construction of the foundation, structures, and buildings.
Paving	Involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.
Architectural Coating	Involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.

By modifying the individual construction phase lengths, the model assumes there are more days to complete the construction activities required by the certain phases. The model therefore assumes fewer activities would be required per day for those phases and, consequently, less pollutants emitted per day. Until the construction phases are verified, the model may underestimate the peak daily emissions associated with certain construction activities. The models should have instead proportionately altered all phase lengths to match the proposed construction duration of 18 and 14 months, respectively.

Updated Analysis Indicates a Potentially Significant Air Quality Impact

To more accurately estimate the Project’s construction-related emissions, we prepared Phase 1 and Phase 2 construction CalEEMod models, using the Project-specific information provided by the IS/MND. For each model, we proportionately altered the individual construction phase lengths to match the proposed 18-month and 14-month construction durations, respectively. All other inputs remain consistent with the IS/MND’s model.

³ “CalEEMod User Guide.” CAPCOA, April 2022, available at: https://www.caleemod.com/documents/user-guide/01_User%20Guide.pdf, p. 10.

⁴ “CalEEMod User Guide.” CAPCOA, April 2022, available at: https://www.caleemod.com/documents/user-guide/01_User%20Guide.pdf, p. 34, Table 3.

Our updated analysis estimates that the Project’s construction-related reactive organic gases (“ROG”) emissions exceed the South Coast Air Quality Management District (“SCAQMD”) daily threshold of 75 pounds per day (“lbs/day”) (see table below).

SWAPE Criteria Air Pollutant Emissions Estimates	
Construction	Phase 1 ROG (lbs/day)
IS/MND	33.7
SWAPE	111
SCAQMD Threshold	75
Exceeds?	Yes

According to our analysis, the Phase 1 construction-related ROG emissions are estimated to be approximately 111 lbs/day, exceeding the SCAQMD daily threshold. This finding indicates a potentially significant air quality impact that the IS/MND did not identify or address. In our opinion, an EIR should be conducted to provide a more accurate evaluation of the potential air quality impact from the Project on the environment and mitigate significant impacts accordingly.

Diesel Particulate Matter Emissions Inadequately Evaluated

Construction of the Project will generate diesel particulate matter (“DPM”), a known human carcinogen, through the use of off-road equipment and heavy-duty trucks. The IS/MND claims a less-than-significant health risk impact without conducting a quantified construction health risk assessment (“HRA”). The IS/MND is thus inconsistent with CEQA’s requirement to correlate the increase in emissions generated by the Project to the adverse impacts on human health caused by those emissions. Under CEQA, agencies must make a “reasonable effort to substantively connect a project’s air quality impacts to likely health consequences.”⁵ To comply with this requirement, a construction-phase HRA should have been performed to assess the potential health risks to nearby, existing sensitive receptors from DPM emissions generated during construction. The resulting cancer risk estimate should then be compared against the SCAQMD established threshold of 10 in one million.⁶

Screening-Level Analysis Demonstrates Potentially Significant Health Risk Impact

We conducted a screening-level risk assessment using AERSCREEN, a screening-level air quality dispersion model which uses a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed.⁷ We prepared a preliminary HRA of the Project’s construction-related health risk impact to

⁵ “Sierra Club v. County of Fresno.” Supreme Court of California, December 2018, available at: <https://law.justia.com/cases/california/supreme-court/2018/s219783a.html>

⁶ “South Coast AQMD Air Quality Significance Thresholds.” SCAQMD, March 2023, available at: <https://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25>.

⁷ “Air Quality Dispersion Modeling - Screening Models,” U.S. EPA, available at: <https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models>.

residential sensitive receptors using the annual PM₁₀ exhaust estimates from the IS/MND's CalEEMod output files.⁸ Consistent with recommendations set forth by the Office of Environmental Health Hazard Assessment ("OEHHA"), we assumed residential exposure begins during the third trimester stage of life.⁹

The "Dexter Village Project - Phase 1 Custom Report" and "Dexter Village Project - Phase 2 Custom Report" models indicate that construction activities will generate approximately 481 pounds of DPM over the total 788-day construction period.¹⁰ The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over construction of the Project, we calculated an average DPM emission rate by the following equation:

$$\text{Emission Rate } \left(\frac{\text{grams}}{\text{second}} \right) = \frac{481 \text{ lbs}}{788 \text{ days}} \times \frac{453.6 \text{ grams}}{\text{lbs}} \times \frac{1 \text{ day}}{24 \text{ hours}} \times \frac{1 \text{ hour}}{3,600 \text{ seconds}} = \mathbf{0.0032 \text{ g/s}}$$

Using this equation, we estimated a construction emission rate of 0.0032 grams per second ("g/s"). Construction and operation were simulated as a 23.05-acre rectangular area source in AERSCREEN, with approximate dimensions of 432- by 216-meters. A release height of three meters was selected to represent the height of stacks of operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution. The population of Lake Elsinore was obtained from U.S. 2024 Census data.¹¹

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations for the Project. The U.S. Environmental Protection Agency ("U.S. EPA") suggests that the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10% in screening procedures.¹² The IS/MND states that the closest known sensitive receptors include an existing single-family residence that is as close as 81 feet, or 25 meters, to the Project site (p. 32).

However, review of the AERSCREEN output files demonstrate that the *maximally* exposed individual receptor ("MEIR") is located approximately 225 meters downwind of the Project site.¹³ Thus, the single-hour concentration estimated by AERSCREEN for construction of the Project is therefore approximately 1.68 µg/m³ DPM at approximately 225 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.168 µg/m³ for Project construction.

⁸ "Appendices A-F Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: <https://oehha.ca.gov/sites/default/files/media/downloads/crn/2015gmappendicesaf.pdf>, p. D-1.

⁹ "Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>, p. 8-18.

¹⁰ See Attachment E for health risk calculations.

¹¹ "Lake Elsinore." U.S. Census Bureau, 2024, available at: <https://datacommons.org/place/geoid/0639486>.

¹² "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." U.S. EPA, October 1992, available at: https://www.epa.gov/sites/default/files/2020-09/documents/epa-454r-92-019_ocr.pdf.

¹³ See Attachment F for AERSCREEN output files.

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

Exposure Assumptions for Residential Individual Cancer Risk						
Age Group	Breathing Rate (L/kg-day) ¹⁴	Age Sensitivity Factor ¹⁵	Exposure Duration (years)	Fraction of Time at Home ¹⁶	Exposure Frequency (days/year) ¹⁷	Exposure Time (hours/day)
3 rd Trimester	361	10	0.25	0.85	350	24
Infant (0 – 2)	1090	10	2	0.85	350	24
Child (2 – 16)	572	3	14	0.72	350	24
Adult (16 – 30)	261	1	14	0.73	350	24

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

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

where:

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

¹⁴ “Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics ‘Hot Spots’ Information and Assessment Act.” SCAQMD, October 2020, available at: <http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=19>, p. 19; see also “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>.

¹⁵ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 8-5 Table 8.3.

¹⁶ “Risk Assessment Procedures.” SCAQMD, August 2017, available at: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1401/riskassessmentprocedures_2017_080717.pdf, p. 7.

¹⁷ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>, p. 5-24.

C_{air} = concentration of contaminant in air ($\mu\text{g}/\text{m}^3$)
 EF = exposure frequency (number of days/365 days)
 BR/BW = daily breathing rate normalized to body weight (L/kg/day)
 A = inhalation absorption factor (default = 1)
 CF = conversion factor (1×10^{-6} , μg to mg, L to m^3)

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

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

where:

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

Consistent with the 788-day construction schedule, the annualized average concentration for construction was used for the entire third trimester of pregnancy (0.25 years) and the first 1.91 years of the entire infantile stage of life (0-2 years). The results of our calculations are shown in the table below.

The Maximally Exposed Individual at an Existing Residential Receptor				
Age Group	Emissions Source	Duration (years)	Concentration ($\mu\text{g}/\text{m}^3$)	Cancer Risk
3rd Trimester	Construction	0.25	0.1680	2.28E-06
	<i>Construction</i>	<i>1.91</i>	<i>0.1680</i>	<i>5.27E-05</i>
	<i>Operation</i>	<i>0.09</i>	*	*
Infant (0 - 2)	Total	2		5.27E-05
Child (2 - 16)	Operation	14	*	*
Adult (16 - 30)	Operation	14	*	*
Lifetime		30		5.50E-05

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

The estimated excess cancer risks for the 3rd trimester of pregnancy and infants at the MEIR located approximately 225 meters away, over the course of construction, are approximately 2.28 and 52.7 in

one million, respectively. The excess cancer risk over the course of construction is approximately 55 in one million. The infant and lifetime construction cancer risks exceed the SCAQMD's threshold of 10 in one million, resulting in a potentially significant impact not addressed or identified by the IS/MND or associated documents.

Our analysis represents a screening-level HRA, which is known to be conservative. The purpose of the screening-level HRA is to demonstrate the potential link between project-generated emissions and adverse health risk impacts. The U.S. EPA Exposure Assessment Guidelines suggest an iterative, tiered approach to exposure assessments, starting with a simple screening-level evaluation using basic tools and conservative assumptions.¹⁸ If required, a more refined analyses with advanced models and detailed input data can follow.

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

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

The IS/MND is required under CEQA to implement all feasible mitigation to reduce the Project's potential impacts. As demonstrated in the sections above, the Project would result in potentially significant air quality and health risk impacts that should be mitigated further.

To reduce the ROG emissions associated with Project construction and operation, we recommend the IS/MND consider incorporating the following mitigation measures:¹⁹

- Use super-compliant ROG-content architectural coatings (0 grams per liter to less than 10 grams per liter ROG) during Project construction application of paints and other architectural coatings.
- If paints and coatings with ROG content of 0 grams/liter to less than 10 grams/liter cannot be utilized, or they do not reduce emissions to below thresholds, the developer shall avoid application of architectural coatings during the peak smog season: July, August, and September.

Further mitigation used by other land use development projects to address ROG emissions include:²⁰

- Recycle leftover paint. Take any leftover paint to a household hazardous waste center; do not mix leftover water-based and oil-based paints.

¹⁸ "Exposure Assessment Tools by Tiers and Types - Screening-Level and Refined." U.S. EPA, May 2024, *available at*: <https://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined>.

¹⁹ "Mitigation Monitoring and Reporting Program." Los Angeles County Housing Element Update Program EIR. August 2021, *available at*: https://planning.lacounty.gov/wp-content/uploads/2023/07/Housing_final-peir-mitigation-monitoring.pdf.

²⁰ "Banning Commerce Center Project." Kimley-Horn and Associates, Inc., June 2024, *available at*: <https://ceganet.opr.ca.gov/2022090102/2>; Draft Environmental Impact Report, p. 1-7.

- Keep lids closed on all paint containers when not in use to prevent ROG emissions and excessive odors.
- For water-based paints, clean up with water only. Whenever possible, do not rinse the cleanup water down the drain or pour it directly into the ground or the storm drain
- Use compliant low-ROG cleaning solvents to clean paint application equipment.
- Keep all paint- and solvent-laden rags in sealed containers to prevent ROG emissions.
- Contractors shall construct/build with materials that do not require painting and use pre-painted construction materials to the extent practicable.
- Use high-pressure/low-volume paint applicators with a minimum transfer efficiency of at least 50 percent or other application techniques with equivalent or higher transfer efficiency.
- Manual application using a paintbrush, hand-roller, trowel, spatula, dauber, rag, or sponge, to achieve a 100 percent application efficiency.

To reduce the DPM emissions associated with Project construction, we recommend the IS/MND consider several mitigation measures as listed below. The Southern California Association of Governments' ("SCAG") Certified Final Program Environmental Impact Report for Connect SoCal 2024 recommends the following Project-level air quality mitigation measures:²¹

- Assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower [hp] and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.
- Ensure that all construction equipment is properly tuned and maintained.
- Minimize idling time to 5 minutes or beyond regulatory requirements — saves fuel and reduces emissions.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
- Obtain CARB Portable Equipment Registration with the state or a local district permit for portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles. Arrange appropriate consultations with CARB or the local air district to determine registration and permitting requirements prior to equipment operation at the site.
- Use Tier 4 Final equipment or better for all engines above 50 hp. In the event that construction equipment cannot meet to Tier 4 Final or better engine certification, the Project representative or contractor must demonstrate through future study with written findings supported by substantial evidence that is approved by the project's lead agency before using other

²¹ "Certified Final Program Environmental Impact Report for Connect SoCal 2024." SCAG, May 2020, *available at*: <https://scag.ca.gov/program-environmental-impact-report-0>.

technologies/strategies. Alternative applicable strategies may include, but would not be limited to, construction equipment with Tier 4 Interim or reduction in the number and/or horsepower rating of construction equipment and/or limiting the number of construction equipment operating at the same time. All equipment must be tuned and maintained in compliance with the manufacturer's recommended maintenance schedule and specifications. All maintenance records for each equipment and their contractor(s) should make available for inspection and remain on-site for a period of at least two years from completion of construction, unless the individual project can demonstrate that Tier 4 Final or better engines would not be required to mitigate emissions below significance thresholds. Project sponsors should also consider including ZE/ZNE technologies where appropriate and feasible or higher tier standard diesel equipment as it becomes developed and feasible.

- Require contractors to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that could be used an aggregate of 40 or more hours for the construction project.

As demonstrated above, we have provided several mitigation measures that would reduce Project-related ROG and DPM emissions developed from sources including SCAG and others. These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently reduces emissions released during Project construction.

An EIR should be prepared that includes all feasible mitigation measures to ensure that the necessary mitigation measures are implemented to reduce emissions to the maximum extent feasible. The EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's potentially significant emissions are reduced to the maximum extent possible.

Disclaimer

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

Sincerely,



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



Paul E. Rosenfeld, Ph.D.

- Attachment A: CalEEMod Output Files, Phase 1
- Attachment B: CalEEMod Output Files, Phase 2
- Attachment C: Construction Calculations, Phase 1
- Attachment D: Construction Calculations, Phase 2
- Attachment E: Health Risk Calculations
- Attachment F: AERSCREEN Output Files
- Attachment G: Matt Hagemann CV
- Attachment H: Paul Rosenfeld CV

Dexter Village - Phase 1 Detailed Report

Table of Contents

1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
 - 2.2. Construction Emissions by Year, Unmitigated
3. Construction Emissions Details
 - 3.1. Site Preparation (2026) - Unmitigated
 - 3.3. Grading (2026) - Unmitigated
 - 3.5. Building Construction (2026) - Unmitigated
 - 3.7. Building Construction (2027) - Unmitigated
 - 3.9. Paving (2027) - Unmitigated
 - 3.11. Architectural Coating (2027) - Unmitigated
4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Dexter Village - Phase 1
Construction Start Date	1/5/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.5
Precipitation (days)	9.2
Location	33.69033997890111, -117.3307661694989
County	Riverside-South Coast
City	Lake Elsinore
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5510
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Condo/Townhouse	84	Dwelling Unit	5.3	116,940	48,737	—	271	—
Parking Lot	196	Space	1.8	0.00	—	—	—	—

Enclosed Parking Structure	442	Space	0.00	0.00	—	—	—	—
Single Family Housing	137	Dwelling Unit	9.4	236,233	0.00	—	443	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	111	111	20	22	0.03	0.70	1.6	2.3	0.65	0.39	1.0	—	4,623	4,623	0.18	0.18	7.1	4,688
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.4	1.4	49	36	0.06	1.4	20	21	1.2	10	11	—	6,852	6,852	0.27	0.18	0.18	6,878
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.4	6.4	17	16	0.02	0.56	2.3	2.9	0.52	0.82	1.3	—	3,412	3,412	0.11	0.12	1.9	3,451
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.2	1.2	3.1	3.0	< 0.005	0.10	0.42	0.52	0.09	0.15	0.24	—	565	565	0.02	0.02	0.31	571

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
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Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.2	1.1	20	22	0.03	0.70	1.6	2.3	0.65	0.39	1.0	—	4,623	4,623	0.18	0.18	7.1	4,688
2027	111	111	20	22	0.03	0.70	1.6	2.3	0.65	0.39	1.0	—	4,581	4,581	0.13	0.18	6.4	4,644
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.4	1.4	49	36	0.06	1.4	20	21	1.2	10	11	—	6,852	6,852	0.27	0.18	0.18	6,878
2027	1.1	1.1	20	20	0.03	0.70	1.6	2.3	0.65	0.39	1.0	—	4,463	4,463	0.13	0.18	0.17	4,519
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.83	0.79	17	16	0.02	0.56	2.3	2.9	0.52	0.82	1.3	—	3,412	3,412	0.11	0.12	1.9	3,451
2027	6.4	6.4	5.5	5.5	0.01	0.20	0.41	0.60	0.19	0.10	0.28	—	1,159	1,159	0.03	0.04	0.68	1,173
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.15	0.14	3.1	3.0	< 0.005	0.10	0.42	0.52	0.09	0.15	0.24	—	565	565	0.02	0.02	0.31	571
2027	1.2	1.2	1.0	1.00	< 0.005	0.04	0.07	0.11	0.03	0.02	0.05	—	192	192	0.01	0.01	0.11	194

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	1.1	1.1	40	28	0.05	1.1	—	1.1	1.0	—	1.0	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	20	20	—	10	10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	1.1	0.78	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.20	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24	24	< 0.005	< 0.005	—	24
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	0.95	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	222	222	< 0.005	0.01	0.02	225
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.2	6.2	< 0.005	< 0.005	0.01	6.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.0	1.0	< 0.005	< 0.005	< 0.005	1.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.3	49	35	0.06	1.4	—	1.4	1.2	—	1.2	—	6,599	6,599	0.27	0.05	—	6,621

Dust From Material Movement	—	—	—	—	—	—	9.2	9.2	—	3.7	3.7	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.11	4.0	2.9	0.01	0.11	—	0.11	0.10	—	0.10	—	542	542	0.02	< 0.005	—	544
Dust From Material Movement	—	—	—	—	—	—	0.76	0.76	—	0.30	0.30	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.73	0.53	< 0.005	0.02	—	0.02	0.02	—	0.02	—	90	90	< 0.005	< 0.005	—	90
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.09	1.1	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	254	254	< 0.005	0.01	0.02	257

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21	21	< 0.005	< 0.005	0.03	21
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.5	3.5	< 0.005	< 0.005	0.01	3.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	0.37	11	8.5	0.01	0.41	—	0.41	0.38	—	0.38	—	1,431	1,431	0.06	0.01	—	1,436	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.07	2.1	1.6	< 0.005	0.07	—	0.07	0.07	—	0.07	—	237	237	0.01	< 0.005	—	238	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.46	0.43	7.9	0.00	0.00	1.4	1.4	0.00	0.34	0.34	—	1,514	1,514	0.06	0.05	5.1	1,537	
Vendor	0.03	0.02	0.76	0.24	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	711	711	0.02	0.11	1.9	746	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.49	0.44	0.48	6.0	0.00	0.00	1.4	1.4	0.00	0.34	0.34	—	1,392	1,392	0.02	0.05	0.13	1,409	
Vendor	0.03	0.01	0.79	0.24	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	712	712	0.02	0.11	0.05	745	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.26	0.31	3.7	0.00	0.00	0.85	0.85	0.00	0.20	0.20	—	842	842	0.01	0.03	1.3	853	
Vendor	0.02	0.01	0.48	0.14	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	425	425	0.01	0.07	0.50	445	

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.06	0.68	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	139	139	< 0.005	0.01	0.22	141	
Vendor	< 0.005	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	70	70	< 0.005	0.01	0.08	74	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.14	4.4	3.3	0.01	0.16	—	0.16	0.15	—	0.15	—	558	558	0.02	< 0.005	—	560

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.80	0.61	< 0.005	0.03	—	0.03	0.03	—	0.03	—	92	92	< 0.005	< 0.005	—	93	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.50	0.44	0.38	7.3	0.00	0.00	1.4	1.4	0.00	0.34	0.34	—	1,486	1,486	0.02	0.05	4.6	1,507	
Vendor	0.03	0.01	0.73	0.23	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	698	698	0.02	0.10	1.8	732	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.47	0.42	0.43	5.5	0.00	0.00	1.4	1.4	0.00	0.34	0.34	—	1,367	1,367	0.02	0.05	0.12	1,383	
Vendor	0.03	0.01	0.76	0.24	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	699	699	0.02	0.10	0.05	730	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.11	0.10	0.11	1.3	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	322	322	< 0.005	0.01	0.46	327	
Vendor	0.01	< 0.005	0.18	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	163	163	< 0.005	0.02	0.18	170	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	0.02	0.02	0.02	0.25	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53	53	< 0.005	< 0.005	0.08	54	
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27	27	< 0.005	< 0.005	0.03	28	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	

3.9. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.50	13	11	0.01	0.58	—	0.58	0.54	—	0.54	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.23	0.23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.73	0.58	< 0.005	0.03	—	0.03	0.03	—	0.03	—	83	83	< 0.005	< 0.005	—	83
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	14	14	< 0.005	< 0.005	—	14
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.05	1.00	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	203	203	< 0.005	0.01	0.63	206
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10	10	< 0.005	< 0.005	0.01	10
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.7	1.7	< 0.005	< 0.005	< 0.005	1.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	1.1	0.96	< 0.005	0.07	—	0.07	0.06	—	0.06	—	134	134	0.01	< 0.005	—	134

Architectural	111	111	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.3	7.3	< 0.005	< 0.005	—	7.3	
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.2	1.2	< 0.005	< 0.005	—	1.2	
Architectural Coatings	1.1	1.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.08	1.5	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	297	297	< 0.005	0.01	0.92	301	
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	0.01	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15	15	< 0.005	< 0.005	0.02	15	
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.5	2.5	< 0.005	< 0.005	< 0.005	2.5	
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/5/2026	1/16/2026	5.0	10.0	—
Grading	Grading	1/19/2026	2/27/2026	5.0	30	—

Building Construction	Building Construction	3/2/2026	4/29/2027	5.0	304	—
Paving	Paving	4/30/2027	5/27/2027	5.0	20	—
Architectural Coating	Architectural Coating	5/28/2027	6/24/2027	5.0	20	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Tier 2	3.0	8.0	367	0.40
Site Preparation	Tractors/Loaders/Back hoes	Diesel	Tier 2	4.0	8.0	84	0.37
Grading	Excavators	Diesel	Tier 2	2.0	8.0	36	0.38
Grading	Graders	Diesel	Tier 2	1.00	8.0	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 2	1.00	8.0	367	0.40
Grading	Scrapers	Diesel	Tier 2	2.0	8.0	423	0.48
Grading	Tractors/Loaders/Back hoes	Diesel	Tier 2	2.0	8.0	84	0.37
Building Construction	Cranes	Diesel	Tier 2	1.00	7.0	367	0.29
Building Construction	Forklifts	Diesel	Tier 2	3.0	8.0	82	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.0	14	0.74
Building Construction	Tractors/Loaders/Back hoes	Diesel	Tier 2	3.0	7.0	84	0.37
Building Construction	Welders	Diesel	Tier 2	1.00	8.0	46	0.45
Paving	Pavers	Diesel	Tier 2	2.0	8.0	81	0.42
Paving	Paving Equipment	Diesel	Tier 2	2.0	8.0	89	0.36
Paving	Rollers	Diesel	Tier 2	2.0	8.0	36	0.38
Architectural Coating	Air Compressors	Diesel	Tier 2	1.00	6.0	37	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	18	19	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10	HHDT,MHDT
Site Preparation	Hauling	0.00	20	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	20	19	LDA,LDT1,LDT2
Grading	Vendor	—	10	HHDT,MHDT
Grading	Hauling	0.00	20	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	110	19	LDA,LDT1,LDT2
Building Construction	Vendor	24	10	HHDT,MHDT
Building Construction	Hauling	0.00	20	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15	19	LDA,LDT1,LDT2
Paving	Vendor	—	10	HHDT,MHDT
Paving	Hauling	0.00	20	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	22	19	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10	HHDT,MHDT
Architectural Coating	Hauling	0.00	20	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	715,175	238,392	0.00	0.00	4,610

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15	0.00	0.00
Grading	—	—	90	0.00	0.00
Paving	0.00	0.00	0.00	0.00	3.3

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Condo/Townhouse	—	0%
Paving	Parking Lot	1.8	100%
Paving	Enclosed Parking Structure	0.00	100%
Paving	Single Family Housing	1.5	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	532	0.03	< 0.005
2027	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29	annual days of extreme heat
Extreme Precipitation	3.8	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	30	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2

Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	85
AQ-PM	52
AQ-DPM	20
Drinking Water	69
Lead Risk Housing	14
Pesticides	0.00
Toxic Releases	23
Traffic	83
Effect Indicators	—
CleanUp Sites	7.7
Groundwater	38

Haz Waste Facilities/Generators	80
Impaired Water Bodies	51
Solid Waste	76
Sensitive Population	—
Asthma	33
Cardio-vascular	84
Low Birth Weights	41
Socioeconomic Factor Indicators	—
Education	50
Housing	31
Linguistic	11
Poverty	48
Unemployment	29

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	69.31861927
Employed	35.14692673
Median HI	73.06557167
Education	—
Bachelor's or higher	47.15770563
High school enrollment	100
Preschool enrollment	48.45374054
Transportation	—
Auto Access	91.71050943
Active commuting	4.978827153

Social	—
2-parent households	67.84293597
Voting	41.5629411
Neighborhood	—
Alcohol availability	88.05338124
Park access	24.81714359
Retail density	13.47363018
Supermarket access	19.72282818
Tree canopy	8.623123316
Housing	—
Homeownership	67.77877582
Housing habitability	89.11843963
Low-inc homeowner severe housing cost burden	58.12909021
Low-inc renter severe housing cost burden	93.91761838
Uncrowded housing	56.87155139
Health Outcomes	—
Insured adults	79.94353907
Arthritis	0.0
Asthma ER Admissions	79.1
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	47.6
Cognitively Disabled	95.5
Physically Disabled	83.0

Heart Attack ER Admissions	38.9
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	44.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	51.5
SLR Inundation Area	0.0
Children	43.1
Elderly	64.7
English Speaking	73.3
Foreign-born	47.1
Outdoor Workers	45.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	68.2
Traffic Density	78.6
Traffic Access	23.0
Other Indices	—
Hardship	46.7
Other Decision Support	—
2016 Voting	53.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	49
Healthy Places Index Score for Project Location (b)	59
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Consistent with IS/MND.
Construction: Construction Phases	See comment on: "Unsubstantiated Changes to Individual Construction Phase Lengths".
Construction: Off-Road Equipment	Consistent with IS/MND.
Construction: Architectural Coatings	Consistent with IS/MND.

Dexter Village - Phase 2 Detailed Report

Table of Contents

- 1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
 - 2.2. Construction Emissions by Year, Unmitigated
- 3. Construction Emissions Details
 - 3.1. Building Construction (2027) - Unmitigated
 - 3.3. Paving (2027) - Unmitigated
 - 3.5. Paving (2028) - Unmitigated
 - 3.7. Architectural Coating (2028) - Unmitigated
- 4. Operations Emissions Details
 - 4.10. Soil Carbon Accumulation By Vegetation Type
 - 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Dexter Village - Phase 2
Construction Start Date	1/4/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.5
Precipitation (days)	9.2
Location	33.69033997890111, -117.3307661694989
County	Riverside-South Coast
City	Lake Elsinore
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5510
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	230	Dwelling Unit	6.1	202,590	28,859	—	743	—
Parking Lot	214	Space	0.60	0.00	0.00	—	—	—

Enclosed Parking Structure	234	Space	0.00	93,600	0.00	—	—	—
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1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.6	1.5	21	28	0.03	0.71	3.0	3.7	0.66	0.72	1.4	—	6,351	6,351	0.16	0.29	12	6,454
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	58	58	21	25	0.03	0.71	3.0	3.7	0.66	0.72	1.4	—	6,129	6,129	0.16	0.29	0.30	6,221
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.5	3.5	15	18	0.02	0.50	2.1	2.6	0.47	0.51	0.97	—	4,348	4,348	0.11	0.21	3.5	4,416
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.64	0.64	2.7	3.3	< 0.005	0.09	0.39	0.48	0.09	0.09	0.18	—	720	720	0.02	0.03	0.58	731

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
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Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.6	1.5	21	28	0.03	0.71	3.0	3.7	0.66	0.72	1.4	—	6,351	6,351	0.16	0.29	12	6,454
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.6	1.4	21	25	0.03	0.71	3.0	3.7	0.66	0.72	1.4	—	6,129	6,129	0.16	0.29	0.30	6,221
2028	58	58	13	11	0.01	0.58	0.54	0.77	0.54	0.13	0.59	—	1,694	1,694	0.06	0.02	0.04	1,702
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.1	1.0	15	18	0.02	0.50	2.1	2.6	0.47	0.51	0.97	—	4,348	4,348	0.11	0.21	3.5	4,416
2028	3.5	3.5	0.78	0.78	< 0.005	0.03	0.04	0.08	0.03	0.01	0.04	—	128	128	< 0.005	< 0.005	0.05	129
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.20	0.18	2.7	3.3	< 0.005	0.09	0.39	0.48	0.09	0.09	0.18	—	720	720	0.02	0.03	0.58	731
2028	0.64	0.64	0.14	0.14	< 0.005	0.01	0.01	0.01	0.01	< 0.005	0.01	—	21	21	< 0.005	< 0.005	0.01	21

3. Construction Emissions Details

3.1. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.62	19	14	0.02	0.69	—	0.69	0.64	—	0.64	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.44	13	10	0.02	0.48	—	0.48	0.45	—	0.45	—	1,688	1,688	0.07	0.01	—	1,694
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.08	2.4	1.8	< 0.005	0.09	—	0.09	0.08	—	0.08	—	279	279	0.01	< 0.005	—	280
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.92	0.82	0.71	14	0.00	0.00	2.7	2.7	0.00	0.63	0.63	—	2,774	2,774	0.03	0.10	8.6	2,812
Vendor	0.05	0.02	1.2	0.39	0.01	0.02	0.34	0.36	0.02	0.09	0.11	—	1,180	1,180	0.03	0.18	3.0	1,236
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.88	0.78	0.80	10	0.00	0.00	2.7	2.7	0.00	0.63	0.63	—	2,551	2,551	0.04	0.10	0.22	2,581

Vendor	0.05	0.02	1.3	0.40	0.01	0.02	0.34	0.36	0.02	0.09	0.11	—	1,181	1,181	0.03	0.18	0.08	1,234
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.62	0.55	0.63	7.6	0.00	0.00	1.9	1.9	0.00	0.44	0.44	—	1,819	1,819	0.03	0.07	2.6	1,842
Vendor	0.04	0.02	0.91	0.28	0.01	0.01	0.24	0.25	0.01	0.07	0.08	—	831	831	0.02	0.12	0.91	870
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.11	1.4	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	301	301	< 0.005	0.01	0.43	305
Vendor	0.01	< 0.005	0.17	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	138	138	< 0.005	0.02	0.15	144
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.50	13	11	0.01	0.58	—	0.58	0.54	—	0.54	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.07	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	< 0.005	< 0.005	0.08	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.9	8.9	< 0.005	< 0.005	—	8.9
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.5	1.5	< 0.005	< 0.005	—	1.5
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.75	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	187	187	< 0.005	0.01	0.02	189
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.1	1.1	< 0.005	< 0.005	< 0.005	1.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.18	0.18	< 0.005	< 0.005	< 0.005	0.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.50	13	11	0.01	0.58	—	0.58	0.54	—	0.54	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.07	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.70	0.56	< 0.005	0.03	—	0.03	0.03	—	0.03	—	80	80	< 0.005	< 0.005	—	80
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.13	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	13	13	< 0.005	< 0.005	—	13
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.06	0.70	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	183	183	< 0.005	0.01	0.01	185
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.8	9.8	< 0.005	< 0.005	0.01	9.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.6	1.6	< 0.005	< 0.005	< 0.005	1.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.05	0.05	1.1	0.96	< 0.005	0.07	—	0.07	0.06	—	0.06	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	58	58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.07	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.0	8.0	< 0.005	< 0.005	—	8.1
Architectural Coatings	3.5	3.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.3	1.3	< 0.005	< 0.005	—	1.3
Architectural Coatings	0.64	0.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.15	0.16	1.9	0.00	0.00	0.54	0.54	0.00	0.13	0.13	—	501	501	0.01	0.02	0.04	507
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31	31	< 0.005	< 0.005	0.04	31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.1	5.1	< 0.005	< 0.005	0.01	5.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Building Construction	Building Construction	1/4/2027	12/28/2027	5.0	257	—
Paving	Paving	12/29/2027	1/27/2028	5.0	22	—
Architectural Coating	Architectural Coating	1/28/2028	2/28/2028	5.0	22	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Building Construction	Cranes	Diesel	Tier 2	1.00	7.0	367	0.29
Building Construction	Forklifts	Diesel	Tier 2	3.0	8.0	82	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.0	14	0.74
Building Construction	Tractors/Loaders/Back hoes	Diesel	Tier 2	3.0	7.0	84	0.37
Building Construction	Welders	Diesel	Tier 2	1.00	8.0	46	0.45
Paving	Pavers	Diesel	Tier 2	2.0	8.0	81	0.42
Paving	Paving Equipment	Diesel	Tier 2	2.0	8.0	89	0.36
Paving	Rollers	Diesel	Tier 2	2.0	8.0	36	0.38
Architectural Coating	Air Compressors	Diesel	Tier 2	1.00	6.0	37	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Building Construction	Worker	205	19	LDA,LDT1,LDT2
Building Construction	Vendor	40	10	HHDT,MHDT
Building Construction	Hauling	0.00	20	HHDT
Building Construction	Onsite truck	—	—	HHDT

Paving	Worker	15	19	LDA,LDT1,LDT2
Paving	Vendor	—	10	HHDT,MHDT
Paving	Hauling	0.00	20	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	41	19	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10	HHDT,MHDT
Architectural Coating	Hauling	0.00	20	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	410,245	136,748	0.00	0.00	1,568

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Paving	0.00	0.00	0.00	0.00	0.60

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Apartments Mid Rise	—	0%
Paving	Parking Lot	0.60	100%
Paving	Enclosed Parking Structure	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	532	0.03	< 0.005
2028	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
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5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
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5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
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6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29	annual days of extreme heat
Extreme Precipitation	3.8	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	30	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	85

AQ-PM	52
AQ-DPM	20
Drinking Water	69
Lead Risk Housing	14
Pesticides	0.00
Toxic Releases	23
Traffic	83
Effect Indicators	—
CleanUp Sites	7.7
Groundwater	38
Haz Waste Facilities/Generators	80
Impaired Water Bodies	51
Solid Waste	76
Sensitive Population	—
Asthma	33
Cardio-vascular	84
Low Birth Weights	41
Socioeconomic Factor Indicators	—
Education	50
Housing	31
Linguistic	11
Poverty	48
Unemployment	29

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	69.31861927
Employed	35.14692673
Median HI	73.06557167
Education	—
Bachelor's or higher	47.15770563
High school enrollment	100
Preschool enrollment	48.45374054
Transportation	—
Auto Access	91.71050943
Active commuting	4.978827153
Social	—
2-parent households	67.84293597
Voting	41.5629411
Neighborhood	—
Alcohol availability	88.05338124
Park access	24.81714359
Retail density	13.47363018
Supermarket access	19.72282818
Tree canopy	8.623123316
Housing	—
Homeownership	67.77877582
Housing habitability	89.11843963
Low-inc homeowner severe housing cost burden	58.12909021
Low-inc renter severe housing cost burden	93.91761838
Uncrowded housing	56.87155139
Health Outcomes	—
Insured adults	79.94353907
Arthritis	0.0

Asthma ER Admissions	79.1
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	47.6
Cognitively Disabled	95.5
Physically Disabled	83.0
Heart Attack ER Admissions	38.9
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	44.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	51.5
SLR Inundation Area	0.0
Children	43.1
Elderly	64.7
English Speaking	73.3
Foreign-born	47.1

Outdoor Workers	45.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	68.2
Traffic Density	78.6
Traffic Access	23.0
Other Indices	—
Hardship	46.7
Other Decision Support	—
2016 Voting	53.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	49
Healthy Places Index Score for Project Location (b)	59
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Consistent with IS/MND.
Construction: Construction Phases	See comment on: "Unsubstantiated Changes to Individual Construction Phase Lengths".
Construction: Off-Road Equipment	Consistent with IS/MND.
Construction: Architectural Coatings	Consistent with IS/MND.

Construction Schedule Calculations						
Phase	Default Phase Length	Construction Duration	%	Construction Duration	Revised Phase Length	
Site Preparation	10	536	0.0187	543	10	
Grading	30	536	0.0560	543	30	
Construction	300	536	0.5597	543	304	
Paving	20	536	0.0373	543	20	
Architectural Coating	20	536	0.0373	543	20	

	Total Default Construction Duration	Revised Construction Duration
Start Date	2/3/2026	1/5/2026
End Date	7/24/2027	7/2/2027
Total Days	536	543

Construction Schedule Calculations						
Phase	Default Phase Length	Construction Duration	%	Construction Duration	Revised Phase Length	
Construction	230	380	0.6053	424	257	
Paving	20	380	0.0526	424	22	
Architectural Coating	20	380	0.0526	424	22	

	Total Default Construction Duration	Revised Construction Duration
Start Date	3/18/2027	1/4/2027
End Date	4/1/2028	3/3/2028
Total Days	380	424

The Maximally Exposed Individual at an Existing Residential Receptor				
Age Group	Emissions Source	Duration (years)	Concentration (ug/m3)	Cancer Risk
3rd Trimester	Construction	0.25	0.1680	2.28E-06
	<i>Construction</i>	<i>1.91</i>	<i>0.1680</i>	<i>5.27E-05</i>
	<i>Operation</i>	<i>0.09</i>	*	*
Infant (0 - 2)	Total	2		5.27E-05
Child (2 - 16)	Operation	14	*	*
Adult (16 - 30)	Operation	14	*	*
Lifetime		30		5.50E-05

AERSCREEN 21112 / AERMOD 21112

12/24/25
17:12:00

TITLE: Dexter Village, Construction

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

SOURCE EMISSION RATE:	0.320E-02 g/s	0.254E-01 lb/hr
AREA EMISSION RATE:	0.344E-07 g/(s-m2)	0.273E-06 lb/(hr-m2)
AREA HEIGHT:	3.00 meters	9.84 feet
AREA SOURCE LONG SIDE:	431.93 meters	1417.09 feet
AREA SOURCE SHORT SIDE:	215.96 meters	708.53 feet
INITIAL VERTICAL DIMENSION:	1.50 meters	4.92 feet
RURAL OR URBAN:	URBAN	
POPULATION:	73595	
INITIAL PROBE DISTANCE =	5000. meters	16404. feet

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

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****
25 meter receptor spacing: 1. meters - 5000. meters

MAXIMUM IMPACT RECEPTOR

Zo SECTOR	SURFACE ROUGHNESS	1-HR CONC (ug/m3)	RADIAL (deg)	DIST (m)	TEMPORAL PERIOD
1*	1.000	1.680	15	225.0	WIN

* = worst case diagonal

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

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

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

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

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

 10 01 10 10 01

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

HT	REF TA	HT
10.0	310.0	2.0

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
1.00	1.289	2525.00	0.7014E-01

25.00	1.347	2550.00	0.6923E-01
50.00	1.403	2575.00	0.6834E-01
75.00	1.452	2600.00	0.6747E-01
100.00	1.499	2625.00	0.6661E-01
125.00	1.544	2650.00	0.6577E-01
150.00	1.585	2675.00	0.6495E-01
175.00	1.624	2700.00	0.6414E-01
200.00	1.660	2725.00	0.6336E-01
225.00	1.680	2750.00	0.6259E-01
250.00	1.467	2775.00	0.6184E-01
275.00	1.142	2800.00	0.6110E-01
300.00	0.9951	2825.00	0.6038E-01
325.00	0.8936	2850.00	0.5967E-01
350.00	0.8102	2875.00	0.5897E-01
375.00	0.7510	2900.00	0.5829E-01
400.00	0.7004	2925.00	0.5762E-01
425.00	0.6552	2950.00	0.5696E-01
450.00	0.6150	2975.00	0.5631E-01
475.00	0.5787	3000.00	0.5568E-01
500.00	0.5461	3025.00	0.5506E-01
525.00	0.5163	3050.00	0.5445E-01
550.00	0.4891	3075.00	0.5385E-01
575.00	0.4643	3100.00	0.5327E-01
600.00	0.4416	3125.00	0.5270E-01
625.00	0.4208	3150.00	0.5213E-01
650.00	0.4013	3175.00	0.5158E-01
675.00	0.3835	3200.00	0.5104E-01
700.00	0.3671	3225.00	0.5051E-01
725.00	0.3517	3250.00	0.4999E-01
750.00	0.3374	3275.00	0.4947E-01
775.00	0.3241	3300.00	0.4897E-01
800.00	0.3115	3325.00	0.4848E-01
825.00	0.2998	3350.00	0.4799E-01
850.00	0.2890	3375.00	0.4751E-01
875.00	0.2788	3400.00	0.4704E-01
900.00	0.2690	3425.00	0.4658E-01
925.00	0.2599	3450.00	0.4612E-01
950.00	0.2513	3475.00	0.4568E-01
975.00	0.2432	3500.00	0.4524E-01
1000.00	0.2355	3525.00	0.4481E-01
1025.00	0.2282	3550.00	0.4438E-01
1050.00	0.2213	3575.00	0.4396E-01
1075.00	0.2148	3600.00	0.4355E-01
1100.00	0.2086	3625.00	0.4315E-01
1125.00	0.2027	3650.00	0.4275E-01
1150.00	0.1971	3675.00	0.4236E-01
1175.00	0.1916	3700.00	0.4198E-01
1200.00	0.1865	3725.00	0.4160E-01
1225.00	0.1816	3750.00	0.4123E-01
1250.00	0.1769	3775.00	0.4086E-01

1275.00	0.1725	3800.00	0.4050E-01
1300.00	0.1682	3825.00	0.4015E-01
1325.00	0.1641	3850.00	0.3980E-01
1350.00	0.1603	3875.00	0.3945E-01
1375.00	0.1565	3900.00	0.3911E-01
1400.00	0.1528	3925.00	0.3878E-01
1425.00	0.1493	3950.00	0.3845E-01
1450.00	0.1460	3975.00	0.3813E-01
1475.00	0.1427	4000.00	0.3835E-01
1500.00	0.1396	4025.00	0.3803E-01
1525.00	0.1366	4050.00	0.3771E-01
1550.00	0.1338	4075.00	0.3739E-01
1575.00	0.1310	4100.00	0.3708E-01
1600.00	0.1283	4125.00	0.3677E-01
1625.00	0.1258	4150.00	0.3647E-01
1650.00	0.1233	4175.00	0.3617E-01
1675.00	0.1209	4200.00	0.3588E-01
1700.00	0.1185	4225.00	0.3559E-01
1725.00	0.1163	4250.00	0.3530E-01
1750.00	0.1141	4275.00	0.3502E-01
1775.00	0.1120	4300.00	0.3474E-01
1800.00	0.1099	4325.00	0.3447E-01
1825.00	0.1079	4350.00	0.3419E-01
1850.00	0.1060	4375.00	0.3393E-01
1875.00	0.1042	4400.00	0.3366E-01
1900.00	0.1023	4425.00	0.3340E-01
1925.00	0.1006	4450.00	0.3315E-01
1950.00	0.9888E-01	4475.00	0.3289E-01
1975.00	0.9723E-01	4500.00	0.3265E-01
2000.00	0.9562E-01	4525.00	0.3240E-01
2025.00	0.9407E-01	4550.00	0.3216E-01
2050.00	0.9255E-01	4575.00	0.3192E-01
2075.00	0.9108E-01	4600.00	0.3168E-01
2100.00	0.8965E-01	4625.00	0.3144E-01
2125.00	0.8825E-01	4650.00	0.3121E-01
2150.00	0.8688E-01	4675.00	0.3099E-01
2175.00	0.8555E-01	4700.00	0.3076E-01
2200.00	0.8426E-01	4725.00	0.3054E-01
2225.00	0.8300E-01	4750.00	0.3032E-01
2250.00	0.8177E-01	4775.00	0.3010E-01
2275.00	0.8057E-01	4800.00	0.2989E-01
2300.00	0.7941E-01	4825.00	0.2968E-01
2325.00	0.7827E-01	4850.00	0.2947E-01
2350.00	0.7717E-01	4875.00	0.2926E-01
2375.00	0.7609E-01	4900.00	0.2906E-01
2400.00	0.7503E-01	4925.00	0.2885E-01
2425.00	0.7401E-01	4950.00	0.2866E-01
2450.00	0.7300E-01	4975.00	0.2846E-01
2475.00	0.7203E-01	5000.00	0.2826E-01
2500.00	0.7107E-01		

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

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

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	1.685	1.685	1.685	1.685	N/A
DISTANCE FROM SOURCE	224.00 meters				
IMPACT AT THE AMBIENT BOUNDARY	1.289	1.289	1.289	1.289	N/A
DISTANCE FROM SOURCE	1.00 meters				



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

Professional Certifications:

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

Education:

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

Professional Experience:

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

Positions held include:

Government:

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

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

Educational:

Geology Instructor, Golden West College, 2010 – 2014, 2017;
Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
Instructor, College of Marin, Department of Science (1990 – 1995).

Private Sector:

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

Senior Regulatory and Litigation Support Analyst:

With SWAPE, responsibilities have included:

- Lead analyst and testifying expert, for both plaintiffs and defendants, in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards.
- Recommending additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce exposure to hazards from toxins.
- Stormwater analysis, sampling and best management practice evaluation, for both government agencies and corporate clients, at more than 150 industrial facilities.
- Serving as expert witness for both plaintiffs and defendants in cases including contamination of groundwater, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns, for both government agencies and corporate clients.
- Lead analyst and testifying expert in the review of environmental issues in license 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., duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking

water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.

- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict State of California regulatory requirements.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Hydrogeology:

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

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

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

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

- Received an EPA Bronze Medal for contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. Prepared geologic reports, conducted hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

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

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

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New 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 as senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advising the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaping 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.
- Improving the technical training of EPA's scientific and engineering staff.
- Earning an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Establishing national protocol for the peer review of scientific documents.

Geology:

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

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

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

Duties included the following:

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

Teaching:

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

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.
- Part time geology instructor at Golden West College in Huntington Beach, California from 2010 to 2014 and in 2017.

Summary of Testimony Experience Over Past Four Years

In Re New Jersey Department of Environmental Protection et al. vs. E.I. DuPont de Nemours and Company, in the United States District Court, District of New Jersey, Civil Action No. 1:19-cv-14766-RMB-JBC. Deposition in 2025.

Representing Plaintiffs in matters regarding contamination of groundwater, wastewater, soil, and air with per- and poly-fluoroalkyl substances.

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

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

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

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

Division 1, California, Case No: D070553. Deposition in 2020. Representing Plaintiff in matters involving compliance with The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Los Angeles Waterkeeper vs. AAA Plating and Inspection, Inc. In the United States District Court for the Central District of California, Case No: No. CV 18-5916 PA (GJSx). Deposition in 2019. Expert witness representing Plaintiff in matters involving contaminated stormwater runoff at an industrial facility in Compton, California.

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

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

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

Invited Testimony, Reports, Papers and Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Unpublished report.

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

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

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

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

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

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

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

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

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

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

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

Other Experience:

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



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Paul Rosenfeld, Ph.D.

Principal Environmental Chemist

Chemical Fate and Transport & Air Dispersion Modeling

Risk Assessment & Remediation Specialist

Education

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

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

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

Professional Experience

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

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

Professional History:

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

Publications:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

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

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

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

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

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

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

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

Academic Grants Awarded:

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

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

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

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

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

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

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

Deposition and/or Trial Testimony:

In the District Court of Harris County Texas
Mt Davis Interest, Inc v Sesco Cement Corp
Cause No 2023-26512
Trial 6-6-25

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

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

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

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

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

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

Deposition: 8-27-24

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cause No. 1923
Rosenfeld Deposition 11-17-2017

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

In The Circuit Court of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 019-L-2295
Rosenfeld Deposition 8-23-2017

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

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

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

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

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

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

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

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

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.

Case No. CACE07030358 (26)
Rosenfeld Deposition December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, vs. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City
Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 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 County of Kern, Unlimited Jurisdiction
Rose Propagation Services vs. Heppe Enterprises
Case No. S-1500-CV-278190, LHB
Rosenfeld Deposition: May 2014

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

In the Court of Galveston County, Texas 56th Judicial District
MDL Litigation Regarding Texas City Refinery Ultracracker Emission Event Litigation
Cause No. 10-UC-0001
Rosenfeld Deposition: March 2013
Rosenfeld Trial: September 2013

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and
on behalf of those similarly situated, *Plaintiffs*, vs. BP Products North America, Inc., *Defendant*.
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

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

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

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

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., Plaintiffs, vs. International Paper Company, Defendant.

Civil Action No. 2:09-cv-232-WHA-TFM
Rosenfeld Deposition July 2010, June 2011