26 September 2021

Vincent Acuna
City of Rancho Cucamonga
10500 Civic Center Dr.
Rancho Cucamonga, CA 91730

Submitted via email

Re: Alta Cuvee IS/MND (SCH #2021090012)

Dear Vincent,

I am writing on behalf of the Inland Empire Biking Alliance in response to the Initial Study/Mitigated Negative Declaration (SCH #2021090012) for the Alta Cuvee ("Project") which has been proposed for development there in the city. After reviewing the document, there are several things which are rather concerning and which appear to be overlooked concerning the provision for biking and general accessibility.

Per subsection a) of section 4.17, it is stated that the Project would have a Less Than Significant Impact and notes that the City contains a number of Policies around transportation choices beyond (single-occupant/private) automobiles, including bicycling. Yet, the Project as proposed does not appear to meet even the bare minimum of what is needed and is in direct conflict with a number of Policies.

Planned Class II bike lanes are woefully adequate

The first glaring issue is that of the planned Class II bike lanes on Etiwanda Avenue and Foothill Boulevard. These recommendations have been identified from a number of different planning documents from the City which show those facilities. Section 9. Active Transportation and Public Transit Analysis of the Rancho Cuvee Transportation Impact Study which was prepared for the Project states that such facilities would be five feet wide and striped without buffers. However, Section 301.2 Class II Bikeway (Bike Lane) Lane Width of the Caltrans Highway Design Manual indicates that the minimum bike lane width should be **six** feet when speeds are greater than 40 MPH. With a speed limit of 50 MPH on Etiwanda Ave. and 55 MPH on Foothill Blvd., both have easily surpassed the threshold for *at least* six feet of width for the Class II bike lanes. Given the speeds, a buffer would be welcome as well.

But the bigger issue is that a painted Class II bike lane is **not** the appropriate facility in this instance to begin with. Specifically, with a signed speed limit of 50 MPH on Etiwanda Ave. and 55 MPH on Foothill Blvd. in the vicinity of the Project site, the proposal for a Class II bike lane is wildly inappropriate and not at all fitting with Policies CM-1.2, CM-2.1, CM-4.1, and ED-3.4. Collectively, those Policies seek to encourage bicycle usage, including the provision of facilities which accomplish that. This is because per guidance from Caltrans[1] and the FHWA[2], the existing and projected speeds and volume of motor traffic on both Etiwanda and Foothill indicate that a Class IV separated bikeway (also called a cycle track) is the only option which meets the criteria set out by the City's General Plan to accomplish an increase in bicycling usage by providing a facility which is comfortable for use by most.

Given that the area currently is not developed, it is imperative that the Project construct the correct bike facility the *first* time around. This avoids wasting efforts and ensures that the Project minimizes disruptions to the traveling public. It also ensures that it is actually built in the first place—the City has previously applied twice to the State's Active Transportation Program for funding of a cycle track on 6th Street and been unsuccessful both times, delaying that project. And the existence of a separated bikeway impacts infrastructure such as drainage which can be prohibitively expensive to move later. Thus, it is vital that the facilities adjacent the Project be built as separated bikeways, **not** Class II bike lanes. Equally important is to ensure that they are constructed of hardscape, not merely flex posts on what are otherwise bike lane stripes. Again, the greenfield nature of this portion of the site makes it imperative to *do it right the first time*.

We would also like to stress the importance of a Class IV facility needing to be *a facility designed for use by bicyclists* and **not** simply a wide sidewalk. This is vital to avoid conflicts between bicyclists and pedestrians due to misunderstandings on the part of both user groups as well as to foster the correct user behaviors. More information on design is available from agencies including Caltrans, the FHWA, and NACTO, but some key considerations should be to avoid the absolute minimums.

We recommend that the Class IV bikeways really need to be designed with at least width for two-abreast riding, ideally of someone on a regular bicycle and someone on a tricycle, recumbent, or cargo bike, but at a bare minimum of two people on regular bicycles. All told, that would come out to a width of *at least* seven feet. Per Policy CM-1.5 of the General Plan, "[m]odified standards may be applied where appropriate on arterial corridors relating to…bicycle facilities…to be context sensitive to adjacent land uses and districts, and to all roadway users, including…bicycles..." Accordingly, using Figure 8-1: Proposed Geometric Changes to Etiwanda Avenue and Foothill Boulevard, enough room for at least seven feet in width for a separated bikeway has been identified on both Etiwanda

[1] Flournoy, M. (2020). Contextual guidance for bike facilities. Caltrans. Retrieved from https://dot.ca.gov/-/media/dotmedia/programs/transportation-planning/documents/office-of-smart-mobility-and-climate-change/planningcontextual-guidance-memo-03-11-20-a11y.pdf.

[2] Schultheiss, B., Goodman, D., Blackburn, L., Wood, A., Reed, D., & Elbech, M. (2019). Bikeway selection guide (FHWA-SA-18-077). US Department of Transportation, Federal Highway Administration. Retrieved from https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf.

Ave. and Foothill Blvd. by repurposing the bike lane and adjusting lane widths. On Etiwanda Ave., slimming all the lanes by six inches will be adequate and on Foothill Blvd., slimming the inside lane by two feet and the center lane by a foot will provide the space.

Additionally, adjacent the bikeway itself, curbs which have beveled/splayed edges are preferred to help bicyclists avoid pedal strikes, thus maximizing the usable width of the facility. Paving the bikeway at an intermediate height between the level of the sidewalk and the roadbed is also helpful in this regard. The bikeway should also be provided around the bus stop pullout in a manner which does not lead to bus patrons (dis)embarking directly into the bikeway nor should the bikeway simply disappear.

Providing the appropriate bike facilities as Class IV separated bikeways does require some attention to be paid to the design of the intersections of both the driveways as well as the main intersection of Etiwanda Ave. and Foothill Blvd. as their use has the potential to trigger concerns of hazards from design. However, such hazards are not insurmountable and we would strongly urge that the NACTO Don't Give Up at the Intersection manual be consulted for the design of all of them. And while it is understood that the resources to construct a full "protected intersection"[3] at Etiwanda and Foothill likely are not available from this Project, that eventuality should be designed for and the corner of the Project should meet that standard.

Lack of connectivity

Another big oversight is in section 1.5.1.2 Vehicular and Pedestrian Access. Here, it seems to be a missed opportunity to follow policies focused on increasing connectivity by providing a bicycle and pedestrian connection to the cul-de-sac of Vine Street directly east of the Project site. Such a connection would serve multiple purposes. First, it facilities Policies CM-1.2, CM-2.1, CM-3.14, ED-3.4, and Goal CM-3 which collectively seek to further the availability of non-motorized connections in the city. Based on the Description of the Project found on Page 2-1, it would include commercial space and such a connection would enable easier for members of the community to the east of the Project site access to any such establishments without using their car by fostering nonmotorized access. This route would be both shorter than traveling along Foothill Blvd. as well as potentially being more pleasant due to Vine St. not being a major arterial and the City is unlikely to be undertaking a streetscape improvement anytime soon which would change that.

An additional interest is that such a connection would be able to form a preferred route to provide access to the Community Trail planned for the Etiwanda Creek/utility corridor approximately 800 feet east of the Project site as depicted in Figure 2: Hiking & Riding Trails Master Plan/Figure CS-3:

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[3] USDOTNHTSA. Making a Community Safer for Pedestrians | A Protected Intersection. YouTube video: https://www.youtube.com/watch?v=a8RAvzKaOLY.

Hiking and Riding Trails Master Plan of the City's General Plan. Though not currently constructed and the Project developer presumably would not be responsible for doing so, when complete, the Etiwanda Creek Trail would enable convenient nonmotorized connections to nearby destinations such as Garcia Park and Perdew Elementary School and via the connection to the San Sevaine Trail, ultimately connect to the Pacific Electric Trail which provides regional access.

Summary

It is imperative that this Project provide at least the bare minimum of what is delineated in the standards, which is not currently the case. The failure to provide the appropriate bike facility runs afoul of several different Policies and Goals of the General Plan and represents a significant impact in that regard. Additionally, the failure to provide the appropriate facilities impacts the ability of the City to meet Goals in other areas beyond just transportation by promoting a shift in travel mode[4].

If there are any questions about these comments, please do not hesitate to reach out for clarification.

Sincerely,

Marven E. Norman, Executive Director

About IEBA The Inland Empire Biking Alliance is advocating for making the Inland Empire a better place for people from all rolls of life. From the children just learning how to ride to the mountain bikers to those headed back and forth to work, school, or their preferred shopping center and beyond, we speak up to make sure they all have safe and convenient place to ride.

[4] National Academies of Sciences, Engineering, and Medicine 2020. Bicyclist Facility Preferences and Effects on Increasing Bicycle Trips. Washington, DC: The National Academies Press. https://doi.org/10.17226/25792.

Table 1: Selected Goals and Policies of the City of Rancho Cucamonga's 2010 General Plan

Goal/Policy	Text
Policy CM-1.2	Provide an integrated network of roadways that provides for convenient automobile, transit, bicycle, and pedestrian circulation movement around the City.
Policy CM-1.5	Implement street design standards. Modified standards may be applied where appropriate on arterial corridors relating to transit, bicycle facilities, sidewalks, and on-street parking to be context sensitive to adjacent land uses and districts, and to all roadway users, including transit, bicycles, and pedestrians.
Policy CM-2.1	Facilitate bicycling and walking citywide.
Policy CM-2.2	Encourage all feasible measures to reduce total vehicle miles traveled by automobiles, including enhanced transit access and land use approaches that provide compact and focused development along major transit corridors.
GOAL CM-3	Provide a transportation system that includes connected transit, bicycle, and pedestrian networks.
Policy CM-3.2	Support Omnitrans' expansion of Bus Rapid Transit (BRT) into Rancho Cucamonga, along Foothill Boulevard, with stops at all major north-south streets, and with direct routing via Victoria Gardens.
Policy CM-3.7	Continue to develop and maintain a citywide bicycle network of off-street bike paths, on-street bike lanes, and bike streets to provide connections between neighborhoods, schools, parks, civic center/facilities, recreational facilities, and major commercial centers.
Policy CM-3.14	Enhance pedestrian and bicycle access to local and regional transit, including facilitating connections to transit.
Policy CM-3.15	Coordinate the provision of the non-motorized networks (bicycle and pedestrian) with adjacent jurisdictions to maximize sub-regional connectivity.
Policy CM-4.1	Continue to implement traffic management and traffic signal operation measures along the arterial roadway to minimize delay and congestion for all modes, without adversely impacting transit, bicycles, and pedestrians.
Policy CM-5.1	Continue to require that new development participates in the cost of transportation mitigation and improvements necessitated by new development, including non-automobile solutions.
Policy CM-5.4	Require that new and substantially renovated office, retail, industrial, institutional and multifamily developments include bicycle and pedestrian amenities on site and/or in the vicinity of the development to facilitate bicycling and walking, including on-site bike paths where appropriate, secure off-street bicycle parking, sidewalk improvements, and benches. The City will encourage such developments to provide bicycle facilities including showers and changing rooms.
Policy CM-5.6	Evaluate proposed parking and circulation plans for new school sites, and coordinate with school districts to provide for safe pedestrian, bicycle, and vehicular access to and around schools.
Policy ED-3.4	Improve internal circulation for all modes of transportation, consistent with the concept of "Complete Streets."
Policy CS-6.1	Provide a comprehensive, interconnected off-road trail system that provides alternative mobility choices throughout the entire City and increases connectivity.
Policy CS-6.3	Continue to incorporate, where feasible, regional and community trails along utility corridors and drainage channels.
Policy CS-6.6	Require new development to provide access to adjacent trails and provide appropriate trail amenities (e.g., benches, drinking fountains, hitching posts, bike stands, and other amenities) for all new projects located adjacent to regional or community trails.

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 29, 2021

Vincent Acuna
City of Rancho Cucamonga
10500 Civic Center Dr.
Rancho Cucamonga, CA 91730

Subject: Alta Cuvee Mixed Use Project
SCH# 2021090012

Dear Vincent Acuna:

The California Department of Fish and Wildlife (CDFW) received a Notice of Intent (NOI) to Adopt a Mitigated Negative Declaration (MND) from the City of Rancho Cucamonga (City; the CEQA lead agency) for the Alta Cuvee Mixed Use Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources, and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

PROJECT DESCRIPTION SUMMARY

The Project includes the development of a 260-unit apartment complex in two four-story buildings on 5.2 acres. The Project is located at 12901-12939 Foothill Boulevard at the southeast corner of Foothill Boulevard and Etiwanda Avenue in the City of Rancho Cucamonga. The 260-unit complex would also include 1 live-work unit, 3,339 square feet of commercial space and a total of 465 parking spaces, with 265 parking spaces located in a below grade parking garage and the remaining 200 parking spaces located on a surface parking lot on the southern and eastern portions of the Project site. The Project also provides approximately 5,500 square feet of indoor amenity space, and outdoor amenity space within two courtyards and a paseo, including a pool and additional outdoor amenities other landscaping surrounding both buildings.

COMMENTS AND RECOMMENDATIONS

CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (i.e., biological resources). CDFW agrees that an MND could be appropriate for the Project with the addition and implementation of specific and enforceable avoidance

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

and minimization measures and compensatory mitigation strategies, including those CDFW recommends within the body of this letter. CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the public agency will carry out, fund, or approve. Following review of MND, CDFW offers the comments and recommendations presented below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. The comments and recommendations are also offered to enable the City to update the MND to adequately disclose impacts and measures for CDFW and the public to review and comment on the proposed Project with respect to the Project's compliance with Fish and Game Code sections 3503, 3503.5, and 3513. CDFW recommends that each of these be addressed prior to finalization of the Mitigated Negative Declaration.

Western Yellow Bat and Nesting Birds

While CDFW appreciates the inclusion of mitigation measure BIO-1, it is more appropriate to separate nesting bird and bat surveys into two measures based on the differences in survey methodology and timing.

It is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Fish and Game Code sections 3503, 3503.5, and 3513 afford protective measures as follows: Fish and Game Code section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by Fish and Game Code or any regulation adopted pursuant thereto. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act.

Birds have been documented nesting outside of the nesting bird period identified (February 15 to September 1) in the draft MND. For example, owls nesting in January and September, hummingbirds nesting in January and February, and red-tailed hawks nesting in January and February. Given documented excursions from the proposed nesting bird season, we recommend the completion of nesting bird survey regardless of time of year to ensure compliance with all applicable laws pertaining to nesting birds and birds of prey. Nesting bird surveys should not be limited to work during a specific time frame (February 15 to September 1) due to recent changes in timing of avian breeding activity.

CDFW also requests the following revisions and additions be made before the City adopts the MND (additions in bold and deletions in strikethrough) to ensure the surveys conducted follow established protocols and protect nesting birds anytime nesting is occurring:

BIO-1: **Applicant shall ensure that impacts to nesting birds are avoided through the implementation of preconstruction surveys, ongoing monitoring, and if necessary, establishment of minimization measures. The Applicant shall designate a**~~A~~ qualified biologist **experienced in: identifying local and migratory bird species; conducting bird surveys using appropriate survey methodology (e.g., Ralph et al. 19931 and United States Fish and Wildlife Service and/or CDFW-accepted species-specific survey protocols, available here: https://www.wildlife.ca.gov/conservation/survey-protocols); nesting surveying techniques, recognizing breeding and nesting behaviors, locating nests and breeding territories, and identifying nesting stages and nest success (e.g., Martin and Geupel 19932); determining/establishing appropriate avoidance and minimization measures; and monitoring the efficacy of implemented avoidance and minimization measures.**

The Designated Biologist shall conduct a pre-construction survey **at the appropriate time of day/night** to identify nesting birds ~~and roosting bats~~ within

~~seven~~**three** days prior to the start of project activities including vegetation clearing and ground-disturbance. The reconstruction survey shall be a pedestrian-based, visual encounter survey, providing full coverage of the Project parcels. ~~The nesting bird survey shall occur when construction activities occur between February 15 and September 1 (i.e., nesting bird season) to detect active nests for MBTA-protected species.~~ **Surveys shall encompass all suitable areas including trees, shrubs, bare ground, burrows, cavities, and structures. Survey duration shall take into consideration the size of the property; density, and complexity of the habitat; number of survey participants; survey techniques employed; and shall be sufficient to ensure the data collected is complete and accurate. Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior (e.g., copulation, carrying of food or nest materials, nest building, removal of fecal sacks, flushing suddenly from atypically close range, agitation, aggressive interactions, feigning injury or distraction displays, or other behaviors).**

If nesting birds are detected during pre-construction surveys, avoidance buffers shall be established, and biological monitoring shall be conducted during construction activities to avoid impacts to nesting birds (250-ft for raptors or special-status birds species and 50-ft for common bird species). If excluding work activities from any established buffers is not feasible, the qualified biologist may establish a modified buffer exclusion utilizing specific biological and/or ecological attributes of the project location and avian species. The active nest shall be monitored by the biologist for the duration of the construction until the young have fledged, or nest is no longer active. If the **Designated** ~~b~~**Biologist** determines nesting activities could fail as a result of work activities, all work shall cease within the buffer exclusion, and no entry into the buffer will occur.

BIO-2: Bat Habitat Avoidance. No less than 60 days prior to initiating project activities, a CDFW-approved bat biologist shall conduct a bat roosting habitat suitability assessment of any vegetation that may be removed, altered, or indirectly impacted by the project activities. Any locations identified as having potentially suitable bat roosting habitat by the CDFW-approved bat biologist shall be subject to additional nighttime surveys (bat surveys) during the summer months (i.e., June- August) to determine the numbers and bat species using the roost(s). The information collected during these additional bat surveys shall be used by the CDFW-approved bat biologist to develop species-specific measures to minimize impacts to roosting bats, should bats be detected using the site. The bat surveys shall be conducted by the CDFW-approved bat biologist using an appropriate combination of visual inspection, sampling, exit counts, and acoustic surveys. The results of the pre-construction bat surveys shall be submitted to CDFW for review no less than 30 days prior to the initiation of project activities.

If the presence of bats within the project is confirmed, avoidance and minimization measures, including the designation of buffers based upon what bat species are found, and phased removal of trees, shall be developed and submitted to CDFW for review and approval. If the site supports maternity roosts, Applicant shall avoid disturbing those areas during the breeding season.

If the site supports a maternity roost(s) or special-status species, Applicant shall contact CDFW and conduct an impact assessment prior to commencing project activities to assist in the development of minimization and mitigation measures. Applicant shall compensate for impacts and losses to maternity roosts and/or special-status bat habitat through a mitigation strategy approved by CDFW.

Burrowing Owl

The MND does not identify or discuss burrowing owl (*Athene cunicularia*), a species of special concern. The Appendix B, Biological Resources Assessment states:

> *Burrowing owl is a CDFW SSC species that is associated with large expanses of (usually flat) grasslands and resides in small mammal burrows year around. Though the BSA is comprised of grassland and does include small mammal burrows (California ground squirrel), western burrowing owl is not expected to occur within the BSA for breeding or overwintering. The Project parcels are a relatively small (5.2 acres) undeveloped area surrounded by residential and commercial development. Anthropogenic disturbances (traffic, noise, mowing, and threats by domestic dogs) prevent the BSA from supporting burrowing owl.*

CDFW disagrees with the conclusion that the Project site could not support burrowing owls. They are commonly found in disturbed areas surrounded by anthropogenic development. Given the oversight of not identifying and analyzing the impacts to burrowing owls in the MND, CDFW requests the City include the following mitigation measure:

BIO-3: Applicant shall designate a burrowing owl biologist (Designated Biologist) that is knowledgeable about the burrowing owl, including its natural history, habitat requirements, seasonal movements, and range, to survey and monitor for burrowing owls prior to project activities. The Designated Biologist shall complete necessary surveys, impact assessments, and associated reports following the recommendations and guidelines provided within the Staff Report on Burrowing Owl Mitigation (Department of Fish and Game, March 2012) or similar approach. The survey(s) shall encompass the entire project site and a 150-meter buffer surrounding it, and it shall occur at a time of the day when most burrowing owls are active. Pre-construction burrowing owl surveys shall also be conducted by the Designated Biologist 3 days prior to the start of project activities. If breeding season or pre-construction surveys confirm occupied burrowing owl habitat in or adjoining areas subject to project activities, the Applicant shall contact CDFW and conduct an impact assessment, in accordance with Staff Report on Burrowing Owl Mitigation prior to commencing project activities, to assist in the development of avoidance, minimization, and mitigation measures. Mitigation may include acquisition and in-perpetuity conservation of occupied burrowing owl habitat. To avoid direct take of owls, the Designated Biologist shall establish a conservative avoidance buffer and monitoring shall occur, if deemed necessary, based on identified activities. If relocation/passive exclusion is deemed necessary Applicant shall prepare a Burrowing Owl Exclusion Plan for CDFW review and approval, in accordance with Staff Report on Burrowing Owl Mitigation (Department of Fish and Game, March 2012).

Please be aware that CDFW does not recommend the exclusion of owls using passive relocation unless there are suitable burrows available within 50-100 meters of the closed burrows, a distance generally within a pair’s territory (Trulio 1995, CDFG 2012), and the relocation area is protected through a long-term conservation mechanism (e.g., conservation easement). Burrow exclusion should only be conducted during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance, camera, and/or scoping. CDFW’s *Staff Report on Burrowing Owl Mitigation* also includes that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (Appendix E in the Staff Report) is developed and approved by the applicable local CDFW office;
- Permanent loss of occupied burrow(s) and habitat and temporary exclusion is mitigated in accordance with guidelines provided in the Staff Report;
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided.

- Young of the year have fledged, as confirmed by daily monitoring for one week, if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_FieldSurveyForm.pdf. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

CDFW appreciates the opportunity to comment on the MND to assist the City of Rancho Cucamonga in identifying and mitigating Project impacts on biological resources. CDFW recommends that the County address CDFW's comments and concerns prior to adoption of the MND to avoid, minimize, or mitigate Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Marina Barton, Environmental Scientist at 909-948-9632 or Marina.Barton@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Heather Pert
DF423498814B441...

Scott Wilson
Environmental Program Manager

Attachment: Draft Mitigation Monitoring and Reporting Program for CDFW-proposed Mitigation Measures

ec: Office of Planning and Research, State Clearinghouse, Sacramento

HCPB CEQA Coordinator
Habitat Conservation Planning Branch

Marina Barton, Environmental Scientist, CDFW Inland Deserts Region
Marina.Barton@wildlife.ca.gov

REFERENCES

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. (https://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html)

Trulio, L.A. (1995) Passive relocation: a method to preserve burrowing owls on disturbed sites. Journal of Field Ornithology, 66, 99-106.

ATTACHMENT 1

MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

PURPOSE OF THE MMRP
The purpose of the MMRP is to ensure compliance with mitigation measures during project implementation. Mitigation measures must be implemented within the time periods indicated in the table below.

TABLE OF MITIGATION MEASURES
The following items are identified for each mitigation measure: Mitigation Measure, Implementation Schedule, and Responsible Party. The Mitigation Measure column summarizes the mitigation requirements. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure.

Mitigation Measure	Implementation Schedule	Responsible Party
BIO 1: Applicant shall ensure that impacts to nesting birds are avoided through the implementation of preconstruction surveys, ongoing monitoring, and if necessary, establishment of minimization measures. The Applicant shall designate a~~A~~ qualified biologist **experienced in: identifying local and migratory bird species; conducting bird surveys using appropriate survey methodology (e.g., Ralph et al. 19931 and United States Fish and Wildlife Service and/or CDFW-accepted species-specific survey protocols, available here: https://www.wildlife.ca.gov/conservation/survey-protocols); nesting surveying techniques, recognizing breeding and nesting behaviors, locating nests and breeding territories, and identifying nesting stages and nest success (e.g., Martin and Geupel 19932); determining/establishing appropriate avoidance and minimization measures; and monitoring the efficacy of implemented avoidance and minimization measures.** **The Designated Biologist** shall conduct a pre-construction survey **at the appropriate time of day/night** to identify nesting birds ~~and roosting bats~~ within ~~seven~~**three** days prior to the start of construction. The reconstruction survey shall be a pedestrian-based, visual encounter survey, providing full coverage of the Project parcels. ~~The nesting bird survey shall occur when construction activities occur between February 15 and September 1 (i.e., nesting bird season) to detect active nests for MBTA-protected species.~~ **Surveys shall encompass all suitable areas including trees, shrubs, bare ground, burrows, cavities, and structures. Survey duration shall take into consideration the size of the property; density, and complexity of the habitat; number of survey participants; survey techniques employed; and shall be sufficient to ensure the data collected is complete and accurate. Preconstruction surveys**	Before commencing ground- or vegetation-disturbing activities/ Throughout project duration	Project Proponent

shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior (e.g., copulation, carrying of food or nest materials, nest building, removal of fecal sacks, flushing suddenly from atypically close range, agitation, aggressive interactions, feigning injury or distraction displays, or other behaviors). If nesting birds are detected during pre-construction surveys, avoidance buffers shall be established, and biological monitoring shall be conducted during construction activities to avoid impacts to nesting birds (250-ft for raptors or special-status birds species and 50-ft for common bird species). If excluding work activities from any established buffers is not feasible, the qualified biologist may establish a modified buffer exclusion utilizing specific biological and/or ecological attributes of the project location and avian species. The active nest shall be monitored by the biologist for the duration of the construction until the young have fledged, or nest is no longer active. If the **Designated ~~b~~Biologist** determines nesting activities could fail as a result of work activities, all work shall cease within the buffer exclusion, and no entry into the buffer will occur.		
BIO-2: Bat Habitat Avoidance. No less than 60 days prior to initiating project activities, a CDFW-approved bat biologist shall conduct a bat roosting habitat suitability assessment of any vegetation that may be removed, altered, or indirectly impacted by the project activities. Any locations identified as having potentially suitable bat roosting habitat by the CDFW-approved bat biologist shall be subject to additional nighttime surveys (bat surveys) during the summer months (i.e., June- August) to determine the numbers and bat species using the roost(s). The information collected during these additional bat surveys shall be used by the CDFW-approved bat biologist to develop species-specific measures to minimize impacts to roosting bats, should bats be detected using the site. The bat surveys shall be conducted by the CDFW-approved bat biologist using an appropriate combination of visual inspection, sampling, exit counts, and acoustic surveys. The results of the pre-construction bat surveys shall be submitted to CDFW for review no less than 30 days prior to the initiation of project activities. **If the presence of bats within the project is confirmed, avoidance and minimization measures, including the designation of buffers based upon what bat species are found, and phased removal of trees, shall be developed and submitted to CDFW for review and approval. If the site supports maternity roosts, Applicant shall avoid disturbing those areas during the breeding season.** **If the site supports a maternity roost(s) or special-status species, Applicant shall contact CDFW and conduct an impact assessment prior to commencing project activities to assist in the**	Before commencing ground- or vegetation-disturbing activities/ Throughout project duration	Project Proponent

development of minimization and mitigation measures. Applicant shall compensate for impacts and losses to maternity roosts and/or special-status bat habitat through a mitigation strategy approved by CDFW.		
BIO-3: Applicant shall designate a burrowing owl biologist (Designated Biologist) that is knowledgeable about the burrowing owl, including its natural history, habitat requirements, seasonal movements, and range, to survey and monitor for burrowing owls prior to project activities. The Designated Biologist shall complete necessary surveys, impact assessments, and associated reports following the recommendations and guidelines provided within the Staff Report on Burrowing Owl Mitigation (Department of Fish and Game, March 2012) or similar approach. The survey(s) shall encompass the entire project site and a 150-meter buffer surrounding it, and it shall occur at a time of the day when most burrowing owls are active. Pre-construction burrowing owl surveys shall also be conducted by the Designated Biologist 3 days prior to the start of project activities. If breeding season or pre-construction surveys confirm occupied burrowing owl habitat in or adjoining areas subject to project activities, the Applicant shall contact CDFW and conduct an impact assessment, in accordance with Staff Report on Burrowing Owl Mitigation prior to commencing project activities, to assist in the development of avoidance, minimization, and mitigation measures. Mitigation may include acquisition and in-perpetuity conservation of occupied burrowing owl habitat. To avoid direct take of owls, the Designated Biologist shall establish a conservative avoidance buffer and monitoring shall occur, if deemed necessary, based on identified activities. If relocation/passive exclusion is deemed necessary Applicant shall prepare a Burrowing Owl Exclusion Plan for CDFW review and approval, in accordance with Staff Report on Burrowing Owl Mitigation (Department of Fish and Game, March 2012).	Before commencing ground- or vegetation-disturbing activities/ Throughout project duration	Project Proponent

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VIA E-MAIL

October 1, 2021

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RE: Initial Study/Mitigated Negative Declaration Comments for the Alta Cuvee Mixed Use Project

Dear Vincent Acuna,

On behalf of the Southwest Regional Council of Carpenters ("**Commenter**" or "**Southwest Carpenters**"), my Office is submitting these comments on the City of Rancho Cucamonga's ("**City**" or "**Lead Agency**") Initial Study / Mitigated Negative Declaration ("**IS / MND**") (SCH No. 2021090012) for the Alta Cuvee Mixed Use Project (**"Project"**).

The Southwest Carpenters is a labor union representing more than 50,000 union carpenters in six states and has a strong interest in well-ordered land use planning and addressing the environmental impacts of development projects.

Individual members of the Southwest Carpenters live, work and recreate in the City and surrounding communities and would be directly affected by the Project's environmental impacts.

Commenters expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearings and proceedings related to this Project. Cal. Gov. Code § 65009(b); Cal. Pub. Res. Code § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal. App. 4th 1184, 1199-1203; see *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.

Commenters incorporates by reference all comments raising issues regarding the EIR submitted prior to certification of the EIR for the Project. *Citizens for Clean Energy v City* *of Woodland* (2014) 225 Cal. App. 4th 173, 191 (finding that any party who has objected to the Project's environmental documentation may assert any issue timely raised by other parties).

Moreover, Commenter requests that the Lead Agency provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act ("**CEQA**"), Cal Public Resources Code ("**PRC**") § 21000 *et seq*, and the California Planning and Zoning Law ("**Planning and Zoning Law**"), Cal. Gov't Code §§ 65000–65010. California Public Resources Code Sections 21092.2, and 21167(f) and Government Code Section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

The City should require the Applicant provide additional community benefits such as requiring local hire and use of a skilled and trained workforce to build the Project. The City should require the use of workers who have graduated from a Joint Labor Management apprenticeship training program approved by the State of California, or have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a state approved apprenticeship training program or who are registered apprentices in an apprenticeship training program approved by the State of California.

Community benefits such as local hire and skilled and trained workforce requirements can also be helpful to reduce environmental impacts and improve the positive economic impact of the Project. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project Site can reduce the length of vendor trips, reduce greenhouse gas emissions and providing localized economic benefits. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project Site can reduce the length of vendor trips, reduce greenhouse gas emissions and providing localized economic benefits. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note:

> [A]ny local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling.

Skilled and trained workforce requirements promote the development of skilled trades that yield sustainable economic development. As the California Workforce Development Board and the UC Berkeley Center for Labor Research and Education concluded:

> . . . labor should be considered an investment rather than a cost – and investments in growing, diversifying, and upskilling California's workforce can positively affect returns on climate mitigation efforts. In other words, well trained workers are key to delivering emissions reductions and moving California closer to its climate targets.[1]

Recently, on May 7, 2021, the South Coast Air Quality Management District found that that the "[u]se of a local state-certified apprenticeship program or a skilled and trained workforce with a local hire component" can result in air pollutant reductions.[2]

Cities are increasingly adopting local skilled and trained workforce policies and requirements into general plans and municipal codes. For example, the City of Hayward 2040 General Plan requires the City to "promote local hiring . . . to help achieve a more positive jobs-housing balance, and reduce regional commuting, gas consumption, and greenhouse gas emissions."[3]

In fact, the City of Hayward has gone as far as to adopt a Skilled Labor Force policy into its Downtown Specific Plan and municipal code, requiring developments in its Downtown area to requiring that the City "[c]ontribute to the stabilization of regional construction markets by spurring applicants of housing and nonresidential developments to require contractors to utilize apprentices from state-approved, joint

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[1] California Workforce Development Board (2020) Putting California on the High Road: A Jobs and Climate Action Plan for 2030 at p. ii, *available at* https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf

[2] South Coast Air Quality Management District (May 7, 2021) Certify Final Environmental Assessment and Adopt Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions Program, and Proposed Rule 316 – Fees for Rule 2305, Submit Rule 2305 for Inclusion Into the SIP, and Approve Supporting Budget Actions, *available at* http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10

[3] City of Hayward (2014) Hayward 2040 General Plan Policy Document at p. 3-99, *available at* https://www.hayward-ca.gov/sites/default/files/documents/General_Plan_FINAL.pdf.

labor-management training programs, . . ."[4] In addition, the City of Hayward requires all projects 30,000 square feet or larger to "utilize apprentices from state-approved, joint labor-management training programs."[5]

Locating jobs closer to residential areas can have significant environmental benefits. As the California Planning Roundtable noted in 2008:

> People who live and work in the same jurisdiction would be more likely to take transit, walk, or bicycle to work than residents of less balanced communities and their vehicle trips would be shorter. Benefits would include potential reductions in both vehicle miles traveled and vehicle hours traveled.[6]

In addition, local hire mandates as well as skill training are critical facets of a strategy to reduce vehicle miles traveled. As planning experts Robert Cervero and Michael Duncan noted, simply placing jobs near housing stock is insufficient to achieve VMT reductions since the skill requirements of available local jobs must be matched to those held by local residents.[7] Some municipalities have tied local hire and skilled and trained workforce policies to local development permits to address transportation issues. As Cervero and Duncan note:

> In nearly built-out Berkeley, CA, the approach to balancing jobs and housing is to create local jobs rather than to develop new housing." The city's First Source program encourages businesses to hire local residents, especially for entry- and intermediate-level jobs, and sponsors vocational training to ensure residents are employment-ready. While the program is voluntary, some 300 businesses have used it to date, placing more than 3,000 city residents in local jobs since it was launched in 1986. When

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[4] City of Hayward (2019) Hayward Downtown Specific Plan at p. 5-24, *available at* https://www.hayward-ca.gov/sites/default/files/Hayward%20Downtown%20Specific%20Plan.pdf.

[5] City of Hayward Municipal Code, Chapter 10, § 28.5.3.020(C).

[6] California Planning Roundtable (2008) Deconstructing Jobs-Housing Balance at p. 6, *available at* https://cproundtable.org/static/media/uploads/publications/cpr-jobs-housing.pdf

[7] Cervero, Robert and Duncan, Michael (2006) Which Reduces Vehicle Travel More: Jobs-Housing Balance or Retail-Housing Mixing? Journal of the American Planning Association 72 (4), 475-490, 482, *available at* http://reconnectingamerica.org/assets/Uploads/UTCT-825.pdf.

needed, these carrots are matched by sticks, since the city is not shy about negotiating corporate participation in First Source as a condition of approval for development permits.

The City should consider utilizing skilled and trained workforce policies and requirements to benefit the local area economically and mitigate greenhouse gas, air quality and transportation impacts.

The City should also require the Project to be built to standards exceeding the current 2019 California Green Building Code to mitigate the Project's environmental impacts and to advance progress towards the State of California's environmental goals.

I. THE PROJECT WOULD BE APPROVED IN VIOLATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

A. The City Must Prepare and Environmental Impact Report for the Project

It would be unlawful for the City to approve the Project in reliance on the incomplete and flawed IS/MND. Because the Project would result in significant impacts to the environment, the City is obligated to develop and circulate an Environmental Impact Report ("**EIR**") for the Project.

1. *Legal Background Concerning the Need for Environmental Impact Reports*

Built into CEQA is a strong presumption in favor of requiring preparation of an EIR. This presumption is reflected in what is known as the "fair argument" standard, under which an agency must prepare an EIR whenever substantial evidence in the record supports a fair argument that a project may have a significant effect on the environment. *Quail Botanical Gardens Found., Inc. v City of Encinitas* (1994) 29 CA4th 1597, 1602; *Friends of "B" St. v City of Hayward* (1980) 106 CA3d 988, 1002.

The fair argument test stems from the statutory mandate that an EIR be prepared for any project that "may have a significant effect on the environment." PRC § 21151; *No Oil, Inc. v City of Los Angeles* (1974) 13 C3d 68, 75; *Jensen v City of Santa Rosa* (2018) 23 CA5th 877, 884. Under this test, if a proposed project is not exempt and may cause a significant effect on the environment, the lead agency must prepare an EIR. PRC §§ 21100(a), 21151; 14 California Code of Regulations ("**CCR**" or "**CEQA Guidelines**") § 15064(a)(1), (f)(1). An EIR may be dispensed with only if the lead agency finds no substantial evidence in the initial study or elsewhere in the record that the project may have a significant effect on the environment. *Parker Shattuck Neighbors v Berkeley City*

Council (2013) 222 CA4th 768, 785. In such a situation, the agency must adopt a negative declaration. PRC § 21080(c)(1); CEQA Guidelines §§ 15063(b)(2), 15064(f)(3).

"Significant effect upon the environment" is defined as "a substantial or potentially substantial adverse change in the environment." PRC § 21068; CEQA Guidelines § 15382. A project "may" have a significant effect on the environment if there is a "reasonable probability" that it will result in a significant impact. *No Oil, Inc. v City of Los Angeles*, 13 Cal. 3d at 83 fn. 16; *Sundstrom v County of Mendocino* (1988) 202 Cal. App. 3d 296, 309. If any aspect of the project may result in a significant impact on the environment, an EIR must be prepared even if the overall effect of the project is beneficial. CEQA Guidelines § 15063(b)(1). See *County Sanitation Dist. No. 2 v County of Kern* (2005) 127 Cal. App. 4th 1544, 1580.

This standard sets a "low threshold" for preparation of an EIR. *Consolidated Irrig. Dist. v City of Selma* (2012) 204 Cal. App. 4th 187, 207; *Nelson v County of Kern* (2010) 190 Cal. App. 4th 252; *Pocket Protectors v City of Sacramento* (2004) 124 Cal. App. 4th 903, 928; *Bowman v City of Berkeley* (2004) 122 Cal. App. 4th 572, 580; *Citizen Action to Serve All Students v Thornley* (1990) 222 Cal. App. 3d 748, 754; Sundstrom v County of Mendocino (1988) 202 Cal. App. 3d 296, 310. If substantial evidence in the record supports a fair argument that the project may have a significant environmental effect, the lead agency must prepare an EIR even if other substantial evidence before it indicates the project will have no significant effect. See *Jensen v City of Santa Rosa* (2018) 23 Cal. App. 5th 877, 886; *Clews Land & Livestock v City of San Diego* (2017) 19 Cal. App. 5th 161, 183; *Stanislaus Audubon Soc'y, Inc. v County of Stanislaus* (1995) 33 Cal. App. 4th 144, 150; *Brentwood Ass'n for No Drilling, Inc. v City of Los Angeles* (1982) 134 Cal. App. 3d 491; *Friends of "B" St. v City of Hayward* (1980) 106 Cal. App. 3d 988; CEQA Guidelines § 15064(f)(1).

As explained in full below, there is a fair argument that the Project will have a significant effect on the environment. As a result, the "low threshold" for preparation of an EIR has been met and the City must prepare an EIR.

B. Due to the COVID-19 Crisis, the City Must Adopt a Mandatory Finding of Significance that the Project May Cause a Substantial Adverse Effect on Human Beings and Mitigate COVID-19 Impacts

CEQA requires that an agency make a finding of significance when a Project may cause a significant adverse effect on human beings. PRC § 21083(b)(3); CEQA Guidelines § 15065(a)(4).

Public health risks related to construction work requires a mandatory finding of significance under CEQA. Construction work has been defined as a Lower to High-risk activity for COVID-19 spread by the Occupations Safety and Health Administration. Recently, several construction sites have been identified as sources of community spread of COVID-19.[8]

SWRCC recommends that the Lead Agency adopt additional CEQA mitigation measures to mitigate public health risks from the Project's construction activities. SWRCC requests that the Lead Agency require safe on-site construction work practices as well as training and certification for any construction workers on the Project Site.

In particular, based upon SWRCC's experience with safe construction site work practices, SWRCC recommends that the Lead Agency require that while construction activities are being conducted at the Project Site:

Construction Site Design:

- The Project Site will be limited to two controlled entry points.
- Entry points will have temperature screening technicians taking temperature readings when the entry point is open.
- The Temperature Screening Site Plan shows details regarding access to the Project Site and Project Site logistics for conducting temperature screening.
- A 48-hour advance notice will be provided to all trades prior to the first day of temperature screening.

[8] Santa Clara County Public Health (June 12, 2020) COVID-19 CASES AT CONSTRUCTION SITES HIGHLIGHT NEED FOR CONTINUED VIGILANCE IN SECTORS THAT HAVE REOPENED, *available at* https://www.sccgov.org/sites/covid19/Pages/press-release-06-12-2020-cases-at-construction-sites.aspx.

- The perimeter fence directly adjacent to the entry points will be clearly marked indicating the appropriate 6-foot social distancing position for when you approach the screening area. Please reference the Apex temperature screening site map for additional details.
- There will be clear signage posted at the project site directing you through temperature screening.
- Provide hand washing stations throughout the construction site.

Testing Procedures:

- The temperature screening being used are non-contact devices.
- Temperature readings will not be recorded.
- Personnel will be screened upon entering the testing center and should only take 1-2 seconds per individual.
- Hard hats, head coverings, sweat, dirt, sunscreen or any other cosmetics must be removed on the forehead before temperature screening.
- Anyone who refuses to submit to a temperature screening or does not answer the health screening questions will be refused access to the Project Site.
- Screening will be performed at both entrances from 5:30 am to 7:30 am.; main gate [ZONE 1] and personnel gate [ZONE 2]
- After 7:30 am only the main gate entrance [ZONE 1] will continue to be used for temperature testing for anybody gaining entry to the project site such as returning personnel, deliveries, and visitors.
- If the digital thermometer displays a temperature reading above 100.0 degrees Fahrenheit, a second reading will be taken to verify an accurate reading.

- If the second reading confirms an elevated temperature, DHS will instruct the individual that he/she will not be allowed to enter the Project Site. DHS will also instruct the individual to promptly notify his/her supervisor and his/her human resources (HR) representative and provide them with a copy of Annex A.

Planning

- Require the development of an Infectious Disease Preparedness and Response Plan that will include basic infection prevention measures (requiring the use of personal protection equipment), policies and procedures for prompt identification and isolation of sick individuals, social distancing (prohibiting gatherings of no more than 10 people including all-hands meetings and all-hands lunches) communication and training and workplace controls that meet standards that may be promulgated by the Center for Disease Control, Occupational Safety and Health Administration, Cal/OSHA, California Department of Public Health or applicable local public health agencies.[9]

The United Brotherhood of Carpenters and Carpenters International Training Fund has developed COVID-19 Training and Certification to ensure that Carpenter union members and apprentices conduct safe work practices. The Agency should require that all construction workers undergo COVID-19 Training and Certification before being allowed to conduct construction activities at the Project Site.

SWRCC has also developed a rigorous Infection Control Risk Assessment ("**ICRA**") training program to ensure it delivers a workforce that understands how to identify and control infection risks by implementing protocols to protect themselves and all others during renovation and construction projects in healthcare environments.[10]

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[9] *See also* The Center for Construction Research and Training, North America's Building Trades Unions (April 27 2020) NABTU and CPWR COVIC-19 Standards for U.S Constructions Sites, *available at* https://www.cpwr.com/sites/default/files/NABTU_CPWR_Standards_COVID-19.pdf; Los Angeles County Department of Public Works (2020) Guidelines for Construction Sites During COVID-19 Pandemic, *available at* https://dpw.lacounty.gov/building-and-safety/docs/pw_guidelines-construction-sites.pdf.

[10] For details concerning SWRCC's ICRA training program, *see* https://icrahealthcare.com/.

ICRA protocols are intended to contain pathogens, control airflow, and protect patients during the construction, maintenance and renovation of healthcare facilities. ICRA protocols prevent cross contamination, minimizing the risk of secondary infections in patients at hospital facilities.

The City should require the Project to be built using a workforce trained in ICRA protocols.

II. THE IS/MND IS DEFFICIENT

A. <u>All Parking Calculations and Requested Parking Exceptions Numbers are Inaccurate, and Deceiving</u>

Table 1-2 shows inaccurate parking requirements and deceiving parking requested parking exceptions. City of Rancho Cucamonga Municipal Code Tables 17.34.060.A and 17.34.060.B indicates that depending on whether provided parking is enclosed or unenclosed, the minimum required number of parking spaces are:

- 1 Bedroom. Between 1.7 and 1.9 per unit,
- 2 Bedroom. Between 2 and 2.3 per unit
- 3 Bedroom. Between 2.4 and 2.6 per unit
- Commercial, depending on of specific type of business

Also, the project is seeking a parking exception in excess of 45%, not the deceiving averaged calculation of 12% shown on the table. Since the Municipal Code has different requirements for each different unit size, parking exceptions should be requested separately for each size, not combined or averaged.

Further, According to City of Rancho Cucamonga Municipal Code Section 17.34.090, "In the case of mixed uses in a building or on a lot, the total number of required parking spaces shall be the sum of the requirements for the various uses computed separately. Off-street parking facilities provided for one use shall not be considered as providing required parking for any other use except as specified hereinafter for shared use."

Therefore, the proposed Alta Cuvee Mixed Use Project requires both residential and commercial parking requirements to be calculated accordingly, not just for the residential use. Guest parking for residential should not be counted for the commercial area.

Commenters request that the City revise and recirculate the Project's parking management plan (Appendix I) to address and calculate the correct number of parking requirements and each one of the requested parking reduction exceptions, without averaging the 45% commercial parking reduction together with an inaccurate, averaged residential convoluted calculation.

B. The IS/MND Project Description is Deficient

"[A]n accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient" environmental document. (*County of Inyo v. City of Los Angeles* (1977) 71 Cal. App. 3d 185, 200.) "A curtailed or distorted project description may stultify the objectives of the reporting process" as an accurate, stable and finite project description is necessary to allow "affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the "no project" alternative) and weigh other alternatives in the balance. (*Id.* At 192 – 93.) Courts determine *de novo* whether an agency proceeded "in a manner required by law" in maintaining a stable and consistent project description. (*Id.* At 200.)

The IS/MND states that "[t]he 12 percent parking reduction would require a minor exception approval from the City of Rancho Cucamonga. The parking exception must be compatible with the surrounding area and adjoining uses. In compliance with the City Code, a parking management plan (Appendix I) has been completed to demonstrate how the proposed land uses would utilize the parking spaces, assign parking spaces to apartment units, and support the 12 percent parking reduction." (IS/MND, p. 1-15.)

By stating that the project will only require a minor 12% parking reduction exception, when in fact it is seeking 45% reduction the IS/MND defeats its purpose of informing the public and decision makers of the actual environmental effects of the Project.

C. The IS/MND Improperly Labels Mitigation Measures as "Project Design Features"

The IS/MND improperly labels mitigation measures for "Project Design Features" or "PDFs" which the IS/MND purports that "The proposed Project would implement sustainable design features to enhance building energy efficiency and conserve energy" (IS/MND, p. 4-23.)

Relying on the PDFs, the IS/MND concludes in many instances that the Project's impacts are less than significant and that no mitigation is required.

However, it is established that "'[a]voidance, minimization and / or mitigation measure' . . . are not 'part of the project.' . . . compressing the analysis of impacts and mitigation measures into a single issue . . disregards the requirements of CEQA." (*Lotus v. Department of Transportation* (2014) 223 Cal. App. 4th 645, 656.)

When "an agency decides to incorporate mitigation measures into its significance determination, and relies on those mitigation measures to determine that no significant effects will occur, that agency must treat those measures as though there were adopted following a finding of significance." (*Lotus, supra*, 223 Cal. App. 4th at 652 [citing CEQA Guidelines § 15091(a)(1) and Cal. Public Resources Code § 21081(a)(1).])

By labeling mitigation measures as project design features, the City violates CEQA by failing to disclose "the analytic route that the agency took from the evidence to its findings." (Cal. Public Resources Code § 21081.5; CEQA Guidelines § 15093; *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal. App. 3d 1022, 1035 [quoting *Topanga Assn for a Scenic Community v. County of Los Angeles* (1974) 11 Cal. 3d 506, 515.])

The IS/MND's use of "Project Design Features" further violates CEQA because such measures would not be included in the Project's Mitigation Monitoring and Reporting Program CEQA requires lead agencies to adopt mitigation measures that are fully enforceable and to adopt a monitoring and/or reporting program to ensure that the measures are implemented <u>to reduce the Project's significant environmental effects to the extent feasible</u>. (PRC § 21081.6; CEQA Guidelines § 15091(d).) Therefore, using Project Design Features in lieu of mitigation measures violates CEQA.

D. <u>The IS/MND Fails to Adopt all Mitigation Measures Identified on The IS/MND</u>

The IS/MND states that "A qualified paleontologist would make an immediate evaluation of the significance and appropriate treatment of the resource. (IS/MND, p. 4-29.) However, the Mitigation Summary fails to Include this.

Since the City is incorporating the hiring of a qualified paleontologist into its significance determination, and relies on those mitigation measures to determine that no significant effects will occur, the City must label them accordingly and treat them as though there were adopted following a finding of significance.

CEQA mitigation measures proposed into an environmental impact report are required to describe what actions that will be taken to reduce or avoid an environmental impact. (CEQA Guidelines § 15126.4(a)(1)(B) [providing "[f]ormulation of mitigation measures should not be deferred until some future time."].) While the same Guidelines section 15126.5(a)(1)(B) acknowledges an exception to the rule against deferrals, but such exception is narrowly proscribed to situations where "measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way." (*Id.*) Courts have also recognized a similar exception to the general rule against deferral of mitigation measures where the performance criteria for each mitigation measure is identified and described in the EIR. (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011.)

Further, impermissible deferral can occur when an EIR calls for mitigation measures to be created based on future studies or describes mitigation measures in general terms but the agency fails to commit itself to specific performance standards. (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281 [city improperly deferred mitigation to butterfly habitat by failing to provide standards or guidelines for its management]; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 671 [EIR failed to provide and commit to specific criteria or standard of performance for mitigating impacts to biological habitats]; *see also Cleveland Nat'l Forest Found. v San Diego Ass'n of Gov'ts* (2017) 17 Cal.App.5th 413, 442 [generalized air quality measures in the EIR failed to set performance standards]; *California Clean Energy Comm. v City of Woodland* (2014) 225 Cal.App.4th 173, 195 [agency could not rely on a future report on urban decay with no standards for determining whether mitigation required]; *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 740 [agency could not rely on future rulemaking to establish specifications to ensure emissions of nitrogen oxide would not increase because it did not establish objective performance criteria for measuring whether that goal would be achieved]; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1119 [rejecting mitigation measure requiring replacement water to be provided to neighboring landowners because it identified a general goal for mitigation rather than specific performance standard]; *Endangered Habitats League, Inc. v. County of Orange* (2005) 131 Cal.App.4th 777, 794 [requiring report without established standards is impermissible delay].)

Therefore, the IS/MND defers the development of environmental mitigation measures and fails to adopt all identified mitigation measures.

III. CONCLUSION

Commenters request that the City revise and recirculate the Project's IS/MND to address the aforementioned concerns.

If the City has any questions or concerns, feel free to contact my Office.

Sincerely,

____

Mitchell M. Tsai
Attorneys for Southwest Regional Council of Carpenters

Attached:

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling (Exhibit A);

Air Quality and GHG Expert Paul Rosenfeld CV (Exhibit B); and

Air Quality and GHG Expert Matt Hagemann CV (Exhibit C).

EXHIBIT A

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

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March 8, 2021

Mitchell M. Tsai
155 South El Molino, Suite 104
Pasadena, CA 91101

Subject: Local Hire Requirements and Considerations for Greenhouse Gas Modeling

Dear Mr. Tsai,

Soil Water Air Protection Enterprise ("SWAPE") is pleased to provide the following draft technical report explaining the significance of worker trips required for construction of land use development projects with respect to the estimation of greenhouse gas ("GHG") emissions. The report will also discuss the potential for local hire requirements to reduce the length of worker trips, and consequently, reduced or mitigate the potential GHG impacts.

Worker Trips and Greenhouse Gas Calculations

The California Emissions Estimator Model ("CalEEMod") is a "statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects."[1] CalEEMod quantifies construction-related emissions associated with land use projects resulting from off-road construction equipment; on-road mobile equipment associated with workers, vendors, and hauling; fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and architectural coating activities; and paving.[2]

The number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[3]

[1] "California Emissions Estimator Model." CAPCOA, 2017*, available at:* http://www.aqmd.gov/caleemod/home.
[2] "California Emissions Estimator Model." CAPCOA, 2017*, available at:* http://www.aqmd.gov/caleemod/home.
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.

Specifically, the number and length of vehicle trips is utilized to estimate the vehicle miles travelled ("VMT") associated with construction. Then, utilizing vehicle-class specific EMFAC 2014 emission factors, CalEEMod calculates the vehicle exhaust, evaporative, and dust emissions resulting from construction-related VMT, including personal vehicles for worker commuting.[4]

Specifically, in order to calculate VMT, CalEEMod multiplies the average daily trip rate by the average overall trip length (see excerpt below):

"$VMT_d = \Sigma(\text{Average Daily Trip Rate}_i * \text{Average Overall Trip Length}_i)_n$

Where:

n = Number of land uses being modeled."[5]

Furthermore, to calculate the on-road emissions associated with worker trips, CalEEMod utilizes the following equation (see excerpt below):

"$\text{Emissions}_{pollutant} = VMT * EF_{running,pollutant}$

Where:

$\text{Emissions}_{pollutant}$ = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

$EF_{running,pollutant}$ = emission factor for running emissions."[6]

Thus, there is a direct relationship between trip length and VMT, as well as a direct relationship between VMT and vehicle running emissions. In other words, when the trip length is increased, the VMT and vehicle running emissions increase as a result. Thus, vehicle running emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise.

Default Worker Trip Parameters and Potential Local Hire Requirements

As previously discussed, the number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[7] In order to understand how local hire requirements and associated worker trip length reductions impact GHG emissions calculations, it is important to consider the CalEEMod default worker trip parameters. CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence.[8] The default number of construction-related worker trips is calculated by multiplying the

[4] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14-15.
[5] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 23.
[6] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 1, 9.

number of pieces of equipment for all phases by 1.25, with the exception of worker trips required for the building construction and architectural coating phases.[9] Furthermore, the worker trip vehicle class is a 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2, respectively."[10] Finally, the default worker trip length is consistent with the length of the operational home-to-work vehicle trips.[11] The operational home-to-work vehicle trip lengths are:

> "[B]ased on the *location* and *urbanization* selected on the project characteristic screen. These values were *supplied by the air districts or use a default average for the state*. Each district (or county) also assigns trip lengths for urban and rural settings" (emphasis added). [12]

Thus, the default worker trip length is based on the location and urbanization level selected by the User when modeling emissions. The below table shows the CalEEMod default rural and urban worker trip lengths by air basin (see excerpt below and Attachment A).[13]

Worker Trip Length by Air Basin

Air Basin	Rural (miles)	Urban (miles)
Great Basin Valleys	16.8	10.8
Lake County	16.8	10.8
Lake Tahoe	16.8	10.8
Mojave Desert	16.8	10.8
Mountain Counties	16.8	10.8
North Central Coast	17.1	12.3
North Coast	16.8	10.8
Northeast Plateau	16.8	10.8
Sacramento Valley	16.8	10.8
Salton Sea	14.6	11
San Diego	16.8	10.8
San Francisco Bay Area	10.8	10.8
San Joaquin Valley	16.8	10.8
South Central Coast	16.8	10.8
South Coast	19.8	14.7
Average	**16.47**	**11.17**
Minimum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[10] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[11] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14.
[12] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 21.
[13] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-84 – D-86.

As demonstrated above, default rural worker trip lengths for air basins in California vary from 10.8- to 19.8-miles, with an average of 16.47 miles. Furthermore, default urban worker trip lengths vary from 10.8- to 14.7-miles, with an average of 11.17 miles. Thus, while default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. Based on these trends evident in the CalEEMod default worker trip lengths, we can reasonably assume that the efficacy of a local hire requirement is especially dependent upon the urbanization of the project site, as well as the project location.

Practical Application of a Local Hire Requirement and Associated Impact

To provide an example of the potential impact of a local hire provision on construction-related GHG emissions, we estimated the significance of a local hire provision for the Village South Specific Plan ("Project") located in the City of Claremont ("City"). The Project proposed to construct 1,000 residential units, 100,000-SF of retail space, 45,000-SF of office space, as well as a 50-room hotel, on the 24-acre site. The Project location is classified as Urban and lies within the Los Angeles-South Coast County. As a result, the Project has a default worker trip length of 14.7 miles.[14] In an effort to evaluate the potential for a local hire provision to reduce the Project's construction-related GHG emissions, we prepared an updated model, reducing all worker trip lengths to 10 miles (see Attachment B). Our analysis estimates that if a local hire provision with a 10-mile radius were to be implemented, the GHG emissions associated with Project construction would decrease by approximately 17% (see table below and Attachment C).

Local Hire Provision Net Change	
Without Local Hire Provision	
Total Construction GHG Emissions (MT CO_2e)	3,623
Amortized Construction GHG Emissions (MT CO_2e/year)	120.77
With Local Hire Provision	
Total Construction GHG Emissions (MT CO2e)	3,024
Amortized Construction GHG Emissions (MT CO_2e/year)	100.80
% Decrease in Construction-related GHG Emissions	***17%***

As demonstrated above, by implementing a local hire provision requiring 10 mile worker trip lengths, the Project could reduce potential GHG emissions associated with construction worker trips. More broadly, any local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

This serves as an example of the potential impacts of local hire requirements on estimated project-level GHG emissions, though it does not indicate that local hire requirements would result in reduced construction-related GHG emission for all projects. As previously described, the significance of a local hire requirement depends on the worker trip length enforced and the default worker trip length for the project's urbanization level and location.

[14] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-85.

Disclaimer

SWAPE has received limited discovery. 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,

M Hagemann

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

Paul Rosenfeld

Paul E. Rosenfeld, Ph.D.

EXHIBIT B

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

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

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

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

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

Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. 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 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, 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 dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

Professional History:

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

Publications:

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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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

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

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

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

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

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

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

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

Academic Grants Awarded:

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

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

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

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

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

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

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

Deposition and/or Trial Testimony:

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

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

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

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

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

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

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

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

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

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

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

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

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

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

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

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

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

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

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. 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 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 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 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

EXHIBIT C

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

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Santa Monica, California 90401
Tel: (949) 887-9013
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Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

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

Education:

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

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

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

<u>Senior Regulatory and Litigation Support Analyst:</u>

With SWAPE, Matt's responsibilities have included:

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

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

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

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

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

Hydrogeology:

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

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

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

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

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

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

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

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

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

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

Policy:

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

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

Geology:

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

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

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

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

Teaching:

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

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

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

Invited Testimony, Reports, Papers and Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

<u>Other Experience:</u>

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

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Via E-mail and US Mail

October 1, 2021

Vincent Acuna, Associate Planner
Planning Department
City of Rancho Cucamonga
10500 Civic Center Drive
Rancho Cucamonga, CA 91730
vincent.acuna@cityofrc.us

Re: Comment on the Initial Study/Mitigated Negative Declaration for the Alta Cuvee Mixed Use Project (DRC2020-00440)

Dear Mr. Acuna and Planning Commissioners:

I am writing on behalf of Supporters Alliance for Environmental Responsibility ("SAFER") regarding the Initial Study and Mitigated Negative Declaration ("IS/MND") prepared for the proposed Alta Cuvee Mixed Use Project (DRC2020-0440), including all actions related or referring to the proposed construction, use, and maintenance of a 260-unit apartment community, located at 12901-12939 Foothill Boulevard in the City of Rancho Cucamonga ("Project").

After reviewing the IS/MND, we conclude the IS/MND fails as an informational document, and that there is a fair argument that the Project may have adverse environmental impacts. Therefore, we request that the City of Rancho Cucamonga ("City") prepare an environmental impact report ("EIR") for the Project pursuant to the California Environmental Quality Act ("CEQA"), Public Resources Code ("PRC") section 21000, et seq.

This comment has been prepared with the assistance of expert reviews by Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, wildlife biologist Dr. Shawn Smallwood, Ph.D., and environmental consulting firm Soil/Water/Air Protection Enterprise ("SWAPE"). Mr. Offerman's comment and curriculum vitae are attached as Exhibit A hereto and is incorporated herein by reference in its entirety. Mr. Smallwood's comment and curriculum vitae are attached as Exhibit B hereto and is incorporated herein by reference in its entirety. SWAPE's comment and the consultants' curriculum vitae are attached as Exhibit C hereto and are incorporated herein by reference in their entirety.

I. PROJECT DESCRIPTION

The proposed Project would involve the construction of a 260-unit apartment complex on 5.2 acres. Applicant is requesting to construct a mixed-use development comprising 259 residential units, 2 commercial units, and 1 live-work unit, and a Minor Exception to reduce the number of required parking stalls by 12% within the Community Commercial (CC) District. More specifically, the proposed Project would include the following elements:

- Two four-story buildings, with a maximum height of 60 feet;
- 259 apartment units, ranging from 715 square feet to 1,367 square feet;
- 1 live-work unit, consisting of two stories and 1,570 square feet;
- 3,339 square feet of commercial space (816 square feet in 1 live-work unit and 2,523 square feet of stand-alone commercial space);
- 465 parking spaces, with 265 parking spaces located in a below-grade parking garage and the remaining 200 parking spaces located on a surface parking lot on the southern and eastern portions of the Project site;
- Approximately 26 bicycle parking spaces;
- Approximately 5,500 square feet of indoor amenity space, which includes a 1,600 square-foot lobby/leasing office, a 1,400 square-foot fitness center, and a 1,400 square-foot Club Room in the west building, and a 1,500 square-foot Business Center in the east building;
- Two courtyards and a paseo, offering a pool and additional outdoor amenities;
- Landscaping surrounding both buildings;
- Sidewalks along Etiwanda Avenue and Foothill Boulevard;
- Intersection improvements at Etiwanda Avenue and Foothill Boulevard including lane modifications and restriping;
- Creation of a bus stop in front of the Project on Foothill Boulevard; and
- Undergrounding of existing Southern California Edison (SCE) overhead 12 kilovolt (kV) power lines along Etiwanda Avenue.

IS/MND, p. 1-13.

The Project site is located at 12901-12939 Foothill Boulevard in the City of Rancho Cucamonga. The Project site is bound by Foothill Boulevard, a vacant lot, and condominiums to the north; Etiwanda Avenue and a shopping center to the west; and residential single-family homes to the south and east. The 5.56-acre site comprises two parcels (Assessor’s Parcel Numbers (APN) 0229-311-14 and 0229-311-15), which are currently vacant and undeveloped.

II. LEGAL STANDARD

As the California Supreme Court has 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, 319-320 (*CBE v. SCAQMD*) (citing *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75, 88; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal.App.3d 491, 504–505). "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.*, 13 Cal.3d at 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 (*CBE v. CRA*).

The EIR is the very heart of CEQA. *Bakersfield Citizens for Local Control v. City of Bakersfield (*2004) 124 Cal.App.4th 1184, 1214 (*Bakersfield Citizens*); *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 927. The EIR is an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return." *Bakersfield Citizens*, 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*, 124 Cal.App.4th at 927.

An EIR is required if "there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment." PRC § 21080(d); see also *Pocket Protectors*, 124 Cal.App.4th at 927. In very limited circumstances, an agency may avoid preparing an EIR by issuing a negative declaration, a written statement briefly indicating that a project will have no significant impact thus requiring no EIR (14 CCR § 15371), only if there is not even a "fair argument" that the project will have a significant environmental effect. PRC, §§ 21100, 21064. Since "[t]he adoption of a negative declaration . . . has a terminal effect on the environmental review process," by allowing the agency "to dispense with the duty [to prepare an EIR]," negative declarations are allowed only in cases where "the proposed project will not affect the environment at all." *Citizens of Lake Murray v. San Diego* (1989) 129 Cal.App.3d 436, 440.

However, mitigation measures may not be construed as project design elements or features in an environmental document under CEQA if such a mischaracterization is significant. *See Lotus vs. Department of Transportation* (2014) 223 Cal.App.4th 645. A "mitigation measure" is a measure designed to minimize a project's significant environmental impacts, PRC § 21002.1(a), while a "project" is defined as including "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." CEQA Guidelines § 15378(a). Unlike mitigation measures, project elements are considered prior to making a significance determination. Measures are not technically "mitigation" under CEQA unless they are incorporated to avoid or minimize "significant" impacts. PRC § 21100(b)(3).

To ensure that the project's potential environmental impacts are fully analyzed and disclosed, and that the adequacy of proposed mitigation measures is considered in depth, mitigation measures that are not included in the project's design should not be treated as part of the project description. *Lotus*, 223 Cal.App.4th at 654-55, 656 fn.8. Mischaracterization of a mitigation measure as a project design element or feature is "significant," and therefore amounts to a material error, "when it precludes or obfuscates required disclosure of the project's environmental impacts and analysis of potential mitigation measures." *Mission Bay Alliance v. Office of Community Investment & Infrastructure* (2016) 6 Cal.App.5th 160, 185.

Where an initial study shows that the project may have a significant effect on the environment, a mitigated negative declaration may be appropriate. However, a mitigated negative declaration is proper *only* if the project revisions would avoid or mitigate the potentially significant effects identified in the initial study "to a point where clearly no significant effect on the environment would occur, and…there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." PRC §§ 21064.5 and 21080(c)(2); *Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322, 331. In that context, "may" means a reasonable possibility of a significant effect on the environment. PRC §§ 21082.2(a), 21100, 21151(a); *Pocket Protectors*, 124 Cal.App.4th at 927; *League for Protection of Oakland's etc. Historic Res. v. City of Oakland* (1997) 52 Cal.App.4th 896, 904–05.

Under the "fair argument" standard, an EIR is required if any substantial evidence in the record indicates that a project may have an adverse environmental effect—even if contrary evidence exists to support the agency's decision. 14 CCR § 15064(f)(1); *Pocket Protectors,* 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*, 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. 273-274. 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*, 124 Cal.App.4th at 928 (emphasis in original).

CEQA requires that an environmental document include a description of the project's environmental setting or "baseline." CEQA Guidelines § 15063(d)(2). The CEQA "baseline" is the set of environmental conditions against which to compare a project's anticipated impacts. *CBE v. SCAQMD*, 48 Cal.4th at 321. CEQA Guidelines section 15125(a) states, in pertinent part, that a lead agency's environmental review under CEQA:

> …must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time [environmental analysis] is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant.

See Save Our Peninsula Committee v. County of Monterey (2001) 87 Cal.App.4th 99, 124–25 ("*Save Our Peninsula*"). As the court of appeal has explained, "the impacts of the project must be measured against the 'real conditions on the ground,'" and not against hypothetical permitted levels. *Id*. at 121-23.

III. DISCUSSION

A. There is Substantial Evidence of a Fair Argument that the Project Will Have a Significant Health Risk Impact from its Indoor Air Quality Impacts.

Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, has conducted a review of the proposed Project and relevant documents regarding the Project's indoor air emissions. Indoor Environmental Engineering Comments (September 24, 2021) (Exhibit A). Mr. Offermann concludes that it is likely that the Project will expose residents and commercial/industrial employees of the Project to significant impacts related to indoor air quality, and in particular, emissions of the cancer-causing chemical formaldehyde. Mr. Offermann is a leading expert on indoor air quality and has published extensively on the topic. Mr. Offermann's expert comments and curriculum vitae are attached as Exhibit A.

Mr. Offermann explains that many composite wood products used in building materials and furnishings commonly found in offices, warehouses, residences, and hotels contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." Ex. A, pp. 2-3.

Formaldehyde is a known human carcinogen. Mr. Offermann states that there is a fair argument that future residents and employees of the commercial spaces will be exposed to a cancer risk from formaldehyde of approximately 120 per million, assuming all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. *Id*., pp. 4-5. This exceeds the South Coast Air Quality Management District's ("SCAQMD") CEQA significance threshold for airborne cancer risk of 10 per million. *Id.*, p. 4.

Mr. Offermann also notes that the high cancer risk that may be posed by the Project's indoor air emissions likely will be exacerbated by the additional cancer risk that exists as a result of the Project's location near roadways with moderate to high traffic (i.e. Foothill Boulevard, Etiwanda Avenue, Interstate 15 freeway, Auto Club Speedway, etc.) and the high levels of PM 2.5 already present in the ambient air. *Id.*, pp. 10-12. No analysis has been conducted of the significant cumulative health impacts that will result to future employees of the Project.

Mr. Offermann concludes that these significant environmental impacts should be analyzed in an EIR and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. *Id*., p. 5. Mr. Offermann identifies mitigation measures that are available to reduce these significant health risks, including the installation of air filters and a requirement that the applicant use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins in the buildings' interiors. Ex. A, pp. 12-13.

The City has a duty to investigate issues relating to a project's potential environmental impacts, especially those issues raised by an expert's comments. *See Cty. Sanitation Dist. No. 2 v. Cty. of Kern*, (2005) 127 Cal.App.4th 1544, 1597–98 ("under CEQA, the lead agency bears a burden to investigate potential environmental impacts"). In addition to assessing the Project's potential health impacts to residents and employees, Mr. Offermann identifies the investigatory path that the City should be following in developing an EIR to more precisely evaluate the Projects' future formaldehyde emissions and establishing mitigation measures that reduce the cancer risk below the BAAQMD level. Ex. A, pp. 6-10. Such an analysis would be similar in form to the air quality modeling and traffic modeling typically conducted as part of a CEQA review.

The failure to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("*CBIA*"). At issue in *CBIA* was whether the Air District could enact CEQA guidelines that advised lead agencies that they must analyze the impacts of adjacent environmental conditions on a project. The Supreme Court held that CEQA does not generally require lead agencies to consider the environment's effects on a project. *CBIA*, 62 Cal.4th at 800-801. However, to the extent a project may exacerbate existing adverse environmental conditions at or near a project site, those would still have to be considered pursuant to CEQA. *Id*. at 801 ("CEQA calls upon an agency to evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present"). In so holding, the Court expressly held that CEQA's statutory language required lead agencies to disclose and analyze "impacts on ***a project's users or residents*** that arise ***from the project's effects*** on the environment." *Id*. at 800 (emphasis added).

The carcinogenic formaldehyde emissions identified by Mr. Offermann are not an existing environmental condition. Those emissions to the air will be from the Project. Residents and commercial/industrial employees will be users of the Project. Currently, there is presumably little if any formaldehyde emissions at the site. Once the project is built, emissions will begin at levels that pose significant health risks. Rather than excusing the City from addressing the impacts of carcinogens emitted into the indoor air from the project, the Supreme Court in *CBIA* expressly finds that this type of effect by the project on the environment and a "project's users and residents" must be addressed in the CEQA process.

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

Because Mr. Offermann's expert review is substantial evidence of a fair argument of a significant environmental impact to future users of the Project, an EIR must be prepared to disclose and mitigate those impacts.

B. The IS/MND Fails to Adequately Mitigate the Potential Adverse Impacts of the Project on Wildlife.

Wildlife biologist Dr. Shawn Smallwood, Ph.D., concludes that the Project may have significant impacts on several special status species. An EIR is required to mitigate these impacts. Dr. Smallwood's conclusions were informed by wildlife biologist Noriko Smallwood's site visit in September 2021. Ms. Smallwood visited the site of the proposed Project on Dr. Smallwood's behalf for nearly 2 hours from 06:54 to 08:42 hours on September 4, 2021. Dr. Smallwood's expert comments and curriculum vitae are attached hereto as Exhibit B.

i. <u>The wildlife baseline relied upon by the IS/MND is woefully inadequate.</u>

Wildlife biologist Dr. Smallwood's review of the impacts to wildlife from the Project concluded that the Project may have significant impacts on several special-status species. An EIR is required to analyze these impacts.

According to the IS/MND and Biological Resources Assessment ("BRA"), at least 49 special-status plant species and 52 special-status wildlife species have been documented within the Guasti and surrounding eight quadrangles. IS/MND, p. 4-14. A California Natural Diversity Database ("CNDDB") search also yielded four special-status species with occurrences that overlapped with the biological survey area ("BSA") used for the Project, which includes the entire Project site plus a surrounding 500-foot buffer. These special status species included the coast horned lizard (*Phrynosoma blainvillii*), Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*), Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), and Parry's spineflower (*Chorizanthe parryi var. parryi*). *Id.* While no special-status plant or wildlife species were observed within the BSA during the reconnaissance field survey for the Project site, "marginal habitat" for two special-status wildlife species, the Crotch bumble bee (*Bombus crotchii*) and western yellow bat (*Lasiurus xanthinus*), were identified during the database review is present in the biological survey area. *Id.* However, as Dr. Smallwood points out, the IS/MND fails to adequately address and mitigate Project impacts to special-status species.

The IS/MND's baseline for biological impacts is inadequate, incomplete, and understates the biological values at the Project site for several reasons. *See* Ex. B, pp. 6-7. First, the IS/MND improperly relies on a single reconnaissance field survey that was insufficient and conducted using minimal effort at the most inappropriate time of the day. According to the IS/MND and BRA, a reconnaissance field survey was conducted by AECOM (2021) on September 24, 2020. *See* IS/MND, App. B, pp. 5-6. A botanist visited the site for 90 minutes in the middle of the afternoon (14:00 to 15:30 hours), at a time when, as Dr. Smallwood points out, wildlife was least likely to be detected. Ex. B, p. 5 (citing IS/MND, App. B, p. 6). In fact, temperatures were reportedly 96° to 99° F, which Dr. Smallwood explains is "too hot for a wildlife survey." *Id.*, p. 5 (citing IS/MND, App. B, p. 6). The IS/MND reports that "no special-status plant or wildlife species were observed within the biological survey area during the reconnaissance field survey." IS/MND, p. 4-14. However, Dr. Smallwood notes that "this report follows from a survey of insufficient effort at the most inappropriate time of day," and as a result, "there should be no surprise that special-status species were undetected." Ex. B, p. 5. Because the IS/MND fails to report which, if any, species of wildlife were detected by the botanist, Dr. Smallwood finds this lack of reporting suggests that "the botanist likely saw no wildlife in the heat of the middle of the afternoon." *Id.* Consequently, whether the BRA is substantial evidence is not apparent from the face of the document or the IS/MND.

Second, the IS/MND misuses the CNDDB. Ex. B, p. 6. When discussing that the CNDDB search yielded four special-status species—i.e. coast horned lizard, Delhi Sands flower-loving fly, Los Angeles pocket mouse, and Parry's spineflower—with occurrences that overlapped the BSA, the IS/MND states that "the CNDDB records of these four species had non-specific locations which were not mapped precisely to the locations where the species were observed and each individual observation is a square mile or greater in size; so it is not known whether the observation was actually made precisely within the biological survey area." IS/MND, p. 4-14. However, this statement is flawed. As Dr. Smallwood explains, "CNDDB records are mapped accurately, but exact locations are often not shared publicly as a means to protect the species." Ex. B, p. 6. According to Dr. Smallwood:

> CNDDB records are intended to indicate the likelihood of occurrence of a special-status species in the project area, but not the species' exact locations. Nor is CNDDB intended to support determinations of species' absence, as the IS/MND implies. CNDDB is intended to flag the occurrences of species in the area, not to provide an exact accounting of where the species is located at the moment.

Id. Additionally, the IS/MND further misrepresents CNDDB by implying that the older records are dismissible. *See id.* The IS/MND states that "...CNDDB records that overlap with the biological survey area are 19 years old or more and since that time, the area has been developed substantially. As a result, it is possible many locations no longer exist. Current site conditions do not provide suitable habitat for these species and none are known to occur or expected to occur within the Project site or vicinity." IS/MND, p. 4-14. Dr. Smallwood explains that this statement is a misrepresentation of CNDDB because:

> CNDDB does not imply that species are static, or that locations where they were mapped previously are the only locations where the species would be found later. Wildlife populations are spatially dynamic, shifting

> centers of activity every generation or so (Taylor and Taylor 1979), so it would be inappropriate of CNDDB to assert that locations of past occupancy should still be locations of current occupancy. For this reason, users of CNDDB typically determine whether CNDDB records exist within a 5-mile radius of a proposed project. Occurrences within 5 miles serve as indicators that the species could also occur at the project site, and if so, then protocol-level detection surveys should be performed.

Ex. B, p. 6. Given the paucity of the coast horned lizard, Delhi Sands flower-loving fly, Los Angeles pocket mouse, and Parry's spineflower in San Bernardino County, the Project's baseline should be informed by protocol level surveys that can determine the presence or absence of these species at the Project site.

Third, the surveys conducted for the Project do not provide substantial evidence of the presence or absence of special-status species that are known in the vicinity. The IS/MND asserts that "the BSA generally does not provide suitable habitat for special-status wildlife species." IS/MND, p. 4-14. Dr. Smallwood states that "[t]his assertion, however, lacks evidence in the form of detection survey results." Ex. B, p. 6. According to Dr. Smallwood, detection surveys are designed by species' experts to provide "the best chance for detecting the targeted species by applying the methods and survey effort most likely to detect the species if it is indeed present." *Id.* Here, the botanist that was charged with surveying the Project site for 90 minutes in the middle of the hot afternoon failed "to come anywhere close to having performed a detection survey for any species of wildlife." *Id.* As a result, neither the IS/MND nor the BRA was justified in asserting that the Project site lacks special-status species of wildlife. Hence, Dr. Smallwood recommends that detection surveys should be performed, and subsequently assessed and reported in an EIR. *Id.*, p. 22.

Furthermore, due to the absence of detection surveys, the IS/MND only speculates that habitat is marginal and occurrence likelihoods low. Ex. B, pp. 6-7. Dr. Smallwood states that the "IS/MND repeatedly speculates that for this or that species, anthropogenic disturbances prevent their occurrences," such as the IS/MND exemplifying one such disturbance as routine mowing of the site. Ex. B, p. 6 (citing IS/MND, pp. 4-14–4-15). However, as Dr. Smallwood points out, "[t]he IS/MND offers no evidence in defense of its premise that routine mowing precludes special-status species of wildlife." *Id.*, pp. 6-7. As evidence, Dr. Smallwood calls attention to the IS/MND's failure "to identify the Crotch bumble bee host plants that allegedly occur in low density," as well as "make the case that the host plants in question are the only plants useable by Crotch bumble bee." *Id.*, p. 7 (citing IS/MND, p. 4-14). Such failures indicate that the IS/MND "relies on generalities rather than specifics, and on speculation rather than evidence." *Id.* Additionally, the IS/MND suggests that special-status species, such as the western yellow bat, were killed off by house cats, driven away by traffic noise, and inhibited by the low supply of insect prey. IS/MND, p. 4-15; Ex. B, p. 7. But as Dr. Smallwood notes, "[n]one of these suggestions are backed by evidence, and no effort has been made to actually look for special-status species on the site." Ex. B, p. 7. Dr.

Smallwood refers to the IS/MND's discussion of the Crotch bumble bee as a prime example:

> In the case of the Crotch bumble bee, the IS/MND reports, "No bumble bee species were observed during the field survey." (There is only one species of Crotch bumble bee.) This reporting ignores the fact that Crotch bumble bees are unlikely to be out and about in the middle of the afternoon when temperatures range 96° to 99° F, as was reportedly the conditions during the one survey performed – a survey performed not by a wildlife ecologist or an entomologist, but by a botanist. The report of having not detected Crotch bumble bee was a meaningless report, and serves only to misrepresent how wildlife ecologists determine whether a species is present or likely absent from a site.

Id., p. 7. As a result, the conclusion that the Project will not significantly impact the Crutch bumble bee and western yellow bat is not supported by substantial evidence and a fair argument exists that the Project may have significant impacts on the special-status species. Dr. Smallwood recommends that detection surveys for multiple special-status species of wildlife be implemented to inform an EIR. *Id.*, pp. 6, 22. Only with an accurate baseline could the IS/MND purport to assess the impacts on these special-status species.

Fourth, in addition to these inadequate survey methods and unidentified baselines, the IS/MND and its BRA understate the range of animal species that are likely present on the Project site. While the IS/MND's BRA determines occurrence likelihood to be low for the western yellow bat and Crotch bumble bee, its determinations for all other species is unreported. IS/MND, App. B, pp. 8-9. The BRA refers the reader to Appendix D for determination of all species to be considered, but Appendix D is empty on the copy of the BRA report downloaded from City of Rancho Cucamonga's website. *See id.*, p. 8 & Appendix D. Contrary to the IS/MND and BRA reports, Dr. Smallwood's review of eBird and iNaturalist identified no less than 60 special-status species of vertebrate wildlife and the Crotch bumble bee as having been seen very close to the project site, seen nearby, seen within the region, or whose geographic range overlaps the project site. Ex. B, pp. 7, 8-10 (Table 2) (listing species that Dr. Smallwood considers potentially occurring on the project site at one time or another or periodically).

Ms. Smallwood also detected 24 species of vertebrate wildlife during her 108-minute site visit on September 4, 2021. *See* Ex. B, p. 3 (Table 1) (listing species of wildlife Noriko Smallwood observed from 06:54 to 08:42 hours on 4 September 2021 at the proposed Project site). She saw Cooper's hawk and American kestrel (Photos 2 and 3, p. 3), California scrub-jays and American crows (Photos 4 and 5, p. 4), Say's phoebe and a great blue heron (Photos 6 and 7, p. 4), and side-blotched lizard and California ground squirrel (Photos 8 and 9, p. 5), among other species. *Id.*, pp. 2-5. Based on Ms. Smallwood's observations, Dr. Smallwood writes:

> [Ms. Smallwood's] survey outcome indicates that the site of the proposed project continues to serve as valuable habitat to at least 24 species of vertebrate wildlife, and it likely serves as habitat to many more species. It also holds the potential to produce many new birds, mammals and reptiles for years to come. A fair argument can be made for the need to more rigorously survey the site for wildlife, and for the need to prepare an EIR to appropriately analyze potential project impacts to wildlife

Id., p. 2. Furthermore, Dr. Smallwood points out the significance of Ms. Smallwood's observance of California ground squirrels on the adjacent property across the street from the Project site. Dr. Smallwood states:

> Ms. Smallwood's detection of California ground squirrels on the open field across the street indicates that ground squirrels likely also occur on the project site. The occurrence of ground squirrels in the project area is significant because many special-status species are found in association with ground squirrels and their burrow complexes. Ground squirrels are prey of large raptors such as bald eagle, golden eagle, ferruginous hawk and Swainson's hawk. Ground squirrels are also prey of terrestrial carnivores such as American badger, which specialize on ground squirrels. Ground squirrels also construct subterranean habitat used by many species such as burrowing owl. The occurrence of ground squirrel warrants detection surveys for multiple special-status species that associate with this species.

Id., p. 5. Moreover, "[b]ecause ground squirrels occur in the project area," Dr. Smallwood also recommends that "breeding-season burrowing owl surveys need to be implemented (CDFW 2012)," but only "implemented prior to the circulation of an EIR to more appropriately address potential impacts to burrowing owls and mitigation of those impacts." *Id.* p. 22. Thus, given the close proximity of these special-status species, the IS/MND fails as a matter of law to analyze the impacts to these species and their habitat.

In conclusion, the IS/MND's failure to adequately evaluate the significance of the impacts to special-status species of wildlife violates CEQA. Thus, the Project requires an EIR to properly mitigate wildlife impacts of the Project.

ii. <u>The IS/MND fails to address the Project's potential significant impact on loss of breeding capacity.</u>

Neither the IS/MND nor the BRA assess the lost breeding capacity of birds that would result from the Project. *See* Ex. B, pp. 7, 11. In so doing, the IS/MND fails to analyze the impact of habitat loss, or the loss of productive capacity on bird species likely to nest on the ground and in trees within the BSA. *Id.*, p. 7. While habitat loss results in the immediate numerical decline of birds and other animals, it also results in a permanent loss of productive capacity. *Id.* Dr. Smallwood cites a recent study that documented a "29% decline in overall bird abundance across North America over the last 48 years," a decline which he says was "driven by multiple factors, but principally attributed to habitat loss and habitat fragmentation." *Id.* (citing Rosenberg et al. 2019).

Here, the IS/MND and BRA identify only mourning dove as a bird species likely to nest on the ground, and only house finch, northern mockingbird, and California scrub-jay as species likely to nest in trees in the area. IS/MND, p. 4-15; IS/MND, App. B, p. 9. In reality, however, Dr. Smallwood reports that "many more species of birds are capable of nesting on and around the project site," especially since a lot of bird species are considered ground-nesters. Ex. B, p. 7. Dr. Smallwood cites two studies that show bird nesting densities that were between 32.8 and 35.8 bird nests per acre, for an average of 34.3 bird nests per acre. *Id.* (citing Young (1948) and Yahner (1982), respectively). Assuming nesting density at the Project site is a fifth of the 34.3 average reported, then 6.8 bird nests per acre multiplied by the Project's 5.2 acres of habit, Dr. Smallwood predicts that 35 bird nests produce new birds at the site annually. *Id.*, p. 11. Based on an average of 2.9 fledglings per nest, the Project would prevent the production of 102 new birds per year. *Id.* (citing Young (1948)). Based on Dr. Smallwood's calculations, "[a]fter 100 years and further assuming an average bird generation time of 5 years, the ***lost capacity of both breeders and annual fledgling production would total 11,600 birds***." *Id.* (emphasis added).

The potential loss of 11,600 birds in California over the first century following construction of this Project easily qualifies as a significant and substantial impact that has not been analyzed. An EIR is required to fully analyze the Project's impact on lost breeding capacity, and to mitigate that impact. Dr. Smallwood recommends, at a minimum, substantial compensatory mitigation is needed in response to the Project's impacts from habitat loss, including impacts to birds and bats using the site as stop-over or staging during migration. Ex. B, p. 22.

iii. <u>The IS/MND fails to address the Project's potential cumulative impacts on habitat fragmentation.</u>

The IS/MND does not assess the likelihood of cumulative impacts on wildlife, especially from habitat fragmentation in the vicinity. Ex. B, p. 11. In addition to habit loss, habitat fragmentation, known as the reduction of connectivity of remaining habitat patches on a landscape, can also further diminish the productive capacity of the Project site. *Id.* (citing Smallwood 2015). Habitat fragmentation has progressed rapidly around the Project site, which has led to a diminishing number of patches of open space in the area. *Id.* As a result, each of these patches of open space, including the Project's 5.2 acres, "is increasingly critical to the continued existence of many wildlife species." *Id.* Because a fair argument exists that developing a currently undeveloped site that is likely suitable habitat for many species of wildlife will further fragment wildlife habitat in this area, there is a fair argument that the Project may contribute to habitat fragmentation. Thus, habitat fragmentation is a cumulative effect of this Project that should be analyzed in an EIR, and mitigated accordingly. *See* Ex. B, p. 22.

iv. The IS/MND fails to address the Project's potential significant impacts on wildlife movement.

The IS/MND fails to address impacts to wildlife movement, and instead looks for impacts to a wildlife corridor. *See* IS/MND, pp. 4-16–4-17; Ex. B, p. 11. In doing so, the IS/MND improperly dismisses the Project's potential to significantly impact wildlife movement reasoning that the BSA "occurs within an industrial center of the Los Angeles Basin and does not occur within a recognized/established regional wildlife corridor or wildlife nursery site," and "as a result, direct impacts to a regional wildlife movement corridor would not occur." IS/MND, App. B, pp. 10-11; Ex. B, p. 11.

These conclusions rely on a false CEQA standard. Ex. B, p. 11. As Dr. Smallwood states, "[t]he primary phrase of the CEQA standard goes to wildlife movement regardless of whether the movement is channeled by a corridor." *Id.*; *see also* CEQA Guidelines, App. G, pp. 333-34 (stating that the CEQA significance threshold is whether, among other things, a project will "[i]nterfere substantially with the movement of any native resident or migratory fish or wildlife species…."). Impacts to wildlife movement may occur with or without the presence of a wildlife corridor. Ex. B, p. 11. Dr. Smallwood writes:

> A site such as the proposed project site is critically important for wildlife movement because it composes one of the last of a diminishing suite of open space patches within a growing expanse of anthropogenic uses, forcing more species of birds to use the site for stopover and staging during migration, dispersal, and home range patrol (Warnock 2010, Taylor et al. 2011, Runge et al. 2014).

Id., p. 11. Hence, the Project "would cut birds and bats off from stopover, roosting and staging opportunities, forcing them to travel even farther between remaining stopover areas along migration routes." *Id.* Because the Project would interfere with wildlife movement in the region, Dr. Smallwood agrees that an EIR needs to be prepared to address the Project's impacts on wildlife movement in the region.

Moreover, the Project site is located within the Pacific Flyway, which is one of four major North American migration routes for birds. While migratory birds travel the flyway on their annual north-south migration, they stopover at areas with suitable habitat and food supplies. As the IS/MND's BRA notes, many birds protected under the Migratory Bird Treaty Act ("MBTA") and California Fish and Game Code ("CFGC") §§ 3503–3503.5 "are ***likely*** to use the BSA for breeding, migratory stopovers, and local dispersal." IS/MND, App. B, p. 9 (emphasis added). However, no analysis of any direct impacts to wildlife movement, including birds' stop-over habitat, is included in the IS/MND and its appendix.

Lastly, the IS/MND and BRA acknowledge that construction from the Project would have indirect impacts on wildlife movement, stating that the Project's "construction activities (i.e., increased noise, human presence, vibration) would ***likely*** result in wildlife avoidance of the area during the construction time frame." *Id.* at 11-12 (emphasis added). Such indirect and direct impacts could significantly affect wildlife movement, and should be addressed in an EIR and mitigated accordingly. Dr. Smallwood recommends, at a minimum, substantial compensatory mitigation is needed in response to the Project's impacts from interference with wildlife movement, including impacts to birds and bats using the site as stop-over or staging during migration. Ex. B, p. 22.

v. <u>The IS/MND fails to address the Project's potential significant impacts on wildlife by window collisions.</u>

Dr. Smallwood's report concludes that the Project will have significant impact on birds as a result of window collisions. *See* Ex. B, pp. 12-18. But neither the IS/MND nor the BRA express any concern about bird-window collision impacts, nor do they propose any mitigation measures to avoid, minimize, or compensate for such impacts to special-status species of bird. *Id.*, p. 12. Analyzing the potential impact on wildlife due to window collisions is especially important because "[w]indow collisions are often characterized as either the second or third largest source or human-caused bird mortality." *Id.*

According to Dr. Smallwood, the Project's buildings, at 60 feet tall, would extend into much of the bird traffic observed by Ms. Smallwood at the Project site on September 4, 2021. *Id.* The IS/MND's rendering of the project shows façades composed of extensive structural glass, which Dr. Smallwood notes, "would introduce substantial collision hazards to an aerosphere that currently provides critically important habitat to birds, and which would act as lethal traps to flying birds." *Id.* Moreover, hundreds of thousands of birds migrate along the Pacific Flyaway, and Ms. Smallwood's observations at the time of her site visit further confirmed that birds fly through the Project's airspace, even during the nonmigratory season. *Id.* Based on Dr. Smallwood's review, at least 47 special-status species of bird are known to the Project area, *see id.* pp. 8-10 (Table 2), most of which "have been documented as window collision fatalities and are therefore susceptible to new structural glass installations." *Id.*, p. 12 (citing Supplemental Material to Basilio et al. 2020; Smallwood unpublished review).

Dr. Smallwood reviewed a number of studies in order to calculate the number of bird collisions that would occur annually as a result of the Project. Ex. B, p. 13. According to his calculations, each m^2 of glass would result in an average of 0.073 bird deaths per year. *Id.* Dr. Smallwood then looked at the building design for the Project and estimated the Project would include at least 3,196 m^2 of glass on its façades. Based on the estimated 3,196 m^2 of glass on its façades and the 0.073 bird deaths per year, Dr. Smallwood estimates that the Project would result in at least **234 bird deaths**

per year. *Id.* Even more significant is the 100-year toll from this average annual fatality rate, which would be at least **23,363 bird deaths**. *Id.* As Dr. Smallwood correctly points out, "[i]f the project moves forward as proposed, and annually kills 234 birds protected by state and federal laws, then the project would cause significant unmitigated impacts." *Id.*

Considering the list of bird-window collision factors that Dr. Smallwood stressed should be used to formulate a bird-safe plan for the proposed Project, Ex. B, pp. 13-17, 22-23, he has suggested a number of mitigation measures. *Id.*, pp. 17-18. As a starting point, before construction, [a]ny new project should be informed by preconstruction surveys of daytime and nocturnal flight activity." *Id.*, p. 17. Dr. Smallwood explains:

> [Preconstruction] surveys can reveal the one or more façades facing the prevailing approach direction of birds, and these revelations can help prioritize where certain types of mitigation can be targeted. It is critical to formulate effective measures prior to construction, because post-construction options will be limited, likely more expensive, and probably less effective.

Id., p. 17. However, with regard to most of the known or suspected collision risk factors that Dr. Smallwood lists, he warns that "the proposed project's design remains insufficiently described to determine the degree to which the project would contribute to relative collision risk." *Id.* Therefore, Dr. Smallwood suggests the following:

> Focused study of birds in the area could reduce the uncertainty of potential project impacts. Such studies could make use of radar (Gauthreaux et al. 2008) or visual scan surveys (Smallwood 2017). Key information useful for impacts assessment and mitigation would include intensity and timing of bird traffic, heights above ground, travel trajectories, and specific behaviors of birds in flight.

Id. Dr. Smallwood also notes the importance of post-construction fatality monitoring, which he says "should be an essential feature of any new building project." *Id.*

In addition, for mitigation measures involving the siting and design of the Project, Dr. Smallwood suggests: (1) retrofitting to reduce impacts by marking windows, managing outdoor landscape vegetation, managing indoor landscape vegetation, and managing nocturnal lighting; (2) siting and designing to minimize impacts by deciding on location of structure, deciding on façade and orientation, selecting type and sizes of windows, designing to minimize transparency through two parallel façades, designing to minimize views of interior plants, and landscaping to increase distances between windows and trees and shrubs; and (3) monitoring for adaptive management to reduce impacts by systematic monitoring for fatalities to identify seasonal and spatial patterns, and adjusting light management, window marking, and other measures as needed. Ex.

B, pp. 17-18. Dr. Smallwood also recommends that the use of compensatory mitigation be incorporated at any new building project. *Id.*, p. 23.

Thus, because many birds can be expected to be killed by windows of the Proposed project, a fair argument can be made for the need to prepare an EIR to adequately address and mitigate this potential impact.

vi. <u>The IS/MND fails to address the Project's potential significant impacts on wildlife from additional traffic generated by the Project.</u>

Dr. Smallwood identifies the serious impacts that increased traffic has on wildlife. Ex. B, pp. 18-20. Analyzing the potential impact on wildlife due to vehicle collisions is especially important because "traffic impacts have taken devastating tolls on wildlife," across North America. *Id.*, p. 18 (citing Forman et al. 2003). In the United States alone, estimates for "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." *Id.* (citing Loss et al. 2014). As Dr. Smallwood explains:

> Vehicle collisions have accounted for the deaths of many thousands of reptile, amphibian, mammal, bird, and arthropod fauna, and the impacts have often been found to be significant at the population level (Forman et al. 2003).
>
> Increased use of existing roads will increase wildlife fatalities (see Figure 7 in Kobylarz 2001). It is possible that project-related traffic impacts will far exceed the impacts of land conversion to residential use for a warehouse.

Id., pp. 18-19. Furthermore, a recent study conducted on traffic-caused wildlife mortality found "1,275 carcasses of 49 species of mammals, birds, amphibians and reptiles over 15 months of searches along a 2.5 mile stretch of Vasco Road in Contra Costa County, California." *Id.*, p. 18 (citing Mendelsohn et al. 2009). Hence, as Dr. Smallwood points out, an analysis is needed to determine whether increased traffic generated by the Project would result in impacts to local wildlife. *Id.*, p. 19.

The IS/MND anticipates that the proposed Project would generate an average of 16,382 daily miles traveled, which translates to 5,979,430 annual vehicle miles traveled. IS/MND, pp. 4-9, 4-23; Ex. B, p. 18. The additional 16,382 daily miles traveled that is expected from the Project will undoubtedly result in collisions with wildlife. Ex. B, p. 19. As Dr. Smallwood explains, this additional 16,382 daily miles driven as a result of the Project is "a lot of mileage to be driven at great peril to wildlife that must cross roads to go about their business of foraging, patrolling home ranges, dispersing and migrating." *Id.* (citing Photos 10 and 11, Ex. B, pp. 19-20). However, "[d]espite the obvious risk to wildlife, and despite the multiple papers and books written about this type of impact and how to mitigate them, the IS/MND does not address impacts to wildlife caused by vehicles traveling to and from the Project site." Ex. B, p. 19.

To predict the road mortality of wildlife vulnerable to front-end collisions and crushing under tires, Dr. Smallwood analyzed the data from the study of traffic-caused wildlife mortality in Contra Costa County. *Id.*, p. 20 (citing Mendelsohn et al. 2009). By inputting estimates of vehicle miles per wildlife fatalities calculated using the Contra Costa County study, i.e. 1,825 vehicle miles per fatality, Dr. Smallwood predicts:

> Based on the daily VMT predicted by the IS/MND, the project would generate 5,979,430 vehicle miles per year, which divided by the 1,825 miles per fatality, would predict 3,276 wildlife fatalities per year. **Operations over 50 years would accumulate 163,820 wildlife fatalities.**

Ex. B, p. 20. Based on Dr. Smallwood's assumptions and calculations, the traffic generated by the Project would cause substantial, significant impacts to wildlife. *Id.* Dr. Smallwood also notes that "mitigation measures to improve wildlife safety along roads are available and are feasible," and therefore, "need exploration for their suitability with the proposed project." *Id.* Specifically, Dr. Smallwood suggests compensatory mitigation in the form of "funding research to identify fatality patterns and effective impact reduction measures," and "donations to wildlife rehabilitation facilities." *Id.*, p. 23.

Moreover, wildlife that will be run over by the Project's additional traffic may include special-status species of wildlife such as the coast horned lizard (*Phrynosoma blainvillii*) and Los Angeles pocket mouse (*Perognathus longimembris brevinasus*). Although these two special-status species were not observed on the Project site during the reconnaissance field survey or Ms. Smallwood's site visit, the CNDDB search yielded occurrences for both the coast horned lizard and Los Angeles pocket mouse that overlapped with the Project's biological survey area. IS/MND, p. 4-14. Regardless of whether these special-status species appear on the Project site, they do cross roads over which traffic from the Project will travel.

The IS/MND fails to recognize at all this potential significant impact of the Project. Because a fair argument exists that the Project may have a significant impact on wildlife in the vicinity, an EIR must be prepared to assess this impact and identify appropriate mitigation.

vii. <u>The IS/MND fails to adequately address the Project's potential cumulative impacts on wildlife.</u>

The IS/MND fails to adequately analyze the cumulative impacts to wildlife from the Project by improperly implying that cumulative impacts are in reality only residual impacts as a result of incomplete mitigation from project-level impacts. Ex. B, p. 21. For example, the IS/MND states:

> As previously discussed, impacts related to the proposed Project are less than significant or can be reduced to less than significant levels with the incorporation of mitigation measures. The proposed Project's contribution to any significant cumulative impacts would be less than cumulatively considerable.

IS/MND, p. 4-78. However, the IS/MND's implied standard is not the standard of cumulative effects required under CEQA. Ex. B, p. 21. CEQA defines cumulative impacts, and it outlines two general approaches for performing the required cumulative analysis. *See* 14 CCR § 15130; PRC § 21083(b)(2). According to Dr. Smallwood, cumulative effects for wildlife "can often be interpreted as effects on the numerical capacity (Smallwood 2015), breeding success, genetic diversity, or other population performance metrics expressed at the regional scale." Ex. B, p. 21.

Here, the IS/MND's cumulative "analysis" is based on flawed logic. The conclusion that the Project will have no cumulative impact because each individual impact has been reduced to a less-than-significant level relies on the exact argument CEQA's cumulative impact analysis is meant to protect against. The entire purpose of the cumulative impact analysis is to prevent the situation where mitigation occurs to address project-specific impacts, without looking at the bigger picture. This argument, applied over and over again, has resulted in major environmental damage, and is a major reason why CEQA was enacted. As the Court stated in *CBE v. CRA*:

> Cumulative impact analysis is necessary because the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact.

CBE v. CRA, 103 Cal.App.4th at 114 (citations omitted). Even if the IS/MND was applying the accurate CEQA standard, which would mean that the cumulative effects analysis would be nothing more than an analysis of mitigation efficiency, Dr. Smallwood points out "that none of the project-level impacts would be offset to any degree by the proposed preconstruction surveys to be performed for nesting birds." Ex. B, p. 21. Notwithstanding, the IS/MND misrepresented the standard and failed to perform an appropriate analysis. An EIR must be prepared to include an adequate, serious analysis of the Project's cumulative impacts on wildlife.

viii. <u>The pre-construction surveys identified in the IS/MND are not sufficient to address potential impacts to birds and bats that may be present at the site.</u>

Dr. Smallwood has reviewed the proposed wildlife impact mitigation identified in the IS/MND related to pre-construction surveys for nesting birds and roosting bats (i.e. **Mitigation Measure BIO-1**). *See* IS/MND, p. 4-15; Ex. B, pp. 21-22. Although Dr. Smallwood agrees with the need for pre-construction surveys for birds and bats at the Project site, he notes that pre-construction surveys will come too late either to disclose the Project's anticipated impacts or to fully mitigate impacts to birds and bats. Ex. B, p. 21. As Dr. Smallwood explains:

> Preconstruction surveys are not designed or intended to reduce project impacts, let alone to reduce impacts to less than significant levels; they are not even designed to assess impacts. Preconstruction surveys are only intended as last-minute, one-time salvage and rescue operations targeting readily detectable nests or individuals before they are crushed under heavy construction machinery. Because most special-status species are rare and cryptic, and because most species are expert at hiding their nests lest they get predated, most of them will not be detected by preconstruction surveys.

Id., p. 21. By failing to determine the actual baseline of bird's and bat's reliance on the site for roosting, nesting, and foraging and instead waiting within seven days prior to the start of construction to determine what roosts, nests, birds, and bats may suffer impacts from the Project, the IS/MND fails to evaluate and mitigate the Project's potential significant impacts to nesting birds and bats.

Dr. Smallwood recommends that detection surveys be implemented for the Project before pre-construction surveys are performed. *Id.*, pp. 21-22. In addition to detection surveys and preconstruction surveys being performed, an EIR should be prepared detailing how the results of preconstruction surveys will be reported. *Id.*, p. 22.

C. The IS/MND Relied on Unsubstantiated Input Parameters to Estimate Project Emissions and Thus Failed to Adequately Analyze the Project's Air Quality Impacts.

The IS/MND for the Project relies on emissions calculated from CalEEMod.2016.3.2. IS/MND, p. 4-8; Ex. C, pp. 1-2. This model relies on recommended default values, or on site-specific information related to a number of factors. When more specific project information is known, the user may change the default values and input project-specific values, but CEQA requires that such changes be justified by substantial evidence. The model is used to generate a project's construction and operational emissions. SWAPE reviewed the Project's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the IS/MND, resulting in an underestimation of the Project's emissions. Ex. C, p. 2. Because the IS/MND uses incorrect estimates for emissions, its air quality analysis and GHG emissions analysis cannot be relied upon to determine the Project's emissions. The particular errors identified by SWAPE are discussed below. These errors should be corrected in a subsequent CEQA document prior to approval of the Project. SWAPE's expert comments and curriculum vitae are attached hereto as Exhibit C.

i. <u>The IS/MND relies on an unsubstantiated reduction of land use size.</u>

Based on the IS/MND, the Project proposes to build "259 apartment units, ranging from 715 square feet to 1,367 square feet." IS/MND, p. 1-13. Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes the correct *number* of residential units (i.e. 259 apartments), but the incorrect *square footage* associated with the residential land use floor surface area (i.e. reduction of the default value of 259,000- to 228,000-SF). IS/MND, App. A, pp. 25, 29; IS/MND, App. F, pp. 23, 27; Ex. C, pp. 4-5.

Further review of the model's output files indicates that the land use size was reduced from the CalEEMod default value without adequate explanation or justification. IS/MND, App. A, p. 29; IS/MND, App. F, p. 27; Ex. C, p. 5. The CalEEMod User's Guide requires that any changes to the default models be justified. Ex. C, p. 5 (citing CalEEMod User Guide, *available at:* http://www.caleemod.com/, pp. 2, 9). According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "Site Plan; Project population." IS/MND, App. A, p. 25; IS/MND, App. F, p. 23. Given that the IS/MND states that the apartment units will range from 715-SF to 1,367-SF, the total square footage of the residential space will range from 185,185-SF to 354,053-SF. Ex. C, p. 5. However, the IS/MND fails to explicitly state the total square footage of the residential land use, and therefore, the reduction to the default floor surface area is unsubstantiated. *Id.* This change also is not mentioned or justified in the IS/MND and associated appendices. SWAPE explains:

> This unsubstantiated reduction presents an issue, as the land use size feature is used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations. The square footage of a land use is used for certain calculations such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts).

Ex. C, p. 5 (citing CalEEMod User Guide, p. 28). By including an unsubstantiated reduction to the floor surface area of the Project's residential units, the model underestimates the Project's construction-related and operational emissions, and thus, should not be relied upon to determine Project significance. *Id.*, p. 5.

ii. <u>The IS/MND relies on unsubstantiated reductions to architectural and area coating emission factors.</u>

Review of the CalEEMod output files demonstrates that the "Alt Cuvee Mixed-Use Project" model includes several reductions to the default architectural coating emission factors. IS/MND, App. A, p. 27; IS/MND, App. F, p. 25; Ex. C, pp. 5-6. The nonresidential exterior and interior architectural area coating emission factors were each reduced from the default 100 g/L to 50 g/L. IS/MND, App. A, p. 27; IS/MND, App. F, p. 25; Ex. C, pp. 5-6. The explanation provided in the file is: "SCAQMD Building Envelope 50 g/L." IS/MND, App. A, p. 26; IS/MND, App. F, p. 24; Ex. C, p. 6. But neither the IS/MND nor the associated appendices mention or justify these changes. According to SWAPE, these changes are unsupported for two reasons:

> First, the IS/MND and associated documents fail to mention the building envelope category of paint, and its associated VOC content limit of 50 g/L as required by SCAQMD Rule 1113, whatsoever. Second, the IS/MND and associated documents fail to explicitly require the Project to use only building envelope coatings during Project construction and operation of the proposed nonresidential land uses whatsoever. As such, we cannot verify that the revised values are accurate.

Ex. C, p. 6.

Such unsubstantiated reductions cause an issue because the model uses the architectural and area coating emission factors to calculate the Project's reactive organic gas/volatile organic compound ("ROG/VOC") emissions. *Id.* By including unsubstantiated reductions to the default architectural and area coating emission factors, the model could underestimate the Project's construction-related and operational ROG/VOC emissions. *Id.* Thus, the IS/MND's emissions for architectural and area coating should not be relied upon to determine Project significance.

iii. <u>The IS/MND relies on an unsubstantiated reduction to gas fireplace values.</u>

Review of the CalEEMod output files for the "Alta Cuvee Mixed-Use Project" model demonstrates a reduction to gas fireplaces values were manually altered to include no gas fireplaces. IS/MND, App. A, p. 28; IS/MND, App. F, p. 26; Ex. C, pp. 6-7. Neither the file nor the IS/MND and the associated appendices mention or justify these changes to the default values. Ex. C, p. 6. However, the IS/MND indicates that the east building would include a courtyard with an outdoor fireplace, meaning that at least one fireplace would be installed on the Project site. IS/MND, p. 1-13; Ex. C, p. 7. By including unsubstantiated reductions to the number of gas fireplaces, the model could underestimate the Project's area-source operational emissions, and thus, should not be relied upon to determine Project significance. Ex. C, p. 7.

iv. <u>The IS/MND relies on incorrect CO_2 intensity factors.</u>

Review of the CalEEMod output files demonstrates that the CO_2 intensity factors for the "Alta Cuvee Mixed-Use Project" and "Alta Cuvee Bus Bay" were officially reduced from 702.44- to 531.98- and 471.24-pounds per megawatt hour ("lbs/MWhr"), respectively. IS/MND, App. A, pp. 30, 91; IS/MND, App. F, pp. 28, 87; Ex. C, p. 2.

According to the "User Entered Comments and Non-Default Data" table, the justifications for these changes are:

- Electricity supplied by Rancho Cucamonga Municipal Utility, which is not available as input selection. SCE used as surrogate

- SB 100 mandates 44% renewable by end of 2024. SCE CO2 factor assumes 40% renewables when operations begin. SCE 2019 power mix = 36% renewables

IS/MND, App. A, pp. 26, 91; IS/MND, App. F, pp. 23, 86.

These justifications are insufficient. Ex. C, p. 2. Based on SWAPE's review of the Rancho Cucamonga Municipal Utility 2020 Power Content Label, the City's CO_2 intensity factor is 630 lbs/MWhr, which means that the CO_2 intensity factor is underestimated by approximately 98- and 159-lbs/MWhr, respectively. *Id.*, pp. 2-3. Neither the IS/MND nor its associated appendices provide a citation or further justification for the updated carbon intensity factors. Such inconsistencies pose an issue because the model uses the CO_2 intensity factor to calculate the Project's GHG emissions associated with electricity use. *Id.*, p. 3. By including an underestimated carbon intensity factor, the models underestimate the Project's potential GHG emissions, and thus, should not be relied upon to determine Project significance. *Id.*

v. <u>The IS/MND fails to model all required parking.</u>

Review of the CalEEMod output files for the "Alta Cuvee Mixed-Use Project" demonstrates that the required parking is underestimated in the model. IS/MND, App. A, p. 25; IS/MND, App. F, p. 23; Ex. C, pp. 3-4. According to the IS/MND, the Project is pending approval from the City of Rancho Cucamonga to reduce the amount of required parking by 12%, from 526 to 465 spaces. IS/MND, p. 1-15, Table 1-2. However, this request is yet to be approved. *Id.*, p. 1-15; Ex. C, p. 4.

As SWAPE points out, "the model should have included the entire amount of required parking in order to conduct the most conservative analysis." Ex. C, p. 4. But review of the output files indicates that the Project's model only includes 465 parking spaces, rather than the 526 spaces required by the City. IS/MND, App. A, p. 25; IS/MND, App. F, p. 23; Ex. C, p. 4. Hence, the total amount of parking is underestimated by 61 spaces. Ex. C, p. 4. But this underestimation is incorrect since there is no way to verify whether the City will approve or deny the Project's requested parking exception. *Id.* As such, the potential underestimation affects CalEEMod calculations for the model's VOC emissions from architectural coatings and energy impacts. *Id.* By failing to include the entire amount of required parking spaces, the model underestimates the Project's construction-related and operational emissions, and thus, should not be relied upon to determine Project significance. *Id.*

vi. The IS/MND relies on incorrect solid waste generation rates.

Review of the CalEEMod output files for the "Alta Cuvee Mixed-Use Project" demonstrates that the solid waste generation rates for that of the proposed Project were reduced in the model, and as a result, may underestimate the Project's emissions. IS/MND, App. A, p. 30; IS/MND, App. F, p. 28; Ex. C, pp. 7-8. The total solid waste generation rate was cumulatively decreased by 23.71 tons per year. Ex. C, p. 7. According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "Remove duplicate waste generation." IS/MND, App. A, p. 26; IS/MND, App. F, p. 24. But the IS/MND estimates that the proposed Project's "operational activities would generate approximately 1.6 tons per day of solid waste during Project operation." IS/MND, p. 4-73 & n.99. Based on the solid waste generation rate that the IS/MND uses, the Project's operational activities would generate approximately 584 tons per year of solid waste. Ex. C, p. 8.

However, the model's output files indicate that its emissions estimates for the Project's total solid waste generation of 123.6 tons per year, which includes 119.6 tons per year for 259 mid-rise apartments, 0.46 tons per year of solid waste for 1 live-work unit (referred to as a condo/townhouse by the model), 0.03 tons per year of solid waste for outdoor amenity space (referred to as a city park), and 3.51 tons per year of solid waste for the commercial space (referred to as a strip mall). IS/MND, App. A, p. 85; IS/MND, App. F, p. 82; Ex. C, p. 8. As SWAPE points out, the model's solid waste is underestimated by 460.4 tons per year, and therefore, inconsistent with information included in the IS/MND. Ex. C, p. 8. Compared to the solid waste generation rate used by the IS/MND, the Project's model relies on solid waste generation rates that are grossly underestimated, and as a result, the model underestimates the Project's GHG emissions from operational activities. *Id.* Thus, the IS/MND's emissions for solid waste should not be relied upon to determine Project significance. *Id.*

vii. The IS/MND relies on the use of underestimated operational vehicle fleet mix percentages.

Review of the CalEEMod output files for the "Alta Cuvee Mixed-Use Project" demonstrates that the operational vehicle fleet mix percentages were underestimated within the model, and as a result, may underestimate the Project's mobile-source operational emissions. IS/MND, App. A, pp. 28-29; IS/MND, App. F, pp. 26-27; Ex. C, pp. 9-10. According to the "User Entered Comments and Non-Default Data" table, the justification for these changes is: "Residential Trips." IS/MND, App. A, p. 27; IS/MND, App. F, p. 25; Ex. C, p. 9. However, neither the file nor the IS/MND and the associated appendices mention or justify these changes to the default values with substantial evidence. Ex. C, pp. 9-10. By including unsubstantiated changes to the default operational vehicle fleet mix percentages, the model could underestimate the Project's operational emissions and should not be relied upon to determine Project significance. *Id.*, p. 10.

viii. The IS/MND relies on unsubstantiated reductions to off-road equipment horsepower values.

Review of the CalEEMod output files for the "Alta Cuvee Mixed-Use Project" demonstrates several reductions to the default off-road construction equipment horsepower values. IS/MND, App. A, p. 30; IS/MND, App. F, p. 28; Ex. C, pp. 10-11. According to the "User Entered Comments and Non-Default Data" table, the justification for these changes is: "Project Inventory." IS/MND, App. A, p. 26; IS/MND, App. F, p. 24; Ex. C, p. 10. However, neither the file nor the IS/MND and the associated appendices mention or justify these changes to the default values with substantial evidence. Ex. C, p. 10. By including unsubstantiated changes to the default off-road construction equipment horsepower values, the model could underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance. *Id.*, pp. 10-11.

ix. The IS/MND relies on the incorrect application of construction-related mitigation measures.

Review of the CalEEMod output files reveals that the model relies on an incorrect application of the construction mitigation measure of "Water Exposed Area." IS/MND, App. A, p. 30; IS/MND, App. F, p. 28; Ex. C, pp. 11-12. No adequate justification is provided in the "User Entered Comments & Non-Default Data" table for the inclusion of this specific mitigation measure. Ex. C, p. 11. Instead, the file mentions "SCAQMD Rule 403" as a "Construction Off-Road Equipment Mitigation." IS/MND, App. A, p. 24; IS/MND, App. F, p. 22; Ex. C, p. 11. However, neither the IS/MND nor the appendices include these as formal mitigation measures, which means they are project design features making it impossible to guarantee whether the measures used in the model would be implemented, monitored, or enforced. *See* IS/MND, pp. 5-1–5-4; Ex. C, pp. 11-12. By the IS/MND using the construction-related mitigation measures in the model, it is artificially reducing its emissions measures. Ex. C, p. 12. As a result, the model may underestimate the Project's construction emissions and the mitigation cannot be relied upon. *Id.* Thus, the design features should be included as mitigation measures. *Id.*, p. 25.

x. The IS/MND relies on the incorrect application of operational mitigation measures.

Review of the CalEEMod output files reveals that the model also relies on an incorrect application of several operational mitigation measures related to energy (i.e. Exceed Title 24, Install High Efficiency Lighting, Install Energy Efficient Appliances), area (i.e. No Hearths Installed, Use Low VOC Cleaning Supplies), and water (i.e. Install Low Flow Bathroom Faucet, Install Low Flow Kitchen Faucet, Use Water Efficient Irrigation System). IS/MND, App. A, pp. 72, 77, 79; IS/MND, App. F, pp. 70, 75, 77; Ex. C, pp. 12-14. The file provided no adequate justification for any of these operational mitigation measures used to reduce operational-related emissions as a result of the

Project, but includes a justification in the "User Entered Comments & Non-Default Data" table for area-related operational mitigation measures, which is "SCAQMD Rule 1113." IS/MND, App. A, p. 27; IS/MND, App. F, p. 25; Ex. C, p. 13. However, neither the IS/MND nor the appendices include these as formal mitigation measures, meaning they are considered project design features, which makes it impossible to guarantee whether the measures used in the model would be implemented, monitored, or enforced. *See* IS/MND, pp. 5-1–5-4; Ex. C, pp. 13-14. By the IS/MND using the operational-related mitigation measures in the model, it is artificially reducing its emissions measures. Ex. C, pp. 13-14. As a result, the model may underestimate the Project's operational emissions and the mitigation cannot be relied upon. *Id.*, p. 14. Thus, the design features should be included as mitigation measures. *Id.*, p. 25.

In conclusion, as a result of these errors in the IS/MND, the Project's construction-related and operational emissions were underestimated and cannot be relied upon to determine the significance of the Project's air quality impacts.

D. An Updated Air Model Analysis Is Needed to Determine Whether the Project Will Have a Significant Air Quality Impact.

Review of the IS/MND's air model analysis demonstrates that the IS/MND fails to provide summer and winter CalEEMod output files. Ex. C, pp. 14-15. To calculate the Project's air quality analysis, the IS/MND uses the CalEEMod.2016.3.2 to calculate construction-related and operational emissions. IS/MND, p. 4-8. According to SWAPE, the CalEEMod is required to provide three types of output files: annual, summer, and winter. Ex. C, p. 14 (citing CalEEMod User's Guide, p. 61). SWAPE further explains:

> As demonstrated above, the CalEEMod summer and winter output files provide peak daily emissions estimates in pounds per day ("lbs/day"). Furthermore, the IS/MND quantifies the Project's construction-related and operational maximum daily criteria air pollutant emissions and compares them to the applicable SCAQMD thresholds.

Id., pp. 14-15 (citing IS/MND, pp. 4-8, Table 4.3-1; 4-9, Table 4.3-2).

However, SWAPE's review of the IS/MND's air quality assessment and GHG assessment demonstrates that the IS/MND failed to disclose the summer and winter CalEEMod output files. Ex. C, p. 15. Because the IS/MND fails to provide the summer and winter output files, the IS/MND's air quality analysis should not be relied upon to determine Project significance. An EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on the surrounding environment, and properly disclose all CalEEMod output files.

E. The IS/MND Fails to Adequately Evaluate Health Risks from Diesel Particulate Matter Emissions.

One of the primary emissions of concern regarding health effects for land development projects is diesel particulate matter ("DPM"), which can be released during Project construction and operation. DPM consists of fine particles with a diameter less than 2.5 micrometers including a subgroup of ultrafine particles (with a diameter less than 0.1 micrometers). Diesel exhaust also contains a variety of harmful gases and cancer-causing substances. Exposure to DPM is a recognized health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. According to the California Air Resources Board ("CARB"), DPM exposure may lead to the following adverse health effects: aggravated asthma; chronic bronchitis; increased respiratory and cardiovascular hospitalizations; decreased lung function in children; lung cancer; and premature deaths for those with heart or lung disease.

The IS/MND concludes that the proposed Project would have a less-than-significant health risk impact without conducting a quantified construction or operational health risk analysis ("HRA"). Specifically, regarding potential health risk impacts associated with Project construction, the IS/MND justifies its "less-than-significant" health risk impact conclusion by stating that "low magnitude of diesel exhaust emissions from construction equipment combined with the brevity of the construction period and local meteorological characteristics indicate that the proposed Project would not generate substantial emissions over an extended period of time that could cause a health risk to adjacent land uses." IS/MND, p. 4-11. Additionally, the IS/MND claims that "the size of the Project site indicates that only during a limited portion of construction activities would heavy-duty diesel-powered equipment be operating within 100 feet of sensitive receptors, and all construction equipment would be maintained in accordance with the CARB Portable Engine Air Toxics Control Measure and the Off-Road Diesel Regulation to control emissions to the maximum extent feasible." *Id.*

In addition, with regard to potential health risk impacts associated with Project operation, the IS/MND's justification is that "[o]peration of the proposed Project would not create a new substantial permanent source of air pollutant emissions to the Project area," because the Project "would be consistent with existing surrounding land use developments," and "does not involve large boilers, generators, or any other equipment or facilities that would warrant special permitting under SCAQMD regulations." *Id.*, p. 4-12. According to the IS/MND this means that operation of the Project "would not produce emissions capable of resulting in substantial pollutant concentrations at sensitive receptor locations." *Id.*

However, SWAPE's review of the IS/MND and its evaluation of potential health risk impacts for the Project found that the IS/MND incorrectly concludes that the Project would have a less-than-significant health risk impact on nearby receptors, and completely failed to conduct a quantified construction or operational HRA. Ex. C, pp. 15-17. SWAPE concluded that the IS/MND's evaluation of the Project's potential health impacts, as well as the less-than-significant health impact conclusion, is incorrect for several reasons. *Id.*

First, the IS/ND fails to quantitatively evaluate construction-related and operational toxic air contaminants ("TACs"), or make a reasonable effort to connect emissions to health impacts posed to nearby existing sensitive receptors. Ex. C, p. 16. SWAPE identifies potential emissions from both the exhaust stacks of construction equipment and daily vehicle trips. *Id.* In failing to connect TAC emissions to potential health risks to nearby sensitive receptors, the Project fails to meet the CEQA requirement that projects correlate increases in project-generated emissions to adverse impacts on human health caused by those emissions. Ex. C, p. 16. *See Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 510.

Second, by failing to prepare a quantified construction and operational HRA, the Project is inconsistent with CEQA's requirement to correlate the increase in emissions that the Project would generate to the adverse impacts on human health caused by those emissions. Ex. C, pp. 16-17. The IS/MND's conclusion is also inconsistent with recommendations set forth by the Office of Health Hazard Assessment's ("OEHHA") most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*, which was formally adopted in March of 2015. *See* "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. OEHHA recommends that projects lasting at least 2 months be evaluated for cancer risks to nearby sensitive receptors, a time period which this Project easily exceeds. Ex. C, p. 17. The OEHHA document also recommends that if a project is expected to last over 6 months, the exposure should be evaluated throughout the project using a 30-year exposure duration to estimate individual cancer risks. *Id.* Based on its extensive experience, SWAPE reasonably assumes that the Project will last at least 30 years, and therefore recommends that health risk impacts from the project be evaluated. *Id.* An EIR is therefore required to analyze these impacts. *Id.*

Third, by claiming a less than significant impact without conducting a quantified construction or operational HRA for nearby, existing sensitive receptors, SWAPE found that the IS/MND fails to compare the excess health risk impact to the SCAQMD's specific numeric threshold of 10 in one million. Ex. C, p. 17. Thus, in accordance with the most relevant guidance, an assessment of the health risk posed to nearby existing receptors from Project construction and operation should have been conducted.

F. There is Substantial Evidence that the Project May have a Significant Health Risk Impact.

Correcting the above errors, SWAPE prepared a screening-level HRA to evaluate potential impacts from the construction and operation of the Project. Ex. C., pp. 17-21. SWAPE prepared a screening-level HRA to evaluate potential impacts from Project construction. SWAPE used AERSCREEN, the leading screening-level air quality dispersion model. SWAPE applied a sensitive receptor distance of 100 meters and analyzed impacts to individuals at different stages of life based on OEHHA and SCAQMD guidance utilizing age sensitivity factors. *Id.*

SWAPE found that the excess cancer risks at a sensitive receptor located approximately 100 meters away over the course of Project construction are approximately 27.1 in one million for infants and 23.7 in one million for children. *Id.*, p. 20. Moreover, the excess lifetime cancer risk over the course of a Project operation of 30 years is approximately 60 in one million. *Id.* The risks to infants, children, and lifetime residents appreciably exceed SCAQMD's threshold of 10 in one million.

SWAPE's analysis constitutes substantial evidence that the Project may have a significant health impact as a result of diesel particulate emissions. A health risk assessment must be prepared disclosing the health risk impacts from toxic air contaminants.

G. The IS/MND Failed to Adequately Analyze Greenhouse Gas Impacts and Thus the Project May Result in Significant Greenhouse Gas Emissions.

The IS/MND estimates that the Project would generate net annual greenhouse gas ("GHG") emissions of 2,668 metric tons of carbon dioxide equivalents per year ("MT CO_2E/year"), which would not exceed the SCAQMD threshold of 3,000 MT CO_2e/year. IS/MND, p. 4-31, Table 4.8-1. Furthermore, the IS/MND relies upon the Project's consistency with CARB's 2017 Climate Change Scoping Plan, SCAG's 2020–2045 RTP/SCS, the San Bernardino Regional GHG Reduction Plan, and the Rancho Cucamonga Sustainable Community Action Plan ("CAP") in order to conclude that the Project would result in a less-than-significant GHG impact. IS/MND, pp. 4-31–4-32. However, SWAPE concludes that the IS/MND's GHG analysis, as well as its subsequent less-than-significant conclusion, is incorrect for several reasons. Ex. C, pp. 21-25.

First, as SWAPE points out, the IS/MND's GHG analysis relies upon a flawed air model, as discussed above. *Id.*, pp. 21-22. As a result, GHG emissions are underestimated and the IS/MND's quantitative GHG analysis should not be relied upon to determine Project significance.

Second, the IS/MND utilizes an outdated GHG threshold. SWAPE notes that when compared to the correct quantitative threshold, the Project's GHG impacts are demonstrably significant. *Id.*, p. 22.

Third, SWAPE's updated analysis indicates a potential significant impact in GHG emissions. *Id.*, pp. 22-23. As such, SWAPE recommends, "an updated GHG analysis using the SCAQMD 2035 efficiency target should be prepared in an EIR and additional mitigation should be incorporated accordingly, per CEQA Guidelines." *Id.*, p. 23.

Fourth, the IS/MND fails to consider the performance-based standards underlying CARB's Scoping Plan. Ex. C, pp. 23-24. Based on SWAPE's quantitative consistency evaluation utilizing these standards, SWAPE concluded that the IS/MND's GHG significance determination regarding the Project's consistency with applicable plans and policies should not be relied upon. *Id.*, p. 24.

Fifth, the IS/MND also fails to consider the performance-based standards underlying SCAG's RTP/SCS. *Id.*, pp. 24-25. SWAPE's quantitative consistency evaluation utilizing these standards concludes that the IS/MND's GHG significance determination concerning the Project's consistency with applicable plans and policies should not be relied upon. *Id.*, p. 25.

SWAPE's analysis demonstrated a potentially significant health risk impact from the project that necessitates mitigation, and it proposes that the project design features that are incorrectly applied as mitigation measures by the model be implemented formally as mitigation measures in order to adequately reduce construction and operational emissions. In addition to implementing these measures, an EIR should be included with updated air quality, health risk, and GHG analysis.

H. There is Substantial Evidence of a Fair Argument that the Project Will Have Significant Noise Impact.

Review of the proposed Project and relevant appendices regarding the Project's noise impacts from construction activities provides substantial evidence that the IS/MND improperly analyzed construction noise levels and failed to adequately mitigate significant construction noise impacts.

Based on the noise levels presented in the IS/MND, "the equipment is expected to generate noise levels ranging from approximately 70.3 dBA to 82.6 dBA Leq at a distance of 50 feet." IS/MND, p. 4-46– 4-47. The IS/MND notes that "construction noise levels would exceed the residential and commercial construction noise standards at the majority of nearby sensitive receptors," and as result, impacts related to on-site construction noise would be significant without mitigation. *Id.* at 4-47. Although the IS/MND concludes that mitigation measures included in the IS/MD will place noise impacts under significant thresholds, substantial evidence exists in the IS/MND and related appendix that demonstrates there still could be significant noise impacts despite the IS/MND's noise mitigation measures.

As the court in *Communities for a Better Environment v. California Resources Agency* stated, the application of an established regulatory standard cannot be applied in a way that forecloses the consideration of any other substantial evidence showing there may be a significant effect. *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 114. The court in *Keep Our Mountains Quiet v. County of Santa Clara* also held that an EIR is required if substantial evidence supports a fair argument that the project may have significant unmitigated noise impacts, even if other evidence shows that the project will not generate noise in excess of a noise ordinance. *See Keep Out Mountains Quiet v. County of Santa Clara* (2015) 236 Cal.App.4th 714, 732. Thus, an EIR to analyze potentially unmitigated noise impacts is required.

IV. CONCLUSION

For the foregoing reasons, the IS/MND for the Project should be withdrawn, an EIR should be prepared, and the draft EIR should be circulated for public review and comment in accordance with CEQA. Thank you for considering these comments.

Sincerely,

Victoria Yundt

Victoria Ann Yundt
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Exhibit A

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Subject: Indoor Air Quality: Alta Cuvee Mixed Use Project, Rancho Cucamonga, CA
(IEE File Reference: P-4499)

Pages: 19

Indoor Air Quality Impacts

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

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

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

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

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

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

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

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

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

With respect to the Alta Cuvee Mixed Use Project, Rancho Cucamonga, CA the buildings consist of residential and commercial spaces.

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

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

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

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

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

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

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

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

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

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

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

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

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

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

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

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

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

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

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

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

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

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

$$Cin= EtotalQoa \quad \text{(Equation 1)}$$

where:

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

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

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

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

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

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

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

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

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

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

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

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

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

The Alta Cuvee Mixed Use Project, Rancho Cucamonga, CA is close to roads with moderate to high traffic (e.g., I-15, Foothill Boulevard, Etiwanda Avenue, etc.), and thus the Project site is likely a sound impacted site.

According to the Initial Study/Mitigated Negative Declaration - Alta Cuvee Mixed Use Project, (AECOM, 2021) the existing ambient noise levels in Table 4.13-1, range from 52.5 to 70.8 dBA L_{eq}.

There were no modeled future noise levels in the Initial Study/Mitigated Negative Declaration - Alta Cuvee Mixed Use Project, (AECOM, 2021). An acoustic study of the existing and projected future noise levels needs to be conducted to understand the ambient noise levels, L_{dn}, and prepare the necessary project mitigation. We note that Project's close proximity to roads with moderate to high traffic (e.g., I-15, Foothill Boulevard, Etiwanda Avenue, etc.) make this Project site a significantly sound impacted site.

As a result of the high outdoor noise levels, the current project will require a mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

$PM_{2.5}$ Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of $PM_{2.5}$. According to the Study/Mitigated Negative Declaration - Alta Cuvee Mixed Use Project, (AECOM, 2021) the Project is located in the South Coast Air Basin, which is a State and Federal non-attainment area for $PM_{2.5}$.

An air quality analyses should to be conducted to determine the concentrations of $PM_{2.5}$ in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local $PM_{2.5}$ sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the California and National annual average $PM_{2.5}$

exceedence concentration of 12 μg/m^3, or the National 24-hour average exceedence concentration of 35 μg/m^3, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient removal efficiency, such that the indoor concentrations of outdoor $PM_{2.5}$ particles is less than the California and National $PM_{2.5}$ annual and 24-hour standards.

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

Indoor Air Quality Impact Mitigation Measures

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

<u>Indoor Formaldehyde Concentrations Mitigation</u>. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

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

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

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

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

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

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

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

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

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

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

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

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

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

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

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

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

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

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

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

Exhibit B

Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

Vincent Acuna, Planning Department
City of Rancho Cucamonga
Planning Department
10500 Civic Center Drive
Rancho Cucamonga, CA 91 26 September 2021

RE: Alta Cuvee Mixed Use Project

Dear Mr. Acuna,

I write to comment on the Initial Study/Mitigated Negative Declaration (IS/MND) prepared for the proposed Alta Cuvee Mixed Use Project (City of Rancho Cucamonga 2021), specifically on its analysis of potential impacts to biological resources. I understand the project would consist of a 260-unit apartment community composed of two 60-foot-tall buildings and 3,339 square feet of commercial floorspace on 5.2 acres at 12901-12939 Foothill Boulevard. The IS/MND is deficient in its characterization of the environmental setting and by not analyzing impacts to special-status species caused by habitat loss, interference with movement in the region, bird-window collisions, wildlife-automobile collisions, and it is deficient in its mitigation plan.

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 for four years as a post-graduate researcher in the Department of Agronomy and Range Sciences. My research has been on animal density and distribution, habitat selection, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I study wildlife mortality caused by wind turbines, electric distribution lines, agricultural practices, and road traffic. I authored numerous papers on special-status species issues. I served as Chair of the Conservation Affairs Committee for The Wildlife Society – Western Section. I am a member of The Wildlife Society and the Raptor Research Foundation. I was a part-time lecturer 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-six years, including at many proposed project sites. My CV is attached.

SITE VISIT

Noriko Smallwood, a wildlife biologist with a Master's Degree from California State University Los Angeles, visited the site of the proposed project on my behalf for nearly 2 hours from 06:54 to 08:42 hours on 4 September 2021 (Photo 1). She walked the site's perimeter, stopping to scan for wildlife with the use of binoculars. The sky was clear with no wind, and temperatures ranged 64–72° F.

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

Noriko Smallwood

Photos 1. *Site of proposed Alta Cuvee Mixed Use Project. Photo by Noriko Smallwood, 4 September 2021.*

Ms. Smallwood detected 24 species of vertebrate wildlife during her 108 minutes at the site (Table 1). She saw Cooper's hawk and American kestrel (Photos 2 and 3), California scrub-jays and American crows (Photos 4 and 5), Say's phoebe and a great blue heron (Photos 6 and 7), and side-blotched lizard and California ground squirrel (Photos 8 and 9), among other species.

Noriko's detections of 24 species of vertebrate wildlife need to be interpreted within the context of her survey effort. No matter who performs the survey, the results of a single survey qualify as a thin empirical foundation for characterizing the environmental setting of any given site, including one proposed for a project. A single survey can serve only as a starting point toward characterization of a site's wildlife community. Noriko had only <2 hours available to perform a visual scan survey on 4 September 2021, so there were only so many species she was likely to detect. Noriko could have detected many more species than she did had she also performed surveys at different times of day to detect diurnal, nocturnal and crepuscular species, or surveys in different seasons and years to detect migrants and species with multi-annual cycles of abundance, or surveys of different methods such as se of acoustic detectors or thermal-imaging for bats, owls, and nocturnally migratory birds, and live-trapping for small mammals.

Noriko survey outcome indicates that the site of the proposed project continues to serve as valuable habitat to at least 24 species of vertebrate wildlife, and it likely serves as habitat to many more species. It also holds the potential to produce many new birds, mammals and reptiles for years to come. A fair argument can be made for the need to more rigorously survey the site for wildlife, and for the need to prepare an EIR to appropriately analyze potential project impacts to wildlife.

Table 1. *Species of wildlife Noriko Smallwood observed from 06:54 to 08:42 hours on 4 September 2021 at the proposed Project site.*

Species	***Scientific name***	**Status**
Great blue heron	*Ardea herodius*	
Gull	*Laridae*	
Cooper's hawk	*Accipiter cooperii*	WL, BOP
American kestrel	*Falco sparverius*	BOP
Mourning dove	*Zenaida macroura*	
Eurasian collared-dove	*Streptopelia decaocto*	Non-native
Anna's hummingbird	*Calypte anna*	
White-throated swift	*Aeronautes saxatalis*	
Say's phoebe	*Sayornis saya*	
Black phoebe	*Sayornis nigricans*	
Cassin's kingbird	*Tyrannus vociferans*	
European starling	*Sturnus vulgaris*	Non-native
California scrub-jay	*Aphelocoma californica*	
Common raven	*Corvus corax*	
American crow	*Corvus brachyrhynchos*	
Tree swallow	*Tachycineta bicolor*	
Barn swallow	*Hirundo rustica*	
Northern mockingbird	*Mimus polyglottos*	
Bushtit	*Psaltiparus minimus*	
House sparrow	*Passer domesticus*	Non-native
House finch	*Carpodacus mexicanus*	
Lesser goldfinch	*Carduelis psaltria*	
California ground squirrel	*Otospermophilus beecheyi*	
Side-blotched lizard	*Uta stansburiana*	

Photos 2 and 3. *Cooper's hawk (left) and American kestrel (right) at the site of the proposed project, 4 September 2021. Photos by Noriko Smallwood.*


Photo 4 and 5. *California scrub-jay (left) and American crow (right) at the project site, 4 September 2021. Photos by Noriko Smallwood.*


Photos 6 and 7. *Say's phoebe (left) and great blue heron (right) at the project site. Photos by Noriko Smallwood, 4 September 2021.*

Photos 8 and 9. *Side-blotched lizard at the project site and a ground squirrel across the street, 4 September 2021. Photos by Noriko Smallwood.*

Ms. Smallwood's detection of California ground squirrels on the open field across the street indicates that ground squirrels likely also occur on the project site. The occurrence of ground squirrels in the project area is significant because many special-status species are found in association with ground squirrels and their burrow complexes. Ground squirrels are prey of large raptors such as bald eagle, golden eagle, ferruginous hawk and Swainson's hawk. Ground squirrels are also prey of terrestrial carnivores such as American badger, which specialize on ground squirrels. Ground squirrels also construct subterranean habitat used by many species such as burrowing owl. The occurrence of ground squirrel warrants detection surveys for multiple special-status species that associate with this species.

BIOLOGICAL IMPACTS ASSESSMENT

The IS/MND refers to a reconnaissance field survey Performed by AECOM (2021) on 24 September 2020. A botanist visited the site for 90 minutes in the middle of the afternoon (14:00 to 15:30 hours) when wildlife were least likely to be detected. In fact, temperatures were reportedly 96° to 99° F, which was just too hot for a wildlife survey. The IS/MND (page 4-14) reports, "no special-status plant or wildlife species were observed within the biological survey area during the reconnaissance field survey," but this report follows from a survey of insufficient effort at the most inappropriate time of day. Given the minimal effort at the worst time of day, there should be no surprise that special-status species were undetected. I further note that nothing is reported of AECOM's (2021) wildlife survey; that is, the IS/MND fails to report which, if any, species of wildlife were detected by the botanist who was sent to do the job. This lack of reporting suggests to me that the botanist likely saw no wildlife in the heat of the middle of the afternoon.

The IS/MND misuses the California Natural Diversity Data Base (CNDDB). According to the IS/MND, "the CNDDB records of these four species had non-specific locations which were not mapped precisely to the locations where the species were observed and each individual observation is a square mile or greater in size; so it is not known whether the observation was actually made precisely within the biological survey area." In fact, CNDDB records are mapped accurately, but exact locations are often not shared publicly as a means to protect the species. CNDDB records are intended to indicate the likelihood of occurrence of a special-status species in the project area, but not the species' exact locations. Nor is CNDDB intended to support determinations of species' absence, as the IS/MND implies. CNDDB is intended to flag the occurrences of species in the area, not to provide an exact accounting of where the species is located at the moment.

The IS/MND further misrepresents CNDDB by implying that older records are dismissible. According to the IS/MND, "...CNDDB records that overlap with the biological survey area are 19 years old or more and since that time, the area has been developed substantially. As a result, it is possible many locations no longer exist. Current site conditions do not provide suitable habitat for these species and none are known to occur or expected to occur within the Project site or vicinity." CNDDB does not imply that species are static, or that locations where they were mapped previously are the only locations where the species would be found later. Wildlife populations are spatially dynamic, shifting centers of activity every generation or so (Taylor and Taylor 1979), so it would be inappropriate of CNDDB to assert that locations of past occupancy should still be locations of current occupancy. For this reason, users of CNDDB typically determine whether CNDDB records exist within a 5-mile radius of a proposed project. Occurrences within 5 miles serve as indicators that the species could also occur at the project site, and if so, then protocol-level detection surveys should be performed.

The IS/MND asserts, "the BSA generally does not provide suitable habitat for special-status wildlife species." This assertion, however, lacks evidence in the form of detection survey results. Detection surveys are designed by species' experts to – at reasonable cost – provide the best chance for detecting the targeted species by applying the methods and survey effort most likely to detect the species if it is indeed present. The objectives of detection surveys are to (1) support negative findings of species when appropriate, (2) inform preconstruction surveys to improve their efficacy, (3) estimate project impacts, and (4) inform compensatory mitigation and other forms of mitigation. The botanist who surveyed the project site for 90 minutes in the middle of the hot afternoon did not come anywhere close to having performed a detection survey for any species of wildlife. Neither AECOM nor City of Rancho Cucamonga was justified by asserting that the site lacks special-status species of wildlife.

Detection surveys for multiple special-status species of wildlife should be implemented to inform an EIR. Without such surveys, the IS/MND only speculates that habitat is marginal and occurrence likelihoods low. The IS/MND repeatedly speculates that for this or that species, anthropogenic disturbances prevent their occurrences. The IS/MND exemplifies one such disturbance as routine mowing of the site. The IS/MND offers no evidence in defense of its premise that routine mowing precludes special-status species of wildlife. It fails to identify the Crotch bumble bee host plants that allegedly occur in low density, and it fails to make the case that the host plants in question are the only plants useable by Crotch bumble bee. The IS/MND relies on generalities rather than specifics, and on speculation rather than evidence. It suggests that house cats killed off the special-status species, and that traffic noise drove them away, and that insect prey are in low supply. None of these suggestions are backed by evidence, and no effort has been made to actually look for special-status species on the site. An example follows.

In the case of the Crotch bumble bee, the IS/MND reports, "No bumble bee species were observed during the field survey." (There is only one species of Crotch bumble bee.) This reporting ignores the fact that Crotch bumble bees are unlikely to be out and about in the middle of the afternoon when temperatures range 96° to 99° F, as was reportedly the conditions during the one survey performed – a survey performed not by a wildlife ecologist or an entomologist, but by a botanist. The report of having not detected Crotch bumble bee was a meaningless report, and serves only to misrepresent how wildlife ecologists determine whether a species is present or likely absent from a site.

My review of eBird and iNaturalist identified 60 special-status species of vertebrate wildlife and the Crotch's bumble bee as having been seen very close to the project site, seen nearby, seen within the region, or whose geographic range overlaps the project site (Table 2). I consider all of these species in Table 2 as potentially occurring on the project site at one time or another or periodically. AECOM (2021) determines occurrence likelihood to be low for western yellow bat and Crotch bumble bee, but its determinations for all other species is unreported. AECOM (2021) refers the reader to Appendix D for determinations of all species considered, but Appendix D is empty on the copy of AECOM's report I downloaded from City of Rancho Cucamonga's web site.

Habitat Loss

The IS/MND identifies only mourning dove as a bird species likely to nest on the ground. It lists only house finch, northern mockingbird and California scrub-jay as species likely to nest trees in the area. In reality, many more species of birds are capable of nesting on and around the project site. Many bird species are ground-nesters. The IS/MND does not analyze the impact of habitat loss, or the loss of productive capacity.

A recent study documented a 29% decline in overall bird abundance across North America over the last 48 years – a decline driven by multiple factors, but principally attributed to habitat loss and habitat fragmentation (Rosenberg et al. 2019). Habitat loss not only results in the immediate numerical decline of wildlife, but it also results in permanent loss of productive capacity. For example, a grassland/wetland/woodland complex at one study site had a total bird nesting density of 32.8 nests per acre (Young 1948). In another study on a similar complex of vegetation cover, the average annual nest density was 35.8 nests per acre (Yahner 1982). These densities averaged 34.3 nests per acre, indicative of a very large productive capacity of North American birds, but also indicative of a very large source of lost capacity should habitat be taken for human uses.

Table 2. *Occurrence likelihoods of special-status species of vertebrate wildlife as determined by the IS/MND and by publicly available data bases such as eBird (https://eBird.org) and iNaturalist, where 'very close' indicates within a mile, 'nearby' indicates within a few miles, and 'in region' indicates within 10 to 30 miles of the project site.*

Common name	*Species name*	Status[1]	Occurrence likelihood	
			IS/MND	Data bases
Double-crested cormorant	*Phalacrocorax auritus*	WL		Nearby
California gull	*Larus californicus*	WL		Very close
Turkey vulture	*Cathartes aura*	BOP		Very close
Bald eagle	*Haliaeetus leucocephalus*	BGEPA, BCC, CFP		Nearby
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC, CFP		Nearby
Swainson's hawk	*Buteo swainsoni*	CT, BOP		Nearby
Red-tailed hawk	*Buteo jamaicensis*	BOP		Very close
Ferruginous hawk	*Buteo regalis*	WL, BOP		Nearby
Red-shouldered hawk	*Buteo lineatus*	BOP		Nearby
Northern harrier	*Circus cyaneus*	SSC3, BOP		Nearby
White-tailed kite	*Elanus leucurus*	CFP, BOP		Nearby
Sharp-shinned hawk	*Accipiter striatus*	WL, BOP		Very close
Cooper's hawk	*Accipiter cooperi*	WL, BOP		Nearby
American kestrel	*Falco sparverius*	BOP		Very close
Merlin	*Falco columbarius*	WL, BOP		Very close
Prairie falcon	*Falco mexicanus*	WL, BOP		Nearby
Peregrine falcon	*Falco peregrinus*	CE, CFP, BOP		Nearby
Barn owl	*Tyto alba*	BOP		Nearby
Burrowing owl	*Bubo virginianus*	BCC, SSC2, BOP		Nearby
Great-horned owl	*Athene cunicularia*	SSC2, BOP		Nearby
Western screech-owl	*Megascops kennicottii*	BOP		In region
Vaux's swift	*Chaetura vauxi*	SSC2		Nearby
Lewis's woodpecker	*Melanerpes lewis*	BCC		In region
Nuttall's woodpecker	*Picoides nuttallii*	BCC		Nearby
Costa's hummingbird	*Calypte costae*	BCC		Nearby
Allen's hummingbird	*Selasphorus sasin*	BCC		Very close
Rufous hummingbird	*Selasphorus rufus*	BCC		Nearby

Common name	*Species name*	Status[1]	Occurrence likelihood	
			IS/MND	Data bases
Cactus wren	*Campylorhynchus brunneicapillus*	BCC		In region
Horned lark	*Eremophila alpestris actia*	WL		Nearby
California gnatcatcher	*Polioptila c. californica*	FT, SSC		In region
Willow flycatcher	*Empidonax traillii*	CE, BCC		Nearby
Olive-sided flycatcher	*Contopus cooperi*	SSC2		Nearby
Vermilion flycatcher	*Pyrocephalus rubinus*	SSC2		Nearby
Purple martin	*Progne subis*	SSC2		In region
Oak titmouse	*Baeolophus inornatus*	BCC		Nearby
Loggerhead shrike	*Lanius ludovicianus*	BCC, SSC2		Very close
Least Bell's vireo	*Vireo belli pusillus*	FE, CE		In region
Yellow warbler	*Setophaga petechia*	SSC2		Nearby
Summer tanager	*Piranga rubra*	SSC1		In region
Black-chinned sparrow	*Spizella atrogularis*	BCC		In region
Bell's sage sparrow	*Amphispiza b. belli*	WL		In region
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SSC2		Nearby
Grasshopper sparrow	*Ammodramus savannarum*	SSC2		In region
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	BCC, WL		In region
Tricolored blackbird	*Agelaius tricolor*	SSC1		In region
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC3		In region
Lawrence's goldfinch	*Spinus lawrencei*	BCC		Nearby
Blainville's horned lizard	*Phrynosoma blainvillii*	SSC		Nearby
Pallid bat	*Antrozous pallidus*	SSC, WBWG H		In range
Townsend's western big-eared bat	*Plecotus t. townsendii*	SSC, WBWG H		In region
Western red bat	*Lasiurus blossevillii*	SSC, WBWG H		In region
Western yellow bat	*Lasiurus xanthinus*	SSC, WBWG H	Low	In range
Small-footed myotis	*Myotis cililabrum*	WBWG M		In range
Miller's myotis	*Myotis evotis*	WBWG M		In region
Fringed myotis	*Myotis thysanodes*	WBWG H		In region
Long-legged myotis	*Myotis Volans*	WBWG H		In range
Yuma myotis	Myotis yumanensis	SSC, WBWG LM		In region

Common name	***Species name***	**Status**[1]	**Occurrence likelihood**	
			IS/MND	**Data bases**
Western mastiff bat	*Eumops perotis*	SSC		In region
Hoary bat	*Lasiurus cinereus*	WBWG LM		In region
American badger	*Taxidea taxus*	SSC		In region
Crotch bumble bee	*Bombus crotchii*	CE	Low	Nearby

[1] Listed as FT and FE = federal threatened and endangered, BCC = U.S. Fish and Wildlife Service Bird of Conservation Concern, CT and CE = California threatened and endangered, CFP = California Fully Protected (CDFW Code 3511), BOP = California Fish and Game Code 3503.5 (Birds of prey), and SSC1, SSC2 and SSC3 = California Bird Species of Special Concern priorities 1, 2 and 3, respectively (Shuford and Gardali 2008), WL = Taxa to Watch List (Shuford and Gardali 2008), and WBWG = Western Bat Working Group listing as moderate or high priority.

Assuming nesting density at the project site is a fifth of the average reported by Young (1948) and Yahner (1982), then 6.8 bird nests per acre multiplied against the project's 5.2 acres would predict that 35 bird nests produce new birds at the site annually. The average number of fledglings per nest in Young's (1948) study was 2.9. Assuming Young's (1948) study site typifies bird productivity, the project would prevent the production of 102 fledglings per year. After 100 years and further assuming an average bird generation time of 5 years, the lost capacity of both breeders and annual fledgling production would total 11,600 birds {(nests/year × chicks/nest × number of years) + (2 adults/nest × nests/year) × (number of years ÷ years/generation)}. **The project's denial to California of 11,600 birds over the first century following construction would easily qualify as a significant and substantial impact**. This impact has not been addressed by City of Cucamonga. If the City believes my assumed nesting density is inaccurate, then I suggest inserting another density value that is better founded, but I also predict that the productive capacity estimate would be little different from my own. The impact of habitat loss would be significant. A fair argument can be made for the need to prepare an EIR to appropriately analyze the project's impacts from habitat loss.

Habitat fragmentation, which is the reduction of connectivity of remaining habitat patches on a landscape, can further diminish the productive capacity of a site (Smallwood 2015). Habitat fragmentation has progressed rapidly around the project site, leaving a diminishing number of patches of open space in the area, each of which is increasingly critical to the continued existence of many wildlife species. Habitat fragmentation is one of the cumulative effects of this project that needs to be analyzed in an EIR.

Wildlife Movement

The IS/MND dismisses potential impacts to wildlife movement by concluding that development around the project site precludes its use as part of a wildlife movement corridor. The premise of this conclusion must be that the presence of a wildlife corridor determines whether a project would significantly interfere with wildlife movement in the region. However, this premise represents a false CEQA standard. The primary phrase of the CEQA standard goes to wildlife movement regardless of whether the movement is channeled by a corridor. A site such as the proposed project site is critically important for wildlife movement because it composes one of the last of a diminishing suite of open space patches within a growing expanse of anthropogenic uses, forcing more species of birds to use the site for stopover and staging during migration, dispersal, and home range patrol (Warnock 2010, Taylor et al. 2011, Runge et al. 2014). The project would cut birds and bats off from stopover, roosting and staging opportunities, forcing them to travel even farther between remaining stopover areas along migration routes. The project would interfere with wildlife movement in the region. An EIR needs to be prepared to address the project's impacts on wildlife movement in the region.

BIRD-WINDOW COLLISION MORTALITY

At 60 feet tall, the project's buildings would extend into much of the bird traffic Ms. Smallwood observed at the project site. The IS/MND's rendering of the project shows facades composed of extensive structural glass, which has been the recent trend.[1] The project would introduce substantial collision hazards to an aerosphere that currently provides critically important habitat to birds, and which would act as lethal traps to flying birds.

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 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. However, these estimates were likely biased too low, because they were based on opportunistic sampling, volunteer study participation, fatality monitoring by more inexperienced than experienced searchers, and usually no adjustments made for scavenger removals of carcasses before searchers could detect them (Bracey et al. 2016).

Hundreds of thousands of birds migrate along the Pacific Flyway. Noriko Smallwood's observations during her visit to the site confirmed that birds fly through the airspace of the project, even during the nonmigratory season. At least 47 special-status species of bird are known to the project area (Table 2). According to the scientific literature, most of the special-status species in Table 2 have been documented as window collision fatalities and are therefore susceptible to new structural glass installations (Supplemental Material to Basilio et al. 2020; Smallwood unpublished review). Many more species of migratory birds, newly protected by California's revised Fish and Game Code section 3513, have also been documented as window collision victims (Basilio et al. 2020).

Nowhere in the IS/MND is there any concern expressed for bird-window collision impacts, nor is there any mitigation proposed to avoid, minimize or compensate for such impacts. As I will show in the next section, many birds can be expected to be killed by windows of the proposed project. A fair argument can be made for the need to prepare an EIR to adequately address this potential impact.

[1] Recent advances in structural glass engineering have contributed to a proliferation of glass windows on building façades. This proliferation is readily observable in newer buildings and in recent project planning documents, and it is represented by a worldwide 20% increase in glass manufacturing for building construction since 2016. Glass markets in the USA experienced 5% growth in both 2011 and 2016, and was forecast to grow 2.3% per year since 2016 (TMCapital 2019). Increasing window to wall ratios and glass façades have become popular for multiple reasons, including a growing demand for 'daylighting.'

Project Impact Prediction

Predicting the impacts caused by loss of aerial habitat and the energetic costs of birds having to navigate around the buildings is possible, but I am unprepared to make such predictions. However, I am prepared to predict bird-window collision mortality. By the time of these comments I had reviewed and processed results of bird collision monitoring at 213 buildings and façades for which bird collisions per m^2 of glass per year could be calculated and averaged (Johnson and Hudson 1976, O'Connell 2001, Somerlot 2003, Hager et al. 2008, Borden et al. 2010, Hager et al. 2013, Porter and Huang 2015, Parkins et al. 2015, Kahle et al. 2016, Ocampo-Peñuela et al. 2016, Sabo et al. 2016, Barton et al. 2017, Gomez-Moreno et al. 2018, Schneider et al. 2018, Loss et al. 2019, Brown et al. 2020, , City of Portland Bureau of Environmental Services and Portland Audubon 2020, Riding et al. 2020). These study results averaged 0.073 bird deaths per m^2 of glass per year (95% CI: 0.042-0.102). Based on a renderin of a building in the IS/MND, I estimated the proposed project would include at least 3,196 m^2 of glass on its facades. This extent of glass applied to the mean fatality rate would predict at least **234 bird deaths per year (95% CI: 139-329)**. The 100-year toll from this average annual fatality rate would be at least **23,363 bird deaths (95% CI: 13,871-32,855)**. These estimates would be perhaps 3 times higher after accounting for the proportions of fatalities removed by scavengers or missed by fatality searchers where studies have been performed. Collision fatalities would continue until the buildings are either renovated to reduce bird collisions or they come down. If the project moves forward as proposed, and annually kills 234 birds protected by state and federal laws, then the project would cause significant unmitigated impacts.

Bird-Window Collision Factors

Below is a list of collision factors I found in the scientific literature, and which I suggest ought to be used to draft Bird-Safe Guidelines for City of Rancho Cucamonga and which ought to be used to formulate a bird-safe plan for the proposed project. Following this list are specific notes and findings taken from the literature and my own experience.

(1) Inherent hazard of a structure in the airspace used for nocturnal migration or other flights
(2) Window transparency, falsely revealing passage through structure or to indoor plants
(3) Window reflectance, falsely depicting vegetation, competitors, or open airspace
(4) Black hole or passage effect
(5) Window or façade extent, or proportion of façade consisting of window or other reflective surface
(6) Size of window
(7) Type of glass
(8) Lighting, which is correlated with window extent and building operations
(9) Height of structure (collision mechanisms shift with height above ground)
(10) Orientation of façade with respect to winds and solar exposure
(11) Structural layout causing confusion and entrapment

(12) Context in terms of urban-rural gradient, or surrounding extent of impervious surface vs vegetation
(13) Height, structure, and extent of vegetation grown near home or building
(14) Presence of birdfeeders or other attractants
(15) Relative abundance
(16) Season of the year
(17) Ecology, demography and behavior
(18) Predatory attacks or cues provoking fear of attack
(19) Aggressive social interactions

(1) Inherent hazard of structure in airspace.—Not all of a structure's collision risk can be attributed to windows. Overing (1938) reported 576 birds collided with the Washington Monument in 90 minutes on one night, 12 September 1937. The average annual fatality count had been 328 birds from 1932 through 1936. Gelb and Delacretaz (2009) and Klem et al. (2009) also reported finding collision victims at buildings lacking windows, although many fewer than they found at buildings fitted with widows. The takeaway is that any building going up at the project site would likely kill birds, although mortality would increase with larger expanses of glass.

(2) Window transparency.—Widely believed as one of the two principal factors contributing to avian collisions with buildings is the transparency of glass used in windows on the buildings (Klem 1989). Gelb and Delacretaz (2009) felt that many of the collisions they detected occurred where transparent windows revealed interior vegetation.

(3) Window reflectance.—Widely believed as one of the two principal factors contributing to avian collisions with buildings is the reflectance of glass used in windows on the buildings (Klem 1989). Reflectance can deceptively depict open airspace, vegetation as habitat destination, or competitive rivals as self-images (Klem 1989). Gelb and Delacretaz (2009) felt that many of the collisions they detected occurred toward the lower parts of buildings where large glass exteriors reflected outdoor vegetation. Klem et al. (2009) and Borden et al. (2010) also found that reflected outdoor vegetation associated positively with collisions.

(4) Black hole or passage effect.—Although this factor was not often mentioned in the bird-window collision literature, it was suggested in Sheppard and Phillips (2015). The black hole or passage effect is the deceptive appearance of a cavity or darkened ledge that certain species of bird typically approach with speed when seeking roosting sites. The deception is achieved when shadows from awnings or the interior light conditions give the appearance of cavities or protected ledges. This factor appears potentially to be nuanced variations on transparency or reflectance or possibly an interaction effect of both of these factors. It might play a significant role in the proposed project, which includes extruded window frames of many windows.

(5) Window or façade extent.—Klem et al. (2009), Borden et al. (2010), Hager et al. (2013), Ocampo-Peñuela et al. (2016), Loss et al. (2019), Rebolo-Ifrán et al. (2019), and Riding et al. (2020) reported increased collision fatalities at buildings with larger

reflective façades or higher proportions of façades composed of windows. However, Porter and Huang (2015) found a negative relationship between fatalities found and proportion of façade that was glazed.

(6) Size of window.—According to Kahle et al. (2016), collision rates were higher on large-pane windows compared to small-pane windows.

(7) Type of glass.—Klem et al. (2009) found that collision fatalities associated with the type of glass used on buildings. Otherwise, little attention has been directed towards the types of glass in buildings.

(8) Lighting.—Parkins et al. (2015) found that light emission from buildings correlated positively with percent glass on the façade, suggesting that lighting is linked to the extent of windows. Zink and Eckles (2010) reported fatality reductions, including an 80% reduction at a Chicago high-rise, upon the initiation of the Lights-out Program. However, Zink and Eckles (2010) provided no information on their search effort, such as the number of searches or search interval or search area around each building.

(9) Height of structure.—Except for Riding et al. (2020), I found little if any hypothesis-testing related to building height, including whether another suite of factors might relate to collision victims of high-rises. Are migrants more commonly the victims of high-rises or of smaller buildings? Some of the most notorious buildings are low-rise buildings.

(10) Orientation of façade.—Some studies tested façade orientation, but not convincingly. Some evidence that orientation affects collision rates was provided by Winton et al. (2018). Confounding factors such as the extent and types of windows would require large sample sizes of collision victims to parse out the variation so that some portion of it could be attributed to orientation of façade. Whether certain orientations cause disproportionately stronger or more realistic-appearing reflections ought to be testable through measurement, but counting dead birds under façades of different orientations would help.

(11) Structural layout.—Bird-safe building guidelines have illustrated examples of structural layouts associated with high rates of bird-window collisions, but little attention has been directed towards hazardous structural layouts in the scientific literature. An exception was Johnson and Hudson (1976), who found high collision rates at 3 stories of glassed-in walkways atop an open breezeway, located on a break in slope with trees on one side of the structure and open sky on the other, Washington State University.

(12) Context in urban-rural gradient.—Numbers of fatalities found in monitoring have associated negatively with increasing developed area surrounding the building (Hager et al. 2013), and positively with more rural settings (Kummer et al. 2016).

(13) Height, structure and extent of vegetation near building.—Correlations have sometimes been found between collision rates and the presence or extent of vegetation near windows (Hager et al. 2008, Borden et al. 2010, Kummer et al. 2016, Ocampo-

Peñuela et al. 2016). However, Porter and Huang (2015) found a negative relationship between fatalities found and vegetation cover near the building. In my experience, what probably matters most is the distance from the building that vegetation occurs. If the vegetation that is used by birds is very close to a glass façade, then birds coming from that glass will be less likely to attain sufficient speed upon arrival at the façade to result in a fatal injury. Too far away and there is probably no relationship. But 30 to 50 m away, and birds alighting from vegetation can attain lethal speeds by the time they arrive at the windows.

(14) Presence of birdfeeders.—Dunn (1993) reported a weak correlation ($r = 0.13$, $P < 0.001$) between number of birds killed by home windows and the number of birds counted at feeders. However, Kummer and Bayne (2015) found that experimental installment of birdfeeders at homes increased bird collisions with windows 1.84-fold.

(15) Relative abundance.—Collision rates have often been assumed to increase with local density or relative abundance (Klem 1989), and positive correlations have been measured (Dunn 1993, Hager et al. 2008). However, Hager and Craig (2014) found a negative correlation between fatality rates and relative abundance near buildings.

(16) Season of the year.—Borden et al. (2010) found 90% of collision fatalities during spring and fall migration periods. The significance of this finding is magnified by 7-day carcass persistence rates of 0.45 and 0.35 in spring and fall, rates which were considerably lower than during winter and summer (Hager et al. 2012). In other words, the concentration of fatalities during migration seasons would increase after applying seasonally-explicit adjustments for carcass persistence. Fatalities caused by collisions into the glass façades of the project's building would likely be concentrated in fall and spring migration periods.

(17) Ecology, demography and behavior.—Klem (1989) noted that certain types of birds were not found as common window-caused fatalities, including soaring hawks and waterbirds. Cusa et al. (2015) found that species colliding with buildings surrounded by higher levels of urban greenery were foliage gleaners, and species colliding with buildings surrounded by higher levels of urbanization were ground foragers. Sabo et al. (2016) found no difference in age class, but did find that migrants are more susceptible to collision than resident birds.

(18) Predatory attacks.—Panic flights caused by raptors were mentioned in 16% of window strike reports in Dunn's (1993) study. I have witnessed Cooper's hawks chasing birds into windows, including house finches next door to my home and a northern mocking bird chased directly into my office window. Predatory birds likely to collide with the project's windows would include Peregrine falcon, red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk.

(19) Aggressive social interactions.—I found no hypothesis-testing of the roles of aggressive social interactions in the literature other than the occasional anecdotal account of birds attacking their self-images reflected from windows. However, I have

witnessed birds chasing each other and sometimes these chases resulting in one of the birds hitting a window.

For most of the known or suspected collision risk factors, the proposed project's design remains insufficiently described to determine the degree to which the project would contribute to relative collision risk. Focused study of birds in the area could reduce the uncertainty of potential project impacts. Such studies could make use of radar (Gauthreaux et al. 2008) or visual scan surveys (Smallwood 2017). Key information useful for impacts assessment and mitigation would include intensity and timing of bird traffic, heights above ground, travel trajectories, and specific behaviors of birds in flight.

Window Collision Solutions

Given the magnitude of bird-window collision impacts, there are obviously great opportunities for reducing and minimizing these impacts going forward. Existing structures can be modified or retrofitted to reduce impacts, and proposed new structures can be more carefully sited, designed, and managed to minimize impacts. However, the costs of some of these measures can be high and can vary greatly, but most importantly the efficacies of many of these measures remain uncertain. Both the costs and effectiveness of all of these measures can be better understood through experimentation and careful scientific investigation. **Post-construction fatality monitoring should be an essential feature of any new building project**. Below is a listing of mitigation options, along with some notes and findings from the literature.

Any new project should be informed by preconstruction surveys of daytime and nocturnal flight activity. Such surveys can reveal the one or more façades facing the prevailing approach direction of birds, and these revelations can help prioritize where certain types of mitigation can be targeted. It is critical to formulate effective measures prior to construction, because post-construction options will be limited, likely more expensive, and probably less effective.

(1) Retrofitting to reduce impacts
(1A) Marking windows
(1B) Managing outdoor landscape vegetation
(1C) Managing indoor landscape vegetation
(1D) Managing nocturnal lighting

(1A) 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).

Following up on the results of Johnson and Hudson (1976), I decided to mark windows of my home, where I have documented 5 bird collision fatalities between the time I moved in and 6 years later. I marked my windows with decals delivered to me via US Postal Service from a commercial vendor. I have documented no fatalities at my windows during the 10 years hence. In my assessment, markers can be effective in some situations.

(2) Siting and Designing to minimize impacts
(2A) Deciding on location of structure
(2B) Deciding on façade and orientation
(2C) Selecting type and sizes of windows
(2D) Designing to minimize transparency through two parallel façades
(2E) Designing to minimize views of interior plants
(2F) Landscaping to increase distances between windows and trees and shrubs

(3) Monitoring for adaptive management to reduce impacts
(3A) Systematic monitoring for fatalities to identify seasonal and spatial patterns
(3B) Adjust light management, window marking and other measures as needed.

TRAFFIC IMPACTS ON WILDLIFE

According to the IS/MND (page 45), the project would generate an average of 16,382 daily miles traveled. This VMT prediction provides a basis for predicting one of the most important potential project impacts to wildlife. 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 or regional impacts can be more intense than at the national level.

In a recent study of traffic-caused wildlife mortality, investigators found 1,275 carcasses of 49 species of mammals, birds, amphibians and reptiles over 15 months of searches along a 2.5 mile stretch of Vasco Road in Contra Costa County, California (Mendelsohn et al. 2009). Using carcass detection trials performed on land immediately adjacent to the traffic mortality study (Brown et al. 2016) to adjust the found fatalities for the proportion of fatalities not found due to scavenger removal and searcher error, the estimated traffic-caused fatalities was 12,187. This fatality estimate translates to a rate of 3,900 wild animals per mile per year killed. In terms comparable to the national estimates, the estimates from the Mendelsohn et al. (2009) study would translate to 243,740 animals killed per 100 km of road per year, or 29 times that of Loss et al.'s (2014) upper bound estimate and 68 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.

Increased use of existing roads would increase wildlife fatalities (see Figure 7 in Kobylarz 2001). It is possible that project-related traffic impacts would far exceed the impacts of land conversion to use for a warehouse. Wildlife roadkill is not randomly distributed, and so it can be predicted. Causal factors include types of roadway, human population density, and temperature (Chen and Wu 2014), as well as time of day and adjacency and extent of vegetation cover (Chen and Wu 2014, Bartonička et al. 2018), and intersections with streams and riparian vegetation (Bartonička et al. 2018). For example, species of mammalian Carnivora are killed by vehicle traffic within 0.1 miles of stream crossings >40 times other than expected (K. S. Smallwood, 1989-2018 unpublished data). Reptiles are killed on roads where roadside fences end or where fences are damaged (Markle et al. 2017). There has even been a function developed to predict the number of golden eagles killed along the road, where the function includes traffic volume and density of road-killed animals available for eagles to scavenge upon (Lonsdorf et al. 2018). These factors also point the way toward mitigation measures, which should be formulated in an EIR.

Predicting project-generated traffic impacts to wildlife

The IS/MND predicts the project would generate an average of 16,382 daily miles traveled. This prediction translates to 5,979,430 annual vehicle miles traveled. This is a lot of mileage to be driven at great peril to wildlife that must cross roads to go about their business of foraging, patrolling home ranges, dispersing and migrating (Photos 10 and 11). Despite the obvious risk to wildlife, and despite the multiple papers and books written about this type of impact and how to mitigate them, the IS/MND does not address impacts to wildlife caused by vehicles traveling to and from the project site.

Photo 10. *A Gambel's quail dashes across a road* on *3 April 2021. Such road crossings are usually successful, but too often prove fatal to the animal. Photo by Noriko Smallwood.*

Photo 11. *A mourning dove killed by vehicle traffic on a California road. Photo by Noriko Smallwood, 21 June 2020.*

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 3,900 animals killed per mile along a county road in Contra Costa County. Two percent of the estimated number of fatalities were birds, and the balance was composed of 34% mammals (many mice and pocket mice, but also ground squirrels, desert cottontails, striped skunks, American badgers, raccoons, and others), 52.3% 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 11.7% reptiles (many western fence lizards, but also skinks, alligator lizards, and snakes of various species).

During the Mendelsohn et al. (2009) study, 19,500 cars traveled Vasco Road daily, so the vehicle miles that contributed to my estimate of wildlife fatalities was 19,500 cars and trucks × 2.5 miles × 365 days/year × 1.25 years = 22,242,187.5 vehicle miles per 12,187 wildlife fatalities, or 1,825 vehicle miles per fatality. Based on the daily VMT predicted by the IS/MND, the project would generate 5,979,430 vehicle miles per year, which divided by the 1,825 miles per fatality, would predict 3,276 wildlife fatalities per year. **Operations over 50 years would accumulate 163,820 wildlife fatalities**. It remains unknown whether and to what degree vehicle tires contribute to carcass removals from the roadway, thereby contributing a negative bias to the fatality estimates I made from the Mendelsohn et al. (2009) fatality counts. The Project's toll on wildlife could be even higher than I predict. The IS/MND does not address this impact in the least.

Based on my assumptions and simple calculations, the project-generated traffic would cause substantial, significant impacts to wildlife. There is at least a fair argument that can be made for the need to prepare an EIR to analyze this impact. Mitigation measures to improve wildlife safety along roads are available and are feasible, and they need exploration for their suitability with the proposed project.

CUMULATIVE IMPACTS

The IS/MND implies that cumulative impacts are really just residual impacts of incomplete mitigation of project-level impacts. It states, "As previously discussed, impacts related to the proposed Project are less than significant or can be reduced to less than significant levels with the incorporation of mitigation measures. The proposed Project's contribution to any significant cumulative impacts would be less than cumulatively considerable." If the IS/MND accurately represented CEQA's standard, then cumulative effects analysis would be merely an analysis of mitigation efficacy. And if that was the standard, then I must point out that none of the project-level impacts would be offset to any degree by the proposed preconstruction surveys to be performed for nesting birds. But the IS/MND's implied standard is not the standard of analysis of cumulative effects. CEQA defines cumulative impacts, and it outlines two general approaches for performing the analysis. The IS/MND has misrepresented the standard and failed to perform an appropriate analysis. An EIR needs to be prepared, and it needs to include an appropriate, serious analysis of cumulative impacts.

When it comes to wildlife, cumulative effects can often be interpreted as effects on the numerical capacity (Smallwood 2015), breeding success, genetic diversity, or other population performance metrics expressed at the regional scale. In the case of migrating birds, the project's cumulative effects could be measured as numerical reductions of breeding birds at far-off breeding sites as migrating adults and next-year's recruits lose access to stop-over habitat. In the cases of wildlife species that are susceptible to traffic collisions, the project's contribution to ongoing and foreseeable traffic-caused mortality can be measured or predicted. Even crude predictions of cumulative impacts are imperative. A fair argument can be made for the need to prepare an EIR to adequately address the project's potential contributions to cumulative impacts on wildlife in the region.

MITIGATION

BIO-1: Preconstruction survey for breeding birds

The IS/MND proposes preconstruction surveys for nesting birds and roosting bats. Preconstruction surveys should be performed, but not as substitute for detection surveys. Preconstruction surveys are not designed or intended to *reduce* project impacts, let alone to reduce impacts to less than significant levels; they are not even designed to assess impacts. Preconstruction surveys are only intended as last-minute, one-time salvage and rescue operations targeting readily detectable nests or individuals before they are crushed under heavy construction machinery. Because most special-status species are rare and cryptic, and because most species are expert at hiding their nests lest they get predated, most of them will not be detected by preconstruction surveys.

Detection surveys are needed to inform preconstruction take-avoidance surveys by mapping out where biologists performing preconstruction surveys are most likely to find animals before the tractor blade finds them. Detection surveys were designed by species experts, often undergoing considerable deliberation and review before adoption. Detection surveys often require repeated efforts using methods known to maximize likelihoods of detection. Detection surveys are needed to assess impacts and to inform the formulation of appropriate mitigation measures, because preconstruction surveys are not intended for these roles either. What is missing from the IS/MND, and what is in greater need than preconstruction surveys, are detection surveys consistent with guidelines and protocols that wildlife ecologists have uniquely developed for use with each special-status species. What is also missing is compensatory mitigation of unavoidable impacts.

Following detection surveys, preconstruction surveys should be performed. However, an EIR should be prepared, and it should detail how the results of preconstruction surveys will be reported. Without reporting the results, preconstruction surveys are vulnerable to serving as an empty gesture rather than a mitigation measure. For these reasons, this mitigation measure is insufficient to reduce the project's impacts to nesting birds to less than significant.

RECOMMENDED MEASURES

Detection Surveys

Detection surveys are needed for each of the special-status species in Table 2. Detection surveys are needed for nesting birds and for bats. For bats, I recommend deployment of acoustic detectors and use of thermal-imaging. For birds, I recommend a rigorous nest survey in the absence of an impending construction schedule, including the mapping of nest sites of each species. Because ground squirrels occur in the project area, breeding-season burrowing owl surveys need to be implemented (CDFW 2012), but they should be implemented prior to the circulation of an EIR to more appropriately address potential impacts to burrowing owls and mitigation of those impacts.

Habitat Loss and Wildlife Movement

The IS/MND provides no mitigation for adverse impacts from habitat loss or to regional movement of wildlife. At a minimum, substantial compensatory mitigation is needed in response to the project's impacts from habitat loss and interference with wildlife movement, including impacts to birds and bats using the site as stop-over or staging during migration. The proposed project site composes one of the last patches of open space available to birds and bats on long-distance dispersal or migration flights.

Guidelines on Building Design to Minimize Bird-Window Collisions

If the project goes forward, it should adhere to the available guidelines prepared by American Bird Conservancy and the Cities of New York and San Francisco. The American Bird Conservancy (ABC) produced an excellent set of guidelines that recommend 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.

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

Road Mortality

Compensatory mitigation is needed for the increased wildlife mortality that will be caused by the project's contribution to increased 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. Compensatory mitigation can also be provided in the form of donations to wildlife rehabilitation facilities (see below).

Fund Wildlife Rehabilitation Facilities

Compensatory mitigation ought also to include funding contributions to wildlife rehabilitation facilities to cover the costs of injured animals that will be delivered to these facilities for care. Most of the injuries will likely be caused by the increased trip generation of cars and trucks. Many animals need treatment caused by collision injuries and an increasing number appear to be injured by the turbulence of passing trucks.

Thank you for your attention,

Shawn Smallwood

Shawn Smallwood, Ph.D.

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Exhibit C

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

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September 30, 2021

Richard Drury
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Subject: Comments on the Alta Cuvee Mixed Use Project

Dear Mr. Drury,

We have reviewed the August 2021 Initial Study/Mitigated Negative Declaration ("IS/MND") for the Alta Cuvee Mixed Use Project ("Project") located in the City of Rancho Cucamonga ("City"). The Project proposes to construct a 260-unit apartment building, 3,339-SF of commercial space, 5,500-SF of amenity space, as well as a total of 465 parking spaces, on the 5.2-acre site.

Our review concludes that the IS/MND fails to adequately evaluate the Project's air quality, health risk, and greenhouse gas impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An EIR should be prepared to adequately assess and mitigate the potential air quality, health risk, and greenhouse gas impacts that the project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The IS/MND's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2 (p. 4-8).[1] CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project's

[1] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project's CalEEMod output files, provided in the Air Quality Impacts Assessment ("AQ Assessment") and the Greenhouse Gas Emissions Impacts Assessment ("GHG Assessment") as Appendix A and Appendix F to the IS/MND, respectively, we found that several model inputs were not consistent with information disclosed in the IS/MND. As a result, the Project's construction and operational emissions are underestimated. As a result, an EIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Incorrect CO_2 Intensity Factor

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" and "Alta Cuvee Bus Bay" models include a reduction to the default CO_2 intensity factor (see excerpts below) (Appendix A, pp. 30, 91; Appendix F, pp. 28, 87).

"Alta Cuvee Mixed-Use Project"

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	702.44	531.98

"Alta Cuvee Bus Bay"

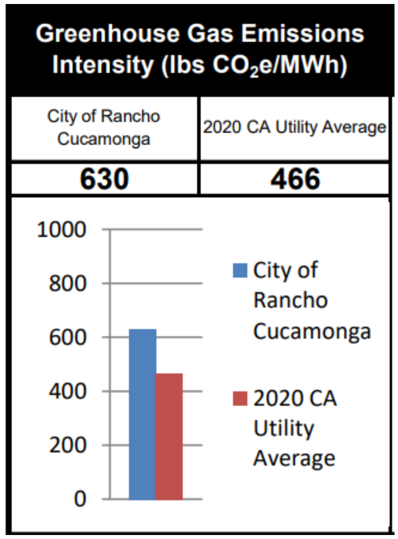
Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	702.44	471.24

As you can see in the excerpts above, the CO_2 intensity factor was decreased from the default value of 702.44- to 531.98- and 471.24-pounds per megawatt hour ("lbs/MWhr"), respectively, in the models. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[2] According to the "User Entered Comments and Non-Default Data" table, the justifications for this change are (see excerpt below) (Appendix A, pp. 26, 91; Appendix F, pp. 23, 86):

- "Electricity supplied by Rancho Cucamonga Municipal Utility, which is not available as input selection. SCE used as surrogate"
- "SB 100 mandates 44% renewable by end of 2024. SCE CO2 factor assumes 40% renewables when operations begin. SCE 2019 power mix = 36% renewables"

However, these justifications remain insufficient. Review of the Rancho Cucamonga Municipal Utility 2020 Power Content Label demonstrates that the City's CO_2 intensity factor is 630 lbs/MWh (see excerpt below)[3]:

[2] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[3] 2020 POWER CONTENT LABEL, Rancho Cucamonga Municipal Utility, *available at:* https://cityofrc.prod.acquia-sites.com/sites/default/files/2021-08/ENG-RCMU%20PCL%202020.pdf.



As such, the CO_2 intensity factor is underestimated by approximately 98- and 159-lbs/MWhr, respectively.

These inconsistencies present an issue, as CalEEMod uses the CO_2 intensity factor to calculate the Project's GHG emissions associated with electricity use.[4] Thus, by including an underestimated CO_2 intensity factor, the models underestimate the Project's potential GHG emissions and should not be relied upon to determine Project significance.

Failure to Model All Required Parking

Regarding the amount of required and proposed parking on the Project site, the IS/MND provides the following table (see excerpt below) (p. 1-15, Table 1-2):

Table 1-2. Required and Proposed Parking

Floorplan	Units	Required Parking Per Unit	Total Parking Required	Total Parking Proposed	Requested Parking Exception
A (1 Bedroom)	184	1.5	276	414	13 (3%)
B (2 Bedroom)	55	2	110		
C (3 Bedroom)	20	2	40		
Live/Work (1 Bedroom)	1	1.5	1		
Commercial	3,339 SF	1 space/250 SF	4	4	9 (69%)
Guests	260	0.33	86	47	39 (45%)
Total	**260**	**-**	**526**	**465**	**61 (12%)**

Source: City of Rancho Cucamonga Municipal Code Table 17.64.050-1 for multi-family development.

Note: The parking code requires more than half of the parking for multifamily development to be garaged; the proposed Project does not provide dedicated garages for reach unit.

[4] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.caleemod.com/, p. 17.

Additionally, regarding the requested parking exception, the IS/MND states:

> "The 12 percent parking reduction would require a minor exception approval from the City of Rancho Cucamonga. The parking exception must be compatible with the surrounding area and adjoining uses. In compliance with the City Code, a parking management plan (Appendix I) has been completed to demonstrate how the proposed land uses would utilize the parking spaces, assign parking spaces to apartment units, and support the 12 percent parking reduction."

As demonstrated above, the Project is pending approval from the City to reduce the amount of parking by 12%, from 526 to 465 spaces. As this request is yet to be approved, the model should have included the entire amount of required parking in order to conduct the most conservative analysis. However, review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use" model includes only 465 parking spaces[5] (Appendix A, pp. 25; Appendix F, pp. 23).

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	7.60	1000sqft	0.00	4,900.00	0
Enclosed Parking with Elevator	265.00	Space	0.00	106,000.00	0
Parking Lot	200.00	Space	1.80	80,000.00	0
City Park	0.33	Acre	0.33	14,374.80	0
Recreational Swimming Pool	3.00	1000sqft	0.07	3,000.00	0
Apartments Mid Rise	259.00	Dwelling Unit	3.00	228,000.00	785
Condo/Townhouse	1.00	Dwelling Unit	0.00	1,570.00	3
Strip Mall	3.34	1000sqft	0.00	3,339.00	0

As you can see in the excerpt above, the total amount of required parking is underestimated by 61 spaces. This is incorrect, as we are unable to verify if the City will approve or deny the Project's requested parking exception.

This potential underestimation presents an issue, as CalEEMod uses the square footage of parking for certain calculations such as determining the area to be painted and stripped (i.e., VOC emissions from architectural coatings) and volume to be ventilated (i.e., energy impacts).[6] Thus, by failing to include the total amount of required parking spaces, the model underestimates the Project's construction-related and operational emissions and should not be relied upon to determine Project significance.

Unsubstantiated Reduction to Land Use Size

According to the IS/MND, the Project proposes to construct "259 apartment units, ranging from 715 square feet to 1,367 square feet" (p. 1-13). Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes the correct *number* of residential units (see excerpt below) (Appendix A, pp. 25; Appendix F, pp. 23).

[5] 265 "Enclosed Parking with Elevator" spaces + 200 "Parking Lot" spaces = 465

[6] "CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2.

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	7.60	1000sqft	0.00	4,900.00	0
Enclosed Parking with Elevator	265.00	Space	0.00	106,000.00	0
Parking Lot	200.00	Space	1.80	80,000.00	0
City Park	0.33	Acre	0.33	14,374.80	0
Recreational Swimming Pool	3.00	1000sqft	0.07	3,000.00	0
Apartments Mid Rise	259.00	Dwelling Unit	3.00	228,000.00	785
Condo/Townhouse	1.00	Dwelling Unit	0.00	1,570.00	3
Strip Mall	3.34	1000sqft	0.00	3,339.00	0

However, further review demonstrates that the *square footage* associated with the residential land use floor surface area was reduced from the default value of 259,000- to 228,000-SF (see excerpt below) (Appendix A, pp. 29; Appendix F, pp. 27).

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	259,000.00	228,000.00

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[7] According to the "User Entered Comments & Non-Default Data" table, the justification provided for this change is: "Site Plan; Project population" (Appendix A, pp. 25; Appendix F, pp. 23). Furthermore, as previously stated, the IS/MND indicates that the apartment units will range from 715-SF to 1,367-SF (p. 1-13). Thus, the total square footage of the residential space will range from 185,185-SF[8] to 354,053-SF.[9] Regardless, as the IS/MND fails to explicitly state the total square footage of the residential land use, the reduction to the default floor surface area is unsubstantiated.

This unsubstantiated reduction presents an issue, as the land use size feature is used throughout CalEEMod to determine default variable and emission factors that go into the model's calculations. The square footage of a land use is used for certain calculations such as determining the wall space to be painted (i.e., VOC emissions from architectural coatings) and volume that is heated or cooled (i.e., energy impacts).[10] Thus, by including an unsubstantiated reduction to the residential floor surface area, the model may underestimate the Project's construction-related and operational emissions, and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Architectural and Area Coating Emission Factors

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes several reductions to the default architectural coating emission factors (see excerpt below) (Appendix A, pp. 27; Appendix F, pp. 25).

[7] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[8] Calculated: 715-SF * 259 units = 185,185-SF total.
[9] Calculated: 1,367-SF * 259 units = 354,053-SF total.
[10] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 28.

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

As you can see in the excerpt above, the nonresidential exterior and interior architectural and area coating emission factors were each reduced from the default value of 100- to 50-grams per liter ("g/L"). As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[11] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "SCAQMD Building Envelope - 50 g/L" (Appendix A, 26; Appendix F, pp. 24). However, these changes remain unsupported for two reasons.

First, the IS/MND and associated documents fail to mention the building envelope category of paint, and its associated VOC content limit of 50 g/L as required by SCAQMD Rule 1113, whatsoever. Second, the IS/MND and associated documents fail to explicitly require the Project to use only building envelope coatings during Project construction and operation of the proposed nonresidential land uses whatsoever. As such, we cannot verify that the revised values are accurate.

These unsubstantiated reductions present an issue, as CalEEMod uses the architectural and area coating emission factors to calculate the Project's reactive organic gas/volatile organic compound ("ROG"/"VOC") emissions.[12] Thus, by including unsubstantiated reductions to the default architectural and area coating emission factors, the model may underestimate the Project's construction-related and operational ROG/VOC emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Gas Fireplace Values

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes several reductions to the default gas fireplace values (see excerpt below) (Appendix A, pp. 28; Appendix F, pp. 26).

[11] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

[12] CalEEMod User Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 35, 40.

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	220.15	0.00
tblFireplaces	NumberGas	0.85	0.00
tblFireplaces	NumberNoFireplace	25.90	0.00
tblFireplaces	NumberNoFireplace	0.10	0.00
tblFireplaces	NumberWood	12.95	0.00
tblFireplaces	NumberWood	0.05	0.00

As you can see in the excerpt above, the model assumes that the Project would not include any gas fireplaces. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[13] However, the "User Entered Comments & Non-Default Data" table fails to provide a justification (Appendix A, pp. 25-27; Appendix F, pp. 23-25). Furthermore, the IS/MND indicates that the east building would include a courtyard with an outdoor fireplace (p. 1-13). As such, the IS/MND states at least one fireplace would be installed on the Project site. However, the IS/MND fails to mention or justify the assumption that no gas fireplaces would be included in the residential building. As such, we cannot verify the revised number of gas fireplaces.

This potential underestimation presents an issue, as CalEEMod uses the number of gas fireplaces to calculate the Project's area-source operational emissions.[14] Thus, by including unsubstantiated reductions to the number gas fireplaces, the model may underestimate the Project's area-source operational emissions and should not be relied upon to determine Project significance.

Incorrect Solid Waste Generation Rates

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes several reductions to the default solid waste generation rates (see excerpts below) (Attachment A, pp. 30; Appendix F, pp. 28).

Table Name	Column Name	Default Value	New Value
tblSolidWaste	SolidWasteGenerationRate	119.14	119.60
tblSolidWaste	SolidWasteGenerationRate	7.07	0.00
tblSolidWaste	SolidWasteGenerationRate	17.10	0.00

As you can see in the excerpt above, the total solid waste generation rate was cumulatively decreased by 23.71 tons per year ("tons/year").[15] As previously mentioned, the CalEEMod User's Guide requires

[13] CalEEMod User's Guide, *available at: :* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 2, 9.
[14] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 40.
[15] Calculated: (119.14 tons/year + 7.07 tons/year + 17.10 tons/year) – (119.60 tons/year) = 23.71 tons/year.

any changes to model defaults be justified.[16] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "Remove duplicate waste generation" (Appendix A, 26; Appendix F, pp. 24). Furthermore, regarding the Project's anticipated solid waste generation rate, the IS/MND states:

> "It is anticipated that the proposed Project would accommodate approximately 788 future residents, and operational activities would generate approximately 1.6 tons per day of solid waste during Project operation" (p. 4-73).

As demonstrated above, the Project anticipates generating 1.6 tons of solid waste per day, or roughly 584 tons/year.[17] However, the model includes a total of only 123.6 tons/year[18] (see excerpt below) (Appendix A, pp. 85; Appendix F, pp. 82).

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	119.6	24.2777	1.4348	0.0000	60.1470
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Condo/Townhouse	0.46	0.0934	5.5200e-003	0.0000	0.2313
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	3.51	0.7125	0.0421	0.0000	1.7652
Total		**25.0897**	**1.4828**	**0.0000**	**62.1586**

As such, the solid waste included in the model is underestimated by 460.4 tons/year.[19] Thus, the model is inconsistent with the information provided in the IS/MND.

This underestimation presents an issue, as CalEEMod uses the solid waste generation rates to calculate the Project's operation GHG emissions associated with the disposal of solid waste into landfills.[20] Thus, by including underestimated solid waste generation rates, the model underestimates the Project's operational GHG emissions and should not be relied upon to determine Project significance.

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[16] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[17] (1.6 tons/day) x 365 days = 584 tons/year.
[18] (119.6 tons/year for "Apartments Mid Rise") + (0.03 tons/year for "City Park") + (0.46 tons/year for "Condo/Townhouse") + (3.51 tons/year "Strip Mall") = 123.6 tons/year of total solid waste.
[19] (584 tons/year proposed by the IS/MND) – (123.6 tons/year included in the model)
[20] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 46.

Underestimated Operational Vehicle Fleet Mix Percentages

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use" model includes several changes to the default operational vehicle fleet mix percentages (see excerpts below) (Appendix A, pp. 28-29; Appendix F, pp. 26-27).

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.07	0.00
tblFleetMix	HHD	0.07	0.00
tblFleetMix	LDA	0.56	0.60
tblFleetMix	LDA	0.56	0.60
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.18	0.19
tblFleetMix	LDT2	0.18	0.19
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD2	4.7940e-003	5.0000e-003
tblFleetMix	LHD2	4.7940e-003	5.0000e-003
tblFleetMix	MCY	5.7250e-003	0.01
tblFleetMix	MCY	5.7250e-003	0.01
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MH	8.3000e-004	0.00
tblFleetMix	MH	8.3000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.3650e-003	0.00
tblFleetMix	OBUS	1.3650e-003	0.00
tblFleetMix	SBUS	7.9900e-004	0.00
tblFleetMix	SBUS	7.9900e-004	0.00
tblFleetMix	UBUS	1.4910e-003	0.00
tblFleetMix	UBUS	1.4910e-003	0.00

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[21] According to the "User Entered Comments & Non-Default Data" table, the justification provided for these changes is: "Residential Trips" (Appendix A, pp. 27; Appendix F, pp. 25). However, these changes remain unsupported, as the IS/MND and associated documents fail to mention the operational vehicle fleet mix or justify the revised percentages whatsoever. According to the CalEEMod User's Guide:

[21] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

"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" (emphasis added).[22]

Here, as the IS/MND fails to provide substantial evidence to support the revised operational vehicle fleet mix percentages, we cannot verify the changes.

These unsubstantiated changes present an issue, as operational vehicle fleet mix percentages are used by CalEEMod to calculate the Project's operational emissions associated with on-road vehicles.[23] Thus, by including unsubstantiated changes to the default operational vehicle fleet mix, the model may underestimate the Project's mobile-source operational emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Off-Road Equipment Horsepower Values

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes several changes to the default off-road construction equipment horsepower values (see excerpt below) (Appendix A, pp. 30; Appendix F, pp. 28).

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	HorsePower	78.00	15.00
tblOffRoadEquipment	HorsePower	78.00	15.00

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[24] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is: "Project Inventory" (Appendix A, pp. 26; Appendix F, pp. 24). However, the IS/MND and associated documents fail to mention or justify the revised horsepower values whatsoever. 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" (emphasis added).[25]

Here, as the IS/MND fails to provide substantial evidence to support the revised horsepower values, we cannot verify the changes.

These unsubstantiated changes present an issue, as CalEEMod uses horsepower values to calculate emissions associated with off-road construction equipment.[26] By including unsubstantiated changes to the default off-road construction equipment horsepower values, the model may underestimate the

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[22] CalEEMod Model 2013.2.2 User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/usersguideSept2016.pdf?sfvrsn=6, p. 12.
[23] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[24] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[25] CalEEMod Model 2013.2.2 User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/usersguideSept2016.pdf?sfvrsn=6, p. 12.
[26] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 32.

Project's construction-related emissions and should not be relied upon to determine Project significance.

Incorrect Application of Construction-related Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes the following construction-related mitigation measure (see excerpt below) (Appendix A, pp. 38; Appendix F, pp. 36):

3.1 Mitigation Measures Construction

Water Exposed Area

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[27] According to the "User Entered Comments & Non-Default Data" table, the justification provided for this inclusion is: "SCAQMD Rule 403" (Appendix A, pp. 24; Appendix F, pp. 22). However, the inclusion of the above-mentioned construction-related mitigation measure remains unsupported for two reasons.

First, the inclusion of the construction-related mitigation measures, based on the Project's compliance with SCAQMD Rule 403, is unsupported. According to the Association of Environmental Professionals ("AEP") *CEQA Portal Topic Paper* on mitigation measures:

> "By definition, mitigation measures are not part of the original project design. Rather, mitigation measures are actions taken by the lead agency to reduce impacts to the environment resulting from the original project design. Mitigation measures are identified by the lead agency after the project has undergone environmental review and are above-and-beyond existing laws, regulations, and requirements that would reduce environmental impacts."[28]

As you can see in the excerpt above, mitigation measures are not part of the original project design and are intended to go above-and-beyond existing regulatory requirements. As such, the inclusion of these measures, based solely on SCAQMD Rule 403, is unsubstantiated.

Second, according to the above-mentioned AEP report:

> "While not 'mitigation', a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project

[27] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

[28] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 5.

that could eliminate one or more of the design features without understanding the resulting environmental impact."[29]

As you can see in the excerpts above, project design features ("PDFs") that are not formally included as mitigation measures may be eliminated from the Project's design altogether. Thus, as the above-mentioned construction-related measure is not formally included as a mitigation measure, we cannot guarantee that it would be implemented, monitored, and enforced on the Project site. By including a construction-related mitigation measures without properly committing to its implementation, the model may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

Incorrect Application of Operational Mitigation Measures

Review of the CalEEMod output files demonstrates that the "Alta Cuvee Mixed-Use Project" model includes the following energy-, area-, and water-related operational mitigation measures (see excerpts below) (Attachment A, pp. 72, 77, 79; Appendix F, pp. 70, 75, 77):

Energy-Related Mitigation Measures:

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

Area-Related Mitigation Measures:

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

Water-Related Mitigation Measures:

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Use Water Efficient Irrigation System

[29] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

As a result of the above-mentioned water-related operational mitigation measures, the model includes an efficient irrigation water use reduction of 20% (see excerpt below) (Appendix A, pp. 32; Appendix F, pp. 30).

Table Name	Column Name	Default Value	New Value
tblWaterMitigation	UseWaterEfficientIrrigationSystemPercentReduction	6.1	20

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[30] However the "User Entered Comments and Non-Default Data" table, only provides justification for the inclusion of the area-related operational mitigation measures, which states: "SCAQMD Rule 1113" (Appendix A, pp. 27; Appendix F, pp. 25). Furthermore, regarding sustainable design features, the IS/MND states:

> "The proposed Project would be designed to exceed the 2019 Title 24 energy efficient standards by approximately 7.2 percent in one building and by approximately 2.5 percent in the other, approximately 10 percent more efficient than 2016 Title 24 standards [...]
>
> Water and energy efficient mechanical equipment and electric appliances (i.e., heating, ventilation, and air conditioning (HVAC), water heaters, kitchen appliances and plumbing) that require less usage intensity for operation and comply with Title 24 of the California Government Code" (p. 1-15).

However, the inclusion of the above-mentioned operational mitigation measures remains unsupported for two reasons.

First, the inclusion of the operational mitigation measures, based on the Project's purported compliance with Title 24 and SCAQMD Rule 1113, is unsupported. As previously stated, according to the AEP *CEQA Portal Topic Paper* on mitigation measures:

> "By definition, mitigation measures are not part of the original project design. Rather, mitigation measures are actions taken by the lead agency to reduce impacts to the environment resulting from the original project design. Mitigation measures are identified by the lead agency after the project has undergone environmental review and are above-and-beyond existing laws, regulations, and requirements that would reduce environmental impacts."[31]

As you can see in the excerpt above, mitigation measures "are not part of the original project design" and are intended to go "above-and-beyond" existing regulatory requirements. As such, the inclusion of these measures, based on the Project's vague compliance with Title 24 and SCAQMD Rule 1113, is unsubstantiated.

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[30] CalEEMod User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 2, 9.

[31] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 5.

Second, the IS/MND fails to formally include the above-mentioned design features as Project-level mitigation measures. This is incorrect, as AEP guidance states:

> "While not "mitigation", a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact" (emphasis added).[32]

As you can see in the excerpt above, design features that are not formally included as mitigation measures in a Mitigation Monitoring and Reporting Program ("MMRP") may be eliminated from the Project's design altogether. Thus, as the above-mentioned energy-, area-, and water-related operational measures are not formally included as mitigation measures, we cannot guarantee that they would be implemented, monitored, and enforced on the Project site. As a result, the inclusion of the above-mentioned operational mitigation measures in the model is incorrect. By including several operational mitigation measures without properly committing to their implementation, the model may underestimate the Project's operational emissions and should not be relied upon to determine Project significance.

Failure to Provide Summer and Winter CalEEMod Output Files

As previously discussed, the IS/MND's air quality analysis relies on emissions calculated by CalEEMod.2016.3.2 (p. 4-8).[33] CalEEMod provides three types of output files – annual, summer, and winter. Specifically, the CalEEMod User's Guide states:

> "The available reports include: Annual, Summer (peak) Daily, Winter (peak) Daily, Mitigation and Summary of peak daily emissions and annual GHG emissions.[34]

As demonstrated above, the CalEEMod summer and winter output files provide peak daily emissions estimates in pounds per day ("lbs/day"). Furthermore, the IS/MND quantifies the Project's construction-related and operational maximum daily criteria air pollutant emissions and compares them to the applicable SCAQMD thresholds (see excerpts below) (p. 4-8, Table 4.3-1 4-9, Table 4.3-2).

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[32] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.
[33] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.
[34] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 61.

Table 4.3-1. Maximum Regional Daily Emissions During Construction

	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Maximum Regional Daily Emissions	29.1	69.8	81.3	0.2	8.9	4.1
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	No	No	No	No	No	No

Source: TAHA 2021

CO = carbon monoxide; lbs/day = pounds per day; NOx = nitrogen oxide; PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; SOx = sulfur oxide; VOC = volatile organic compounds

Table 4.3-2. Daily Operational Emissions (2024)

	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Daily Operational Emissions[1]	8.7	6.0	56.3	0.1	12.8	3.6
Regional Significance Threshold	55	55	550	150	150	55
Exceed Threshold?	No	No	No	No	No	No

Source: TAHA 2021

1 Includes area (e.g., consumer products and landscaping), energy (consumption of energy), and mobile (e.g., vehicle trips) sources

CO = carbon monoxide; lbs/day = pounds per day; NOx = nitrogen oxide; PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; SOx = sulfur oxide; VOC = volatile organic compounds

However, review of the AQ Assessment and GHG Assessment demonstrates that the summer and winter CalEEMod output files are not disclosed. As such, we cannot verify that the above-mentioned emissions estimates are an accurate reflection of the peak daily emissions reported in the IS/MND's CalEEMod output files. As the IS/MND fails to provide the summer and winter output files, the IS/MND's air quality analysis should not be relied upon to determine Project significance. An EIR should be prepared to include an adequate air quality analysis and disclose all CalEEMod output files.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The IS/MND concludes that the proposed Project would have a less-than-significant health risk impact without conducting a quantified construction or operational health risk analysis ("HRA"). Specifically, regarding potential health risk impacts associated with Project construction, the IS/MND states:

> "The SCAQMD has not established a mass daily screening threshold for diesel emissions, and the only established TAC significance thresholds require estimating concentrations of TAC in ambient air resulting from project emissions using intensive air dispersion modeling. However, the low magnitude of diesel exhaust emissions from construction equipment combined with the brevity of the construction period and local meteorological characteristics indicate that the proposed Project would not generate substantial emissions over an extended period of time that could cause a health risk to adjacent land uses. In addition, the size of the Project site indicates that only during a limited portion of construction activities would heavy-duty diesel-powered equipment be operating within 100 feet of sensitive receptors, and all construction equipment would be maintained in accordance with the CARB Portable Engine Air Toxics Control Measure and the Off-Road Diesel Regulation to control emissions to the maximum extent feasible. Therefore, construction of the proposed Project would result in a less than significant impact related to pollutant concentrations at sensitive receptor locations" (p. 4-11).

As demonstrated above, the IS/MND concludes that the Project would result in a less-than-significant construction-related health risk impact because the low magnitude of diesel exhaust emissions from construction equipment, the short-term construction schedule, and the local meteorological conditions would not generate substantial toxic air contaminant ("TAC") emissions. Furthermore, regarding potential health risk impacts associated with Project operation, the IS/MND states:

> "The proposed Project would introduce a new multi-family residential land use to the City of Rancho Cucamonga and would be consistent with existing surrounding land use developments. Operation of the proposed Project would not create a new substantial permanent source of air pollutant emissions to the Project area. The proposed Project does not involve large boilers, generators, or any other equipment or facilities that would warrant special permitting under SCAQMD regulations. The operational emissions analysis shown in Table 4.3-2 demonstrates that operation of the proposed Project would not produce emissions capable of resulting in substantial pollutant concentrations at sensitive receptor locations. Therefore, operation of the proposed Project would result in less than significant impacts related to substantial pollutant concentrations at sensitive receptor locations" (p. 4-12).

As demonstrated in the excerpt above, the IS/MND concludes that the Project would result in a less-than-significant operational health risk impact because the Project's operational criteria air pollutants would not result in substantial pollutant concentrations at sensitive receptor locations. However, the IS/MND fails to mention or discuss the Project's operational TAC emissions whatsoever. However, the IS/MND's evaluation of the Project's potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is incorrect for three reasons.

First, by failing to quantitatively evaluate the Project's construction-related and operational TAC emissions, the IS/MND fails to make a reasonable effort to connect these emissions to potential health risk impacts posed to nearby existing sensitive receptors. This is incorrect, as construction of the proposed Project would produce diesel particulate matter ("DPM") emissions through the exhaust stacks of construction equipment over a potential construction period of approximately 24 months (p. 1-16). Furthermore, the IS/MND indicates that Project operation would generate approximately 1,503 average daily vehicle trips, which would generate additional exhaust emissions and continue to expose nearby sensitive receptors to DPM emissions (p. 4-9). However, the IS/MND fails to discuss Project-generated TACs or indicate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the Project's construction-related and operational TAC emissions to the potential health risks posed to nearby receptors, the IS/MND is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the Project with the potential adverse impacts on human health.

Second, the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* in February 2015. This guidance document describes the types of projects that warrant the preparation of an HRA. The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors. As the Project's construction duration vastly exceeds the 2-month requirement set forth by OEHHA, it is clear that the Project meets the threshold warranting a quantified HRA under OEHHA guidance. Furthermore, the OEHHA document recommends that exposure from projects lasting more than 6 months be evaluated for the duration of the project and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident ("MEIR"). Even though we were not provided with the expected lifetime of the Project, we can reasonably assume that the Project will operate for at least 30 years, if not more. Therefore, we recommend that health risk impacts from Project operation also be evaluated, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA. These recommendations reflect the most recent state health risk policies, and as such, we recommend that an analysis of health risk impacts posed to nearby sensitive receptors from Project-generated DPM emissions be included in an EIR for the Project.

Third, by claiming a less than significant impact without conducting a quantified construction or operational HRA for nearby, existing sensitive receptors, the IS/MND fails to compare the excess health risk impact to the applicable SCAQMD threshold of 10 in one million.[35] Thus, pursuant to CEQA, an analysis of the health risk posed to nearby, existing receptors from Project construction and operation should have been conducted.

Screening-Level Analysis Indicates a Potentially Significant Health Risk Impact

In order to conduct our screening-level risk analysis we relied upon AERSCREEN, which is a screening level air quality dispersion model.[36] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[37] and the California Air Pollution Control Officers Associated ("CAPCOA")[38] guidance as the appropriate air dispersion model for Level 2 health risk screening analyses ("HRSAs"). A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

In order to estimate the health risk impacts posed to residential sensitive receptors as a result of the Project's construction-related and operational TAC emissions, we prepared a preliminary HRA using the annual PM_{10} exhaust estimates from the CalEEMod output files included in the IS/MND. Consistent with recommendations set forth by OEHHA, we assumed residential exposure begins during the third trimester stage of life. The IS/MND's CalEEMod model indicates that construction activities will generate

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[35] "South Coast AQMD Air Quality Significance Thresholds." SCAQMD, April 2019, available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

[36] U.S. EPA (April 2011) AERSCREEN Released as the EPA Recommended Screening Model, http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf

[37] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf

[38] CAPCOA (July 2009) Health Risk Assessments for Proposed Land Use Projects, http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf.

approximately 799 pounds of DPM over the 735-day construction period.[39] 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 Project construction, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{799.2\ lbs}{735\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00571\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.00571 grams per second ("g/s"). Subtracting the 735-day construction period from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 28 years, approximately. The IS/MND's operational CalEEMod emissions indicate that operational activities will generate approximately 86 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM rate, we estimated the following emission rate for Project operation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{85.8\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00123\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.00123 g/s. Construction and operational activity was simulated as a 5.2-acre rectangular area source in AERSCREEN with dimensions of approximately 205- by 103-meters. A release height of three meters was selected to represent the height of exhaust stacks on 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 AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[40] The IS/MND indicates that the nearest sensitive receptors are residences 50 feet, or 15 meters, away from the project site (p. 4-47, Table 4.13-4). However, review of the AERSCREEN output files demonstrates that the maximally exposed individual resident ("MEIR") is located approximately 100 meters from the Project site. Thus, the single-hour concentration estimated by AERSCREEN for Project construction is approximately 9.101 µg/m^3 DPM at approximately 100 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.9101 µg/m^3 for Project construction at the MEIR. For Project operation, the single-hour concentration estimated by AERSCREEN is 1.967 µg/m^3 DPM at approximately 100 meters downwind. Multiplying this single-hour

[39] See Attachment B for calculations.

[40] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 4-36.

concentration by 10%, we get an annualized average concentration of 0.1967 μg/m^3 for Project operation at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA. Consistent with the 735-day construction schedule included in the Project's CalEEMod output files, the annualized average concentration for Project construction was used for the entire third trimester of pregnancy (0.25 years) and the first 1.76 years of the infantile stage of life (0 – 2 years); and the annualized averaged concentration for operation was used for the remainder of the 30-year exposure period, which makes up the remaining and the 0.24 years of the infantile stage of life (0 – 2 years), the entire child stage of life, and the entire adult stage of life (16 – 30 years).

Consistent with OEHHA guidance and recommended by the SCAQMD, BAAQMD, and SJVAPCD guidance, we used Age Sensitivity Factors ("ASF") to account for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution.[41, 42, 43] According to this guidance, the quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant), as well as multiplied by a factor of three during the child stage of life (2 – 16 years). We also included the quantified cancer risk without adjusting for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution in accordance with older OEHHA guidance from 2003. This guidance utilizes a less health protective scenario than what is currently recommended by SCAQMD, the air quality district with jurisdiction over the City, and several other air districts in the state. Furthermore, in accordance with the guidance set forth by OEHHA, we used the 95th percentile breathing rates for infants.[44] Finally, according to SCAQMD guidance, we used a Fraction of Time At Home ("FAH") Value of 1 for the 3rd trimester and infant receptors.[45] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. The results of our calculations are shown below.

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[41] "Draft Environmental Impact Report (IS/MND) for the Proposed The Exchange (SCH No. 2018071058)." SCAQMD, March 2019, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2019/march/RVC190115-03.pdf?sfvrsn=8, p. 4.

[42] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. 56; see also "Recommended Methods for Screening and Modeling Local Risks and Hazards." BAAQMD, May 2011, *available at:* http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20Modeling%20Approach.ashx, p. 65, 86.

[43] "Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document." SJVAPCD, May 2015, *available at:* https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf, p. 8, 20, 24.

[44] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," July 2018, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588supplementalguidelines.pdf, p. 16.
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

[45] "Risk Assessment Procedures for Rules 1401, 1401.1, and 212." SCAQMD, August 2017, *available at:* http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1401/riskassessmentprocedures_2017_080717.pdf, p. 7.

The Maximally Exposed Individual at an Existing Residential Receptor							
Age Group	**Emissions Source**	**Duration** (years)	**Concentration** (ug/m3)	**Breathing Rate** (L/kg-day)	**Cancer Risk** (without ASFs*)	**ASF**	**Cancer Risk** (with ASFs*)
3rd Trimester	Construction	0.25	0.9101	361	1.24E-06	10	**1.24E-05**
	Construction	*1.76*	*0.9101*	*1090*	*2.64E-05*		
	Operation	*0.24*	*0.1967*	*1090*	*7.63E-07*		
Infant (Age 0 - 2)	Total	2			2.71E-05	10	**2.71E-04**
Child (Age 2 - 16)	Operation	14	0.1967	572	2.37E-05	3	**7.12E-05**
Adult (Age 16 - 30)	Operation	14	0.1967	261	7.91E-06	1	**7.91E-06**
Lifetime		**30**			**6.00E-05**		**3.63E-04**

* We, along with CARB and SCAQMD, recommend using the more updated and health protective 2015 OEHHA guidance, which includes ASFs.

As demonstrated in the table above, the excess cancer risks for the 3rd trimester of pregnancy, infants, children, and adults at the MEIR located approximately 100 meters away, over the course of Project construction and operation, utilizing ASFs, is approximately 12.4, 271, 71.2, and 7.91 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years), utilizing ASFs, is approximately 363 in one million. The 3rd trimester, infant, child, and lifetime cancer risks exceed the SCAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the IS/MND.

Utilizing ASFs is the most conservative, health-protective analysis according to the most recent guidance by OEHHA and reflects recommendations from the air district. Results without ASFs are presented in the table above, although we do not recommend utilizing these values for health risk analysis. Regardless, excess cancer risks for the 3rd trimester of pregnancy, infants, children, and adults at the MEIR located approximately 100 meters away, over the course of Project construction and operation, without ASFs, are approximately 1.24, 27.1, 23.7, and 7.91 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years), without ASFs, is approximately 60 in one million. While we recommend the use of ASFs, the Project's infant, child, and lifetime cancer risks without ASFs, as estimated by SWAPE, exceed the SCAQMD threshold of 10 in one million regardless, thus resulting in a potentially significant impact not previously addressed or identified by the IS/MND.

An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. [46] The purpose of the screening-level

[46] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 1-5

construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. Therefore, our screening-level HRA indicates a potentially significant impact, the City should prepare an EIR analysis with an HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the City should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk analysis which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

Greenhouse Gas

Failure to Adequately Evaluate Greenhouse Gas Impacts

The IS/MND estimates that the Project would generate net annual GHG emissions of 2,668 metric tons of carbon dioxide equivalents per year ("MT CO_2e/year"), which would not exceed the SCAQMD threshold of 3,000 MT CO_2e/year (p. 4-31, Table 4.8-1).

Table 4.8-1. Estimated Annual Greenhouse Gas Emissions

Source Category	Annual GHG Emissions (MTCO_2e per year)
Amortized Construction Emissions (Direct)	108.7
Area Source Emissions (Direct)	4.5
Energy Source Emissions (Indirect)	597.6
Mobile Source Emissions (Direct)	1,794.0
Solid Waste Disposal Emissions (Indirect)	62.2
Water Supply and Wastewater Treatment (Indirect)	101.0
Total Annual GHG Emissions	**2,668.0**
Threshold	**3,000**
Exceed Threshold?	**No**

Source: TAHA 2021

Furthermore, the IS/MND relies upon the Project's consistency with CARB's 2017 Climate Change Scoping Plan, SCAG's 2020–2045 RTP/SCS, the San Bernardino Regional GHG Reduction Plan, and the Rancho Cucamonga Sustainable Community Action Plan ("CAP") in order to conclude that the Project would result in a less-than-significant GHG impact (p. 4-31 – 4-32). However, the IS/MND's GHG analysis, as well as the subsequent less-than-significant impact conclusion, is incorrect for five reasons:

(1) The IS/MND's quantitative GHG analysis relies upon an incorrect and unsubstantiated air model;
(2) The IS/MND's quantitative GHG analysis relies upon an outdated threshold;
(3) SWAPE's updated analysis indicates a potentially significant GHG impact;
(4) The IS/MND fails to consider the performance-based standards under CARB's *Scoping Plan*; and
(5) The IS/MND fails to consider the performance-based standards under SCAG's *RTP/SCS*.

1) Incorrect and Unsubstantiated Quantitative Analysis of Emissions

As previously stated, IS/MND estimates that the Project would generate net annual GHG emissions of 2,668 MT CO2e/year (p. 4-31, Table 4.8-1). However, the IS/MND's quantitative GHG analysis is unsubstantiated. As previously discussed, when we reviewed the Project's CalEEMod output files, provided in the AQ Assessment and GHG Assessment as Appendix A and Appendix F to the IS/MND, respectively, we found that several of the values inputted into the model are not consistent with information disclosed in the IS/MND. As a result, the model underestimates the Project's emissions, and the IS/MND's quantitative GHG analysis should not be relied upon to determine Project significance. An EIR should be prepared that adequately assesses the potential GHG impacts that construction and operation of the proposed Project may have on the surrounding environment.

2) Incorrect Reliance on an Outdated Quantitative GHG Threshold

As previously stated, IS/MND estimates that the Project would generate net annual GHG emissions of 2,668 MT CO_2e/year, which would not exceed the SCAQMD bright-line threshold of 3,000 MT CO_2e/year (p. 4-31, Table 4.8-1). However, the guidance that provided the 3,000 MT CO_2/year threshold, the SCAQMD's 2008 *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans* report, was developed when the Global Warming Solutions Act of 2006, commonly known as "AB 32", was the governing statute for GHG reductions in California. AB 32 requires California to reduce GHG emissions to 1990 levels by 2020.[47] Furthermore, AEP guidance states:

> "[F]or evaluating projects with a post 2020 horizon, the threshold will need to be revised based on a new gap analysis that would examine 17 development and reduction potentials out to the next GHG reduction milestone."[48]

As it is currently September 2021, thresholds for 2020 are not applicable to the proposed Project and should be revised to reflect the current GHG reduction target. As such, the SCAQMD bright-line threshold of 3,000 MT CO_2e/year is outdated and inapplicable to the proposed Project, and the IS/MND's less-than-significant GHG impact conclusion should not be relied upon. Instead, we recommend that the Project apply the SCAQMD 2035 efficiency target of 3.0 MT CO_2e/year, which was calculated by applying a 40% reduction to the 2020 targets.[49]

3) Updated Analysis Indicates a Potentially Significant GHG Impact

SWAPE's updated air model indicates a potentially significant GHG impact, when applying the outdated SCAQMD threshold of 3,000 MT CO_2e/year. The updated CalEEMod output files, modeled by SWAPE with Project-specific information, disclose the Project's mitigated emissions, which include approximately 150 MT CO_2e of total construction emissions (sum of 2022, 2023, and 2024) and approximately 3,824 MT CO_2e/year of net annual operational emissions (sum of area-, energy-, mobile-, waste-, and water-related emissions). When amortizing the Project's construction-related GHG

[47] HEALTH & SAFETY CODE 38550, *available at:* https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=38550.

[48] "Beyond Newhall and 2020: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California." Association of Environmental Professionals (AEP), October 2016, *available at:* https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf, p. 39.

[49] "Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15." SCAQMD, September 2010, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf, p. 2.

emissions over a period of 30 years and summing them with the Project's operational GHG emissions, we estimate net annual GHG emissions of approximately 3,975 MT CO_2e/year (see table below).

SWAPE Annual Greenhouse Gas Emissions

Project Phase	Proposed Project (MT CO_2e/year)
Construction (amortized over 30 years)	150.54
Area	*67.31*
Energy	*785.56*
Mobile	*2,546.48*
Waste	*293.70*
Water	*131.08*
Total Annual Operational	3,824.13
Net Annual GHG Emissions	**3,974.67**
Threshold	3,000
Exceed?	**Yes**

As demonstrated above, the Project's estimated net annual GHG emissions exceed the outdated SCAQMD bright-line threshold of 3,000 MT CO_2e/year, thus resulting in a significant impact not previously addressed or mitigated in the IS/MND. As stated above, this threshold is outdated, and we recommend that the Project apply the SCAQMD 2035 efficiency target of 3.0 MT CO_2e/year, which was calculated by applying a 40% reduction to the 2020 targets.[50] However, as the IS/MND fails to provide the Project's estimated number of residents and employees, we are unable to compare the Project's emissions to the SCAQMD 2035 efficiency target. As such, an updated GHG analysis using the SCAQMD 2035 efficiency target should be prepared in an EIR and additional mitigation should be incorporated accordingly, per CEQA Guidelines.

4) Failure to Consider Performance-based Standards Under CARB's 2017 Scoping Plan

As previously discussed, the IS/MND relies upon the Project's consistency with CARB's 2017 *Scoping Plan* to determine Project GHG significance (p. 4-31). However, this is incorrect, as the IS/MND fails to consider performance-based measures proposed by CARB.

i. Passenger & Light Duty VMT Per Capita Benchmarks per SB 375

In reaching the State's long-term GHG emission reduction goals, CARB's 2017 *Scoping Plan* explicitly cites to SB 375 and the VMT reductions anticipated under the implementation of Sustainable Community Strategies.[51] CARB has identified the population and daily VMT from passenger autos and

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[50] "Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15." SCAQMD, September 2010, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf, p. 2.

[51] "California's 2017 Climate Change Scoping Plan." CARB, November 2017, *available at*: https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, p. 25, 98, 101-103.

light-duty vehicles at the state and county level for each year between 2010 to 2050 under a "baseline scenario" that includes "current projections of VMT included in the existing Regional Transportation Plans/Sustainable Communities Strategies (RTP/SCSs) adopted by the State's 18 Metropolitan Planning Organizations (MPOs) pursuant to SB 375 as of 2015."[52] By dividing the projected daily VMT by the population, we calculated the daily VMT per capita for each year at the state and county level for 2010 (baseline year), 2022 (Project operational year), and 2030 (target years under SB 32) (see table below).

2017 Scoping Plan Daily VMT Per Capita						
San Bernardino County				State		
Year	Population	LDV VMT Baseline	VMT Per Capita	Population	LDV VMT Baseline	VMT Per Capita
2010	2,043,484	55,741,307.23	27.28	37,335,085	836,463,980.46	22.40
2024	2,327,528	62,431,182.19	26.82	41,994,283	926,776,780.89	22.07
2030	2,478,888	65,538,854.28	26.44	43,939,250	957,178,153.19	21.78

As the IS/MND fails to evaluate the Project's consistency with the CARB 2017 *Scoping Plan* performance-based daily VMT per capita projections, the IS/MND's claim that the proposed Project would not conflict with the CARB 2017 *Scoping Plan* is unsupported. An updated EIR should be prepared for the proposed Project to provide additional information and analysis to conclude less-than-significant GHG impacts.

5) Failure to Consider Performance-based Standards under SCAG's RTP/SCS

Here, as discussed above, the IS/MND concludes that the Project would be consistent with SCAG's *RTP/SCS* (p. 4-32). However, the IS/MND fails to consider whether or not the Project meets any of the specific performance-based goals underlying SCAG's *RTP/SCS* and SB 375, such as: i) per capita GHG emission targets, or ii) daily vehicles miles traveled ("VMT") per capita benchmarks.

i. SB 375 Per Capita GHG Emission Goals

SB 375 was signed into law in September 2008 to enhance the state's ability to reach AB 32 goals by directing CARB to develop regional 2020 and 2035 GHG emission reduction targets for passenger vehicles (autos and light-duty trucks). In March 2018, CARB adopted updated regional targets requiring a 19 percent decrease in VMT for the SCAG region by 2035. This goal is reflected in SCAG's 2020 RTP/SCS Program Environmental Impact Report ("PEIR"), in which the 2020 RTP/SCS PEIR updates the per capita emissions to 18.8 lbs/day in 2035 (*see* excerpt below). [53]

[52] "Supporting Calculations for 2017 Scoping Plan-Identified VMT Reductions," Excel Sheet "Readme." CARB, January 2019, *available at*: https://ww2.arb.ca.gov/sites/default/files/2019-01/sp_mss_vmt_calculations_jan19_0.xlsx.

[53] "Connect SoCal Certified Final Program Environmental Impact Report." SCAG, May 2020, *available at*: https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocal_complete.pdf?1607981618, p. 3.8-74.

Table 3.8-10
SB 375 Analysis

	2005 (Baseline)	2020 (Plan)	2035 (Plan)
Resident population (per 1,000)	17,161	19,194	21,110
CO2 emissions (per 1,000 tons)	204.0/a/	204.5/b/	198.6/b/
Per capita emissions (pounds/day)	23.8	21.3	18.8
% difference from Plan (2020) to Baseline (2005)			–8%
% difference from Plan (2035) to Baseline (2005)			–19%/c/

Note:
/a/ Based on EMFAC2007
/b/Based on EMFAC2014 and SCAG modeling, 2019.
/c/ Includes off-model adjustments for 2035 and 2045
Source: SCAG modeling, 2019.
http://www.scag.ca.gov/committees/CommitteeDocLibrary/jointRCPC110515fullagn.pdf

As the IS/MND fails to evaluate the Project's consistency with the SCAG's per capita emissions, the IS/MND's claim that the proposed Project would not conflict with SCAG's *RTP/SCS* is unsupported. An updated EIR should be prepared for the proposed Project to provide additional information and analysis to conclude less-than-significant GHG impacts.

i. SB 375 RTP/SCS Daily VMT Per Capita Target

Under the SCAG's 2020 *RTP/SCS*, daily VMT per capita in the SCAG region should decrease from 23.2 VMT in 2016 to 20.7 VMT by 2045.[54] Daily VMT per capita in Los Angeles County should decrease from 22.2 to 19.2 VMT during that same period.[55] Here, however, the IS/MND fails to consider any of the above-mentioned performance-based VMT targets. As the IS/MND fails to evaluate the Project's consistency with the SCAG's performance-based daily VMT per capita projections, the IS/MND's claim that the proposed Project would not conflict with SCAG's *RTP/SCS* is unsupported. An updated EIR should be prepared for the proposed Project to provide additional information and analysis to conclude less-than-significant GHG impacts.

Design Features Should Be Included as Mitigation Measures

Our analysis demonstrates that the Project would result in potentially significant health risk and GHG impacts that should be mitigated further. We recommend that the IS/MND implement all PDFs, such as including water and energy efficient mechanical equipment and electric appliances, water efficient landscaping and irrigation systems, and electric vehicle charging stations, as formal mitigation measures. As a result, we could guarantee that these measures would be implemented, monitored, and enforced on the Project site. Including formal mitigation measures by properly committing to their implementation would result in verifiable emissions reductions that may help reduce emissions to less-than-significant levels.

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[54] "Connect SoCal." SCAG, September 2020, *available at*: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176, pp. 138.
[55] "Connect SoCal." SCAG, September 2020, *available at*: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176, pp. 138.

Disclaimer

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

Sincerely,

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

Paul Rosenfeld

Paul E. Rosenfeld, Ph.D.

Attachment A: CalEEMod Output Files
Attachment B: Health Risk Calculations
Attachment C: AERSCREEN Output Files
Attachment D: Matt Hagemann CV
Attachment E: Paul E. Rosenfeld CV

Alta Cuvee Mixed-Use Project

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	7.60	1000sqft	0.00	4,900.00	0
Enclosed Parking with Elevator	300.00	Space	0.00	120,000.00	0
Parking Lot	226.00	Space	1.80	90,400.00	0
City Park	0.33	Acre	0.33	14,374.80	0
Recreational Swimming Pool	3.00	1000sqft	0.07	3,000.00	0
Apartments Mid Rise	259.00	Dwelling Unit	3.00	259,000.00	741
Condo/Townhouse	1.00	Dwelling Unit	0.00	1,570.00	3
Strip Mall	3.34	1000sqft	0.00	3,339.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See SWAPE comment on "Incorrect CO2 Intensity Factor"

Land Use - See SWAPE comments on "Failure to Model Required Amount of Parking" and "Unsubstantiated Reduction to Land Us
Enclosed Parking= 57% of total, Parking Lot = 43% of total parking.

Construction Phase - Consistent with IS/MND's model
Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

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Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"

Off-road Equipment - Consistent with the IS/MND's model.

Trips and VMT - Consistent with the IS/MND's model.

Grading - Consistent with the IS/MND's model.

Architectural Coating - See SWAPE comment on "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the IS/MND's model.

Woodstoves - Woodstoves: consistent with IS/MND's model.
Fireplaces: See SWAPE comment on "Unsubstantiated Changes to Gas Fireplace Values"

Area Coating - See SWAPE comment on "Unsubstantiated Changes to Architectural and Area Coating Emission Factors"

Energy Use -

Water And Wastewater - Consistent with the IS/MND's model.

Solid Waste - See SWAPE comment on "Unsubstantiated Reductions to Solid Waste Generation Rates"
Total adds up to 584 tons/year

Construction Off-road Equipment Mitigation - See SWAPE comment on "Incorrect Application of Construction-related Mitigation Measures"

Area Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Energy Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Water Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	220.15	259.00
tblFireplaces	NumberGas	0.85	1.00
tblFireplaces	NumberNoFireplace	25.90	0.00
tblFireplaces	NumberNoFireplace	0.10	0.00
tblFireplaces	NumberWood	12.95	0.00
tblFireplaces	NumberWood	0.05	0.00
tblGrading	AcresOfGrading	50.00	60.00
tblGrading	AcresOfGrading	50.00	45.00
tblGrading	AcresOfGrading	10.00	24.00
tblGrading	AcresOfGrading	10.00	12.00
tblGrading	MaterialExported	0.00	21,180.00
tblGrading	MaterialExported	0.00	10,590.00
tblLandUse	LandUseSquareFeet	7,600.00	4,900.00
tblLandUse	LandUseSquareFeet	1,000.00	1,570.00
tblLandUse	LandUseSquareFeet	3,340.00	3,339.00
tblLandUse	LotAcreage	0.17	0.00
tblLandUse	LotAcreage	2.70	0.00
tblLandUse	LotAcreage	2.03	1.80
tblLandUse	LotAcreage	6.82	3.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.08	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	630
tblSolidWaste	SolidWasteGenerationRate	119.14	555.83
tblTripsAndVMT	HaulingTripNumber	2,648.00	2,880.00
tblTripsAndVMT	HaulingTripNumber	1,324.00	1,440.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00

tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblVehicleTrips	CC_TL	8.40	10.90
tblVehicleTrips	CNW_TL	6.90	10.90
tblVehicleTrips	CW_TL	16.60	10.90
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	HO_TL	8.70	10.90
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TL	5.90	10.90
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HW_TL	14.70	10.90
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	HW_TTP	40.20	40.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	6.39	5.48
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	42.04	24.86
tblVehicleTrips	SU_TR	5.86	5.48
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	20.43	24.86
tblVehicleTrips	WD_TR	6.65	5.48
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	0.00
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblVehicleTrips	WD_TR	44.32	24.86
tblWater	IndoorWaterUseRate	16,874,892.64	16,940,046.66
tblWater	IndoorWaterUseRate	177,429.43	0.00
tblWater	OutdoorWaterUseRate	10,638,519.27	10,679,594.63

tblWater	OutdoorWaterUseRate	827,895.26	0.00
tblWoodstoves	NumberCatalytic	12.95	0.00
tblWoodstoves	NumberCatalytic	0.05	0.00
tblWoodstoves	NumberNoncatalytic	12.95	0.00
tblWoodstoves	NumberNoncatalytic	0.05	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4472	3.9343	3.8304	9.7000e-003	0.2963	0.1598	0.4562	0.0674	0.1548	0.2223	0.0000	868.1095	868.1095	0.0981	0.0000	870.5612
2023	0.5684	3.9296	5.6253	0.0118	0.3179	0.1765	0.4944	0.0852	0.1749	0.2601	0.0000	1,036.1911	1,036.1911	0.0775	0.0000	1,038.1273
2024	1.9424	1.2399	1.8664	3.9000e-003	0.1021	0.0512	0.1533	0.0274	0.0502	0.0776	0.0000	345.0841	345.0841	0.0325	0.0000	345.8963
Maximum	**1.9424**	**3.9343**	**5.6253**	**0.0118**	**0.3179**	**0.1765**	**0.4944**	**0.0852**	**0.1749**	**0.2601**	**0.0000**	**1,036.1911**	**1,036.1911**	**0.0981**	**0.0000**	**1,038.1273**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4472	3.9343	3.8304	9.7000e-003	0.2963	0.1598	0.4562	0.0674	0.1548	0.2223	0.0000	868.1089	868.1089	0.0981	0.0000	870.5606
2023	0.5684	3.9296	5.6253	0.0118	0.3179	0.1765	0.4944	0.0852	0.1749	0.2601	0.0000	1,036.1903	1,036.1903	0.0775	0.0000	1,038.1265
2024	1.9424	1.2399	1.8664	3.9000e-003	0.1021	0.0512	0.1533	0.0274	0.0502	0.0776	0.0000	345.0839	345.0839	0.0325	0.0000	345.8960
Maximum	**1.9424**	**3.9343**	**5.6253**	**0.0118**	**0.3179**	**0.1765**	**0.4944**	**0.0852**	**0.1749**	**0.2601**	**0.0000**	**1,036.1903**	**1,036.1903**	**0.0981**	**0.0000**	**1,038.1265**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-5-2022	6-4-2022	1.4079	1.4079
2	6-5-2022	9-4-2022	1.2728	1.2728
3	9-5-2022	12-4-2022	1.3150	1.3150
4	12-5-2022	3-4-2023	1.2210	1.2210
5	3-5-2023	6-4-2023	1.1835	1.1835
6	6-5-2023	9-4-2023	1.0936	1.0936
7	9-5-2023	12-4-2023	1.0817	1.0817
8	12-5-2023	3-4-2024	1.0395	1.0395
9	3-5-2024	6-4-2024	0.9290	0.9290
10	6-5-2024	9-4-2024	1.5127	1.5127
		Highest	1.5127	1.5127

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1609	0.0849	2.7100	4.9000e-004		0.0192	0.0192		0.0192	0.0192	0.0000	66.8289	66.8289	5.4300e-003	1.1400e-003	67.3059
Energy	0.0209	0.1788	0.0766	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	782.0369	782.0369	0.0304	9.2700e-003	785.5608
Mobile	0.4455	3.0770	6.0309	0.0274	2.2695	0.0166	2.2862	0.6082	0.0155	0.6237	0.0000	2,543.6943	2,543.6943	0.1116	0.0000	2,546.4834
Waste						0.0000	0.0000		0.0000	0.0000	118.5467	0.0000	118.5467	7.0059	0.0000	293.6945
Water						0.0000	0.0000		0.0000	0.0000	5.9020	105.3330	111.2350	0.6110	0.0153	131.0754
Total	**1.6273**	**3.3406**	**8.8175**	**0.0291**	**2.2695**	**0.0503**	**2.3199**	**0.6082**	**0.0492**	**0.6574**	**124.4487**	**3,497.8931**	**3,622.3418**	**7.7644**	**0.0257**	**3,824.1199**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1609	0.0849	2.7100	4.9000e-004		0.0192	0.0192		0.0192	0.0192	0.0000	66.8289	66.8289	5.4300e-003	1.1400e-003	67.3059
Energy	0.0209	0.1788	0.0766	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	782.0369	782.0369	0.0304	9.2700e-003	785.5608
Mobile	0.4455	3.0770	6.0309	0.0274	2.2695	0.0166	2.2862	0.6082	0.0155	0.6237	0.0000	2,543.6943	2,543.6943	0.1116	0.0000	2,546.4834
Waste						0.0000	0.0000		0.0000	0.0000	118.5467	0.0000	118.5467	7.0059	0.0000	293.6945
Water						0.0000	0.0000		0.0000	0.0000	5.9020	105.3330	111.2350	0.6110	0.0153	131.0754
Total	**1.6273**	**3.3406**	**8.8175**	**0.0291**	**2.2695**	**0.0503**	**2.3199**	**0.6082**	**0.0492**	**0.6574**	**124.4487**	**3,497.8931**	**3,622.3418**	**7.7644**	**0.0257**	**3,824.1199**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/5/2022	4/1/2022	5	20	
2	Site Preparation	Grading	4/30/2022	5/27/2022	5	20	
3	Trenching/Utilites - East Building	Site Preparation	4/2/2022	4/15/2022	5	10	
4	Construction - East Building	Building Construction	6/25/2022	5/12/2023	5	230	
5	Grading	Grading	5/28/2022	6/24/2022	5	20	
6	Trenching/Utilities - West Building	Site Preparation	4/16/2022	4/29/2022	5	10	
7	Construction - West Building	Building Construction	5/13/2023	3/29/2024	5	230	
8	Paving - East Building	Paving	3/30/2024	4/26/2024	5	20	
9	Architectural Coatings East Bldg	Architectural Coating	5/25/2024	6/21/2024	5	20	
10	Paving - West Building	Paving	4/27/2024	5/24/2024	5	20	
11	Architectural Coatings - West Bldg	Architectural Coating	6/22/2024	7/19/2024	5	20	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 45

Acres of Paving: 1.8

Residential Indoor: 527,654; Residential Outdoor: 175,885; Non-Residential Indoor: 12,359; Non-Residential Outdoor: 4,120; Striped Parking Area: 12,624 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Generator Sets	2	4.00	84	0.74
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Crawler Tractors	2	8.00	212	0.43

Site Preparation	Excavators	0	8.00	158	0.38
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilites - East Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilites - East Building	Excavators	1	8.00	158	0.38
Trenching/Utilites - East Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilites - East Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilites - East Building	Trenchers	2	8.00	78	0.50
Construction - East Building	Air Compressors	10	8.00	78	0.48
Construction - East Building	Cranes	1	7.00	231	0.29
Construction - East Building	Forklifts	0	8.00	89	0.20
Construction - East Building	Generator Sets	2	8.00	84	0.74
Construction - East Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - East Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - East Building	Welders	0	8.00	46	0.45
Grading	Crawler Tractors	2	8.00	212	0.43
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilities - West Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilities - West Building	Excavators	1	8.00	158	0.38

Trenching/Utilities - West Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilities - West Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilities - West Building	Trenchers	2	8.00	78	0.50
Construction - West Building	Air Compressors	10	8.00	78	0.48
Construction - West Building	Cranes	0	7.00	231	0.29
Construction - West Building	Forklifts	0	8.00	89	0.20
Construction - West Building	Generator Sets	2	8.00	84	0.74
Construction - West Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - West Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - West Building	Welders	0	8.00	46	0.45
Paving - East Building	Pavers	2	8.00	130	0.42
Paving - East Building	Paving Equipment	2	8.00	132	0.36
Paving - East Building	Rollers	2	8.00	80	0.38
Architectural Coatings East Bldg	Air Compressors	4	6.00	78	0.48
Paving - West Building	Pavers	2	8.00	130	0.42
Paving - West Building	Paving Equipment	2	8.00	132	0.36
Paving - West Building	Rollers	2	8.00	80	0.38
Architectural Coatings - West Bldg	Air Compressors	4	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilites - East Building	6	40.00	0.00	2,880.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - East Building	15	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities - West Building	6	40.00	0.00	1,440.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - West Building	14	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - East Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings East Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - West Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings - West Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0256	0.2509	0.1776	3.5000e-004		0.0122	0.0122		0.0114	0.0114	0.0000	30.5702	30.5702	6.8800e-003	0.0000	30.7422
Total	**0.0256**	**0.2509**	**0.1776**	**3.5000e-004**		**0.0122**	**0.0122**		**0.0114**	**0.0114**	**0.0000**	**30.5702**	**30.5702**	**6.8800e-003**	**0.0000**	**30.7422**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0256	0.2509	0.1776	3.5000e-004		0.0122	0.0122		0.0114	0.0114	0.0000	30.5701	30.5701	6.8800e-003	0.0000	30.7422
Total	**0.0256**	**0.2509**	**0.1776**	**3.5000e-004**		**0.0122**	**0.0122**		**0.0114**	**0.0114**	**0.0000**	**30.5701**	**30.5701**	**6.8800e-003**	**0.0000**	**30.7422**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0318	0.0000	0.0318	3.4400e-003	0.0000	3.4400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.2967	0.1645	4.3000e-004		0.0117	0.0117		0.0108	0.0108	0.0000	37.5379	37.5379	0.0121	0.0000	37.8414
Total	**0.0255**	**0.2967**	**0.1645**	**4.3000e-004**	**0.0318**	**0.0117**	**0.0435**	**3.4400e-003**	**0.0108**	**0.0142**	**0.0000**	**37.5379**	**37.5379**	**0.0121**	**0.0000**	**37.8414**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0318	0.0000	0.0318	3.4400e-003	0.0000	3.4400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.2967	0.1645	4.3000e-004		0.0117	0.0117		0.0108	0.0108	0.0000	37.5379	37.5379	0.0121	0.0000	37.8414
Total	**0.0255**	**0.2967**	**0.1645**	**4.3000e-004**	**0.0318**	**0.0117**	**0.0435**	**3.4400e-003**	**0.0108**	**0.0142**	**0.0000**	**37.5379**	**37.5379**	**0.0121**	**0.0000**	**37.8414**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0139	0.0000	0.0139	1.5600e-003	0.0000	1.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.1111	0.0766	1.5000e-004		5.5400e-003	5.5400e-003		5.1000e-003	5.1000e-003	0.0000	13.4863	13.4863	4.3600e-003	0.0000	13.5953
Total	**0.0104**	**0.1111**	**0.0766**	**1.5000e-004**	**0.0139**	**5.5400e-003**	**0.0195**	**1.5600e-003**	**5.1000e-003**	**6.6600e-003**	**0.0000**	**13.4863**	**13.4863**	**4.3600e-003**	**0.0000**	**13.5953**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2500e-003	0.3078	0.0524	1.0900e-003	0.0248	7.7000e-004	0.0256	6.8100e-003	7.4000e-004	7.5500e-003	0.0000	105.4147	105.4147	5.8500e-003	0.0000	105.5610
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	6.3000e-004	6.5400e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.7542	1.7542	5.0000e-005	0.0000	1.7554
Total	**9.1100e-003**	**0.3085**	**0.0589**	**1.1100e-003**	**0.0270**	**7.8000e-004**	**0.0278**	**7.3900e-003**	**7.5000e-004**	**8.1500e-003**	**0.0000**	**107.1689**	**107.1689**	**5.9000e-003**	**0.0000**	**107.3164**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0139	0.0000	0.0139	1.5600e-003	0.0000	1.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.1111	0.0766	1.5000e-004		5.5400e-003	5.5400e-003		5.1000e-003	5.1000e-003	0.0000	13.4863	13.4863	4.3600e-003	0.0000	13.5953
Total	**0.0104**	**0.1111**	**0.0766**	**1.5000e-004**	**0.0139**	**5.5400e-003**	**0.0195**	**1.5600e-003**	**5.1000e-003**	**6.6600e-003**	**0.0000**	**13.4863**	**13.4863**	**4.3600e-003**	**0.0000**	**13.5953**

3.4 Trenching/Utilites - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2500e-003	0.3078	0.0524	1.0900e-003	0.0248	7.7000e-004	0.0256	6.8100e-003	7.4000e-004	7.5500e-003	0.0000	105.4147	105.4147	5.8500e-003	0.0000	105.5610
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	6.3000e-004	6.5400e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.7542	1.7542	5.0000e-005	0.0000	1.7554
Total	**9.1100e-003**	**0.3085**	**0.0589**	**1.1100e-003**	**0.0270**	**7.8000e-004**	**0.0278**	**7.3900e-003**	**7.5000e-004**	**8.1500e-003**	**0.0000**	**107.1689**	**107.1689**	**5.9000e-003**	**0.0000**	**107.3164**

3.5 Construction - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2658	2.1099	2.5492	4.3700e-003		0.1106	0.1106		0.1092	0.1092	0.0000	376.9132	376.9132	0.0415	0.0000	377.9505
Total	**0.2658**	**2.1099**	**2.5492**	**4.3700e-003**		**0.1106**	**0.1106**		**0.1092**	**0.1092**	**0.0000**	**376.9132**	**376.9132**	**0.0415**	**0.0000**	**377.9505**

3.5 Construction - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2488	0.0495	7.1000e-004	0.0170	3.8000e-004	0.0174	4.9100e-003	3.6000e-004	5.2800e-003	0.0000	68.0115	68.0115	4.4600e-003	0.0000	68.1231
Worker	0.0581	0.0422	0.4411	1.3100e-003	0.1480	9.4000e-004	0.1490	0.0393	8.6000e-004	0.0402	0.0000	118.4104	118.4104	3.0800e-003	0.0000	118.4875
Total	**0.0648**	**0.2910**	**0.4906**	**2.0200e-003**	**0.1650**	**1.3200e-003**	**0.1664**	**0.0442**	**1.2200e-003**	**0.0455**	**0.0000**	**186.4219**	**186.4219**	**7.5400e-003**	**0.0000**	**186.6105**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2658	2.1099	2.5492	4.3700e-003		0.1106	0.1106		0.1092	0.1092	0.0000	376.9128	376.9128	0.0415	0.0000	377.9500
Total	**0.2658**	**2.1099**	**2.5492**	**4.3700e-003**		**0.1106**	**0.1106**		**0.1092**	**0.1092**	**0.0000**	**376.9128**	**376.9128**	**0.0415**	**0.0000**	**377.9500**

3.5 Construction - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2488	0.0495	7.1000e-004	0.0170	3.8000e-004	0.0174	4.9100e-003	3.6000e-004	5.2800e-003	0.0000	68.0115	68.0115	4.4600e-003	0.0000	68.1231
Worker	0.0581	0.0422	0.4411	1.3100e-003	0.1480	9.4000e-004	0.1490	0.0393	8.6000e-004	0.0402	0.0000	118.4104	118.4104	3.0800e-003	0.0000	118.4875
Total	**0.0648**	**0.2910**	**0.4906**	**2.0200e-003**	**0.1650**	**1.3200e-003**	**0.1664**	**0.0442**	**1.2200e-003**	**0.0455**	**0.0000**	**186.4219**	**186.4219**	**7.5400e-003**	**0.0000**	**186.6105**

3.5 Construction - East Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1751	1.3747	1.7892	3.0700e-003		0.0679	0.0679		0.0671	0.0671	0.0000	265.2390	265.2390	0.0282	0.0000	265.9429
Total	**0.1751**	**1.3747**	**1.7892**	**3.0700e-003**		**0.0679**	**0.0679**		**0.0671**	**0.0671**	**0.0000**	**265.2390**	**265.2390**	**0.0282**	**0.0000**	**265.9429**

3.5 Construction - East Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5400e-003	0.1350	0.0301	4.9000e-004	0.0120	1.3000e-004	0.0121	3.4600e-003	1.3000e-004	3.5800e-003	0.0000	46.5437	46.5437	2.5200e-003	0.0000	46.6068
Worker	0.0383	0.0267	0.2846	8.9000e-004	0.1042	6.4000e-004	0.1048	0.0277	5.9000e-004	0.0283	0.0000	80.1971	80.1971	1.9400e-003	0.0000	80.2457
Total	**0.0418**	**0.1617**	**0.3146**	**1.3800e-003**	**0.1161**	**7.7000e-004**	**0.1169**	**0.0311**	**7.2000e-004**	**0.0318**	**0.0000**	**126.7408**	**126.7408**	**4.4600e-003**	**0.0000**	**126.8524**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1751	1.3747	1.7892	3.0700e-003		0.0679	0.0679		0.0671	0.0671	0.0000	265.2387	265.2387	0.0282	0.0000	265.9426
Total	**0.1751**	**1.3747**	**1.7892**	**3.0700e-003**		**0.0679**	**0.0679**		**0.0671**	**0.0671**	**0.0000**	**265.2387**	**265.2387**	**0.0282**	**0.0000**	**265.9426**

3.5 Construction - East Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.5400e-003	0.1350	0.0301	4.9000e-004	0.0120	1.3000e-004	0.0121	3.4600e-003	1.3000e-004	3.5800e-003	0.0000	46.5437	46.5437	2.5200e-003	0.0000	46.6068
Worker	0.0383	0.0267	0.2846	8.9000e-004	0.1042	6.4000e-004	0.1048	0.0277	5.9000e-004	0.0283	0.0000	80.1971	80.1971	1.9400e-003	0.0000	80.2457
Total	**0.0418**	**0.1617**	**0.3146**	**1.3800e-003**	**0.1161**	**7.7000e-004**	**0.1169**	**0.0311**	**7.2000e-004**	**0.0318**	**0.0000**	**126.7408**	**126.7408**	**4.4600e-003**	**0.0000**	**126.8524**

3.6 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0239	0.0000	0.0239	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.2967	0.1645	4.3000e-004		0.0117	0.0117		0.0108	0.0108	0.0000	37.5379	37.5379	0.0121	0.0000	37.8414
Total	**0.0255**	**0.2967**	**0.1645**	**4.3000e-004**	**0.0239**	**0.0117**	**0.0356**	**2.5800e-003**	**0.0108**	**0.0133**	**0.0000**	**37.5379**	**37.5379**	**0.0121**	**0.0000**	**37.8414**

3.6 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0239	0.0000	0.0239	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.2967	0.1645	4.3000e-004		0.0117	0.0117		0.0108	0.0108	0.0000	37.5379	37.5379	0.0121	0.0000	37.8414
Total	**0.0255**	**0.2967**	**0.1645**	**4.3000e-004**	**0.0239**	**0.0117**	**0.0356**	**2.5800e-003**	**0.0108**	**0.0133**	**0.0000**	**37.5379**	**37.5379**	**0.0121**	**0.0000**	**37.8414**

3.6 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7200e-003	1.2500e-003	0.0131	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	3.5085	3.5085	9.0000e-005	0.0000	3.5107
Total	**1.7200e-003**	**1.2500e-003**	**0.0131**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**3.5085**	**3.5085**	**9.0000e-005**	**0.0000**	**3.5107**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.9600e-003	0.0000	6.9600e-003	7.8000e-004	0.0000	7.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.1111	0.0766	1.5000e-004		5.5400e-003	5.5400e-003		5.1000e-003	5.1000e-003	0.0000	13.4863	13.4863	4.3600e-003	0.0000	13.5953
Total	**0.0104**	**0.1111**	**0.0766**	**1.5000e-004**	**6.9600e-003**	**5.5400e-003**	**0.0125**	**7.8000e-004**	**5.1000e-003**	**5.8800e-003**	**0.0000**	**13.4863**	**13.4863**	**4.3600e-003**	**0.0000**	**13.5953**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1200e-003	0.1539	0.0262	5.5000e-004	0.0124	3.9000e-004	0.0128	3.4000e-003	3.7000e-004	3.7700e-003	0.0000	52.7073	52.7073	2.9300e-003	0.0000	52.7805
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	6.3000e-004	6.5400e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.7542	1.7542	5.0000e-005	0.0000	1.7554
Total	**4.9800e-003**	**0.1546**	**0.0327**	**5.7000e-004**	**0.0146**	**4.0000e-004**	**0.0150**	**3.9800e-003**	**3.8000e-004**	**4.3700e-003**	**0.0000**	**54.4616**	**54.4616**	**2.9800e-003**	**0.0000**	**54.5359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.9600e-003	0.0000	6.9600e-003	7.8000e-004	0.0000	7.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.1111	0.0766	1.5000e-004		5.5400e-003	5.5400e-003		5.1000e-003	5.1000e-003	0.0000	13.4863	13.4863	4.3600e-003	0.0000	13.5953
Total	**0.0104**	**0.1111**	**0.0766**	**1.5000e-004**	**6.9600e-003**	**5.5400e-003**	**0.0125**	**7.8000e-004**	**5.1000e-003**	**5.8800e-003**	**0.0000**	**13.4863**	**13.4863**	**4.3600e-003**	**0.0000**	**13.5953**

3.7 Trenching/Utilities - West Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1200e-003	0.1539	0.0262	5.5000e-004	0.0124	3.9000e-004	0.0128	3.4000e-003	3.7000e-004	3.7700e-003	0.0000	52.7073	52.7073	2.9300e-003	0.0000	52.7805
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	6.3000e-004	6.5400e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.7542	1.7542	5.0000e-005	0.0000	1.7554
Total	**4.9800e-003**	**0.1546**	**0.0327**	**5.7000e-004**	**0.0146**	**4.0000e-004**	**0.0150**	**3.9800e-003**	**3.8000e-004**	**4.3700e-003**	**0.0000**	**54.4616**	**54.4616**	**2.9800e-003**	**0.0000**	**54.5359**

3.8 Construction - West Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2788	2.1123	2.9751	4.9200e-003		0.1065	0.1065		0.1059	0.1059	0.0000	424.0827	424.0827	0.0371	0.0000	425.0093
Total	**0.2788**	**2.1123**	**2.9751**	**4.9200e-003**		**0.1065**	**0.1065**		**0.1059**	**0.1059**	**0.0000**	**424.0827**	**424.0827**	**0.0371**	**0.0000**	**425.0093**

3.8 Construction - West Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1500e-003	0.2344	0.0522	8.4000e-004	0.0208	2.3000e-004	0.0210	6.0000e-003	2.2000e-004	6.2200e-003	0.0000	80.8390	80.8390	4.3800e-003	0.0000	80.9486
Worker	0.0665	0.0465	0.4942	1.5400e-003	0.1809	1.1100e-003	0.1820	0.0481	1.0300e-003	0.0491	0.0000	139.2896	139.2896	3.3800e-003	0.0000	139.3740
Total	**0.0727**	**0.2809**	**0.5464**	**2.3800e-003**	**0.2017**	**1.3400e-003**	**0.2031**	**0.0541**	**1.2500e-003**	**0.0553**	**0.0000**	**220.1287**	**220.1287**	**7.7600e-003**	**0.0000**	**220.3227**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2788	2.1123	2.9751	4.9200e-003		0.1065	0.1065		0.1059	0.1059	0.0000	424.0822	424.0822	0.0371	0.0000	425.0088
Total	**0.2788**	**2.1123**	**2.9751**	**4.9200e-003**		**0.1065**	**0.1065**		**0.1059**	**0.1059**	**0.0000**	**424.0822**	**424.0822**	**0.0371**	**0.0000**	**425.0088**

3.8 Construction - West Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1500e-003	0.2344	0.0522	8.4000e-004	0.0208	2.3000e-004	0.0210	6.0000e-003	2.2000e-004	6.2200e-003	0.0000	80.8390	80.8390	4.3800e-003	0.0000	80.9486
Worker	0.0665	0.0465	0.4942	1.5400e-003	0.1809	1.1100e-003	0.1820	0.0481	1.0300e-003	0.0491	0.0000	139.2896	139.2896	3.3800e-003	0.0000	139.3740
Total	**0.0727**	**0.2809**	**0.5464**	**2.3800e-003**	**0.2017**	**1.3400e-003**	**0.2031**	**0.0541**	**1.2500e-003**	**0.0553**	**0.0000**	**220.1287**	**220.1287**	**7.7600e-003**	**0.0000**	**220.3227**

3.8 Construction - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1035	0.7813	1.1713	1.9400e-003		0.0363	0.0363		0.0361	0.0361	0.0000	167.0589	167.0589	0.0141	0.0000	167.4110
Total	**0.1035**	**0.7813**	**1.1713**	**1.9400e-003**		**0.0363**	**0.0363**		**0.0361**	**0.0361**	**0.0000**	**167.0589**	**167.0589**	**0.0141**	**0.0000**	**167.4110**

3.8 Construction - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3900e-003	0.0928	0.0198	3.3000e-004	8.2000e-003	9.0000e-005	8.2900e-003	2.3700e-003	9.0000e-005	2.4500e-003	0.0000	31.8102	31.8102	1.7300e-003	0.0000	31.8533
Worker	0.0247	0.0166	0.1812	5.9000e-004	0.0713	4.3000e-004	0.0717	0.0189	4.0000e-004	0.0193	0.0000	53.0917	53.0917	1.2100e-003	0.0000	53.1221
Total	**0.0271**	**0.1094**	**0.2010**	**9.2000e-004**	**0.0795**	**5.2000e-004**	**0.0800**	**0.0213**	**4.9000e-004**	**0.0218**	**0.0000**	**84.9019**	**84.9019**	**2.9400e-003**	**0.0000**	**84.9754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1035	0.7813	1.1713	1.9400e-003		0.0363	0.0363		0.0361	0.0361	0.0000	167.0587	167.0587	0.0141	0.0000	167.4108
Total	**0.1035**	**0.7813**	**1.1713**	**1.9400e-003**		**0.0363**	**0.0363**		**0.0361**	**0.0361**	**0.0000**	**167.0587**	**167.0587**	**0.0141**	**0.0000**	**167.4108**

3.8 Construction - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3900e-003	0.0928	0.0198	3.3000e-004	8.2000e-003	9.0000e-005	8.2900e-003	2.3700e-003	9.0000e-005	2.4500e-003	0.0000	31.8102	31.8102	1.7300e-003	0.0000	31.8533
Worker	0.0247	0.0166	0.1812	5.9000e-004	0.0713	4.3000e-004	0.0717	0.0189	4.0000e-004	0.0193	0.0000	53.0917	53.0917	1.2100e-003	0.0000	53.1221
Total	**0.0271**	**0.1094**	**0.2010**	**9.2000e-004**	**0.0795**	**5.2000e-004**	**0.0800**	**0.0213**	**4.9000e-004**	**0.0218**	**0.0000**	**84.9019**	**84.9019**	**2.9400e-003**	**0.0000**	**84.9754**

3.9 Paving - East Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1885
Paving	2.3600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0122**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1885**

3.9 Paving - East Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.4000e-004	0.0286	6.0900e-003	1.0000e-004	2.5200e-003	3.0000e-005	2.5500e-003	7.3000e-004	3.0000e-005	7.5000e-004	0.0000	9.7878	9.7878	5.3000e-004	0.0000	9.8010
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**2.2600e-003**	**0.0296**	**0.0172**	**1.4000e-004**	**6.9100e-003**	**6.0000e-005**	**6.9600e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**13.0549**	**13.0549**	**6.0000e-004**	**0.0000**	**13.0701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1884
Paving	2.3600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0122**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1884**

3.9 Paving - East Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.4000e-004	0.0286	6.0900e-003	1.0000e-004	2.5200e-003	3.0000e-005	2.5500e-003	7.3000e-004	3.0000e-005	7.5000e-004	0.0000	9.7878	9.7878	5.3000e-004	0.0000	9.8010
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**2.2600e-003**	**0.0296**	**0.0172**	**1.4000e-004**	**6.9100e-003**	**6.0000e-005**	**6.9600e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**13.0549**	**13.0549**	**6.0000e-004**	**0.0000**	**13.0701**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2300e-003	0.0488	0.0724	1.2000e-004		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	10.2130	10.2130	5.8000e-004	0.0000	10.2274
Total	**0.8899**	**0.0488**	**0.0724**	**1.2000e-004**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**10.2130**	**10.2130**	**5.8000e-004**	**0.0000**	**10.2274**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**1.5200e-003**	**1.0200e-003**	**0.0112**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**2.0000e-005**	**1.1900e-003**	**0.0000**	**3.2672**	**3.2672**	**7.0000e-005**	**0.0000**	**3.2691**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2300e-003	0.0488	0.0724	1.2000e-004		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	10.2130	10.2130	5.8000e-004	0.0000	10.2274
Total	**0.8899**	**0.0488**	**0.0724**	**1.2000e-004**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**10.2130**	**10.2130**	**5.8000e-004**	**0.0000**	**10.2274**

3.10 Architectural Coatings East Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**1.5200e-003**	**1.0200e-003**	**0.0112**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**2.0000e-005**	**1.1900e-003**	**0.0000**	**3.2672**	**3.2672**	**7.0000e-005**	**0.0000**	**3.2691**

3.11 Paving - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1885
Paving	2.3600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0122**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1885**

3.11 Paving - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.4000e-004	0.0286	6.0900e-003	1.0000e-004	2.5200e-003	3.0000e-005	2.5500e-003	7.3000e-004	3.0000e-005	7.5000e-004	0.0000	9.7878	9.7878	5.3000e-004	0.0000	9.8010
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**2.2600e-003**	**0.0296**	**0.0172**	**1.4000e-004**	**6.9100e-003**	**6.0000e-005**	**6.9600e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**13.0549**	**13.0549**	**6.0000e-004**	**0.0000**	**13.0701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8800e-003	0.0953	0.1463	2.3000e-004		4.6900e-003	4.6900e-003		4.3100e-003	4.3100e-003	0.0000	20.0265	20.0265	6.4800e-003	0.0000	20.1884
Paving	2.3600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0122**	**0.0953**	**0.1463**	**2.3000e-004**		**4.6900e-003**	**4.6900e-003**		**4.3100e-003**	**4.3100e-003**	**0.0000**	**20.0265**	**20.0265**	**6.4800e-003**	**0.0000**	**20.1884**

3.11 Paving - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.4000e-004	0.0286	6.0900e-003	1.0000e-004	2.5200e-003	3.0000e-005	2.5500e-003	7.3000e-004	3.0000e-005	7.5000e-004	0.0000	9.7878	9.7878	5.3000e-004	0.0000	9.8010
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**2.2600e-003**	**0.0296**	**0.0172**	**1.4000e-004**	**6.9100e-003**	**6.0000e-005**	**6.9600e-003**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**0.0000**	**13.0549**	**13.0549**	**6.0000e-004**	**0.0000**	**13.0701**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2300e-003	0.0488	0.0724	1.2000e-004		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	10.2130	10.2130	5.8000e-004	0.0000	10.2274
Total	**0.8899**	**0.0488**	**0.0724**	**1.2000e-004**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**10.2130**	**10.2130**	**5.8000e-004**	**0.0000**	**10.2274**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**1.5200e-003**	**1.0200e-003**	**0.0112**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**2.0000e-005**	**1.1900e-003**	**0.0000**	**3.2672**	**3.2672**	**7.0000e-005**	**0.0000**	**3.2691**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2300e-003	0.0488	0.0724	1.2000e-004		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	10.2130	10.2130	5.8000e-004	0.0000	10.2274
Total	**0.8899**	**0.0488**	**0.0724**	**1.2000e-004**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**10.2130**	**10.2130**	**5.8000e-004**	**0.0000**	**10.2274**

3.12 Architectural Coatings - West Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0112	4.0000e-005	4.3900e-003	3.0000e-005	4.4100e-003	1.1600e-003	2.0000e-005	1.1900e-003	0.0000	3.2672	3.2672	7.0000e-005	0.0000	3.2691
Total	**1.5200e-003**	**1.0200e-003**	**0.0112**	**4.0000e-005**	**4.3900e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**2.0000e-005**	**1.1900e-003**	**0.0000**	**3.2672**	**3.2672**	**7.0000e-005**	**0.0000**	**3.2691**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Mitigated	0.4455	3.0770	6.0309	0.0274	2.2695	0.0166	2.2862	0.6082	0.0155	0.6237	0.0000	2,543.6943	2,543.6943	0.1116	0.0000	2,546.4834
Unmitigated	0.4455	3.0770	6.0309	0.0274	2.2695	0.0166	2.2862	0.6082	0.0155	0.6237	0.0000	2,543.6943	2,543.6943	0.1116	0.0000	2,546.4834

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,419.32	1,419.32	1419.32	5,631,294	5,631,294
City Park	0.00	0.00	0.00		
Condo/Townhouse	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Strip Mall	83.03	83.03	83.03	329,439	329,439
Total	1,502.35	1,502.35	1,502.35	5,960,733	5,960,733

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.90	10.90	10.90	40.00	20.00	40.00	100	0	0
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.00	20.00	40.00	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
Strip Mall	10.90	10.90	10.90	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
City Park	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Condo/Townhouse	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Enclosed Parking with Elevator	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
General Office Building	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Parking Lot	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Recreational Swimming Pool	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Strip Mall	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	575.0523	575.0523	0.0265	5.4800e-003	577.3461
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	575.0523	575.0523	0.0265	5.4800e-003	577.3461
NaturalGas Mitigated	0.0209	0.1788	0.0766	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	206.9847	206.9847	3.9700e-003	3.7900e-003	208.2147
NaturalGas Unmitigated	0.0209	0.1788	0.0766	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	206.9847	206.9847	3.9700e-003	3.7900e-003	208.2147

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.83167e+006	0.0207	0.1766	0.0751	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.4723	204.4723	3.9200e-003	3.7500e-003	205.6874
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	22663.5	1.2000e-004	1.0400e-003	4.4000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.2094	1.2094	2.0000e-005	2.0000e-005	1.2166
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	17003	9.0000e-005	8.3000e-004	7.0000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9073	0.9073	2.0000e-005	2.0000e-005	0.9127
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	7412.58	4.0000e-005	3.6000e-004	3.1000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3956	0.3956	1.0000e-005	1.0000e-005	0.3979
Total		**0.0209**	**0.1788**	**0.0766**	**1.1500e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**	**0.0000**	**206.9846**	**206.9846**	**3.9700e-003**	**3.8000e-003**	**208.2147**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.83167e +006	0.0207	0.1766	0.0751	1.1300e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.4723	204.4723	3.9200e-003	3.7500e-003	205.6874
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	22663.5	1.2000e-004	1.0400e-003	4.4000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.2094	1.2094	2.0000e-005	2.0000e-005	1.2166
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	17003	9.0000e-005	8.3000e-004	7.0000e-004	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.9073	0.9073	2.0000e-005	2.0000e-005	0.9127
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	7412.58	4.0000e-005	3.6000e-004	3.1000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3956	0.3956	1.0000e-005	1.0000e-005	0.3979
Total		**0.0209**	**0.1788**	**0.0766**	**1.1500e-003**		**0.0144**	**0.0144**		**0.0144**	**0.0144**	**0.0000**	**206.9846**	**206.9846**	**3.9700e-003**	**3.8000e-003**	**208.2147**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.18304e +006	338.0684	0.0156	3.2200e-003	339.4169
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	5642.06	1.6123	7.0000e-005	2.0000e-005	1.6187
Enclosed Parking with Elevator	703200	200.9487	9.2500e-003	1.9100e-003	201.7502
General Office Building	46648	13.3303	6.1000e-004	1.3000e-004	13.3835
Parking Lot	31640	9.0416	4.2000e-004	9.0000e-005	9.0776
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	42171.6	12.0511	5.5000e-004	1.1000e-004	12.0992
Total		**575.0523**	**0.0265**	**5.4800e-003**	**577.3461**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.18304e+006	338.0684	0.0156	3.2200e-003	339.4169
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	5642.06	1.6123	7.0000e-005	2.0000e-005	1.6187
Enclosed Parking with Elevator	703200	200.9487	9.2500e-003	1.9100e-003	201.7502
General Office Building	46648	13.3303	6.1000e-004	1.3000e-004	13.3835
Parking Lot	31640	9.0416	4.2000e-004	9.0000e-005	9.0776
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	42171.6	12.0511	5.5000e-004	1.1000e-004	12.0992
Total		**575.0523**	**0.0265**	**5.4800e-003**	**577.3461**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1609	0.0849	2.7100	4.9000e-004		0.0192	0.0192		0.0192	0.0192	0.0000	66.8289	66.8289	5.4300e-003	1.1400e-003	67.3059
Unmitigated	1.1609	0.0849	2.7100	4.9000e-004		0.0192	0.0192		0.0192	0.0192	0.0000	66.8289	66.8289	5.4300e-003	1.1400e-003	67.3059

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0883					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.3100e-003	0.0539	0.0229	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	62.4357	62.4357	1.2000e-003	1.1400e-003	62.8067
Landscaping	0.0812	0.0309	2.6871	1.4000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	4.3933	4.3933	4.2400e-003	0.0000	4.4992
Total	**1.1609**	**0.0849**	**2.7100**	**4.8000e-004**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**66.8289**	**66.8289**	**5.4400e-003**	**1.1400e-003**	**67.3059**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0883					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9851					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.3100e-003	0.0539	0.0229	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	62.4357	62.4357	1.2000e-003	1.1400e-003	62.8067
Landscaping	0.0812	0.0309	2.6871	1.4000e-004		0.0149	0.0149		0.0149	0.0149	0.0000	4.3933	4.3933	4.2400e-003	0.0000	4.4992
Total	**1.1609**	**0.0849**	**2.7100**	**4.8000e-004**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**66.8289**	**66.8289**	**5.4400e-003**	**1.1400e-003**	**67.3059**

7.0 Water Detail

7.1 Mitigation Measures Water

Category	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	111.2350	0.6110	0.0153	131.0754
Unmitigated	111.2350	0.6110	0.0153	131.0754

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.94 / 10.6796	102.3128	0.5565	0.0140	120.3833
City Park	0 / 0.393189	1.2483	6.0000e-005	1.0000e-005	1.2533
Condo/Townhouse	0.065154 / 0.0410754	0.3935	2.1400e-003	5.0000e-005	0.4630
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	1.35078 / 0	5.4547	0.0443	1.0900e-003	6.8848
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0 / 0.108747	0.3453	2.0000e-005	0.0000	0.3466
Strip Mall	0.247402 / 0.151634	1.4805	8.1300e-003	2.0000e-004	1.7443
Total		**111.2350**	**0.6111**	**0.0153**	**131.0754**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.94 / 10.6796	102.3128	0.5565	0.0140	120.3833
City Park	0 / 0.393189	1.2483	6.0000e-005	1.0000e-005	1.2533
Condo/Townhouse	0.065154 / 0.0410754	0.3935	2.1400e-003	5.0000e-005	0.4630
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	1.35078 / 0	5.4547	0.0443	1.0900e-003	6.8848
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0 / 0.108747	0.3453	2.0000e-005	0.0000	0.3466
Strip Mall	0.247402 / 0.151634	1.4805	8.1300e-003	2.0000e-004	1.7443
Total		**111.2350**	**0.6111**	**0.0153**	**131.0754**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	118.5467	7.0059	0.0000	293.6945
Unmitigated	118.5467	7.0059	0.0000	293.6945

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	555.83	112.8285	6.6680	0.0000	279.5278
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Condo/Townhouse	0.46	0.0934	5.5200e-003	0.0000	0.2313
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	7.07	1.4352	0.0848	0.0000	3.5555
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	17.1	3.4712	0.2051	0.0000	8.5996
Strip Mall	3.51	0.7125	0.0421	0.0000	1.7652
Total		**118.5467**	**7.0059**	**0.0000**	**293.6945**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	555.83	112.8285	6.6680	0.0000	279.5278
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Condo/Townhouse	0.46	0.0934	5.5200e-003	0.0000	0.2313
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	7.07	1.4352	0.0848	0.0000	3.5555
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	17.1	3.4712	0.2051	0.0000	8.5996
Strip Mall	3.51	0.7125	0.0421	0.0000	1.7652
Total		**118.5467**	**7.0059**	**0.0000**	**293.6945**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Alta Cuvee Mixed-Use Project

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	7.60	1000sqft	0.00	4,900.00	0
Enclosed Parking with Elevator	300.00	Space	0.00	120,000.00	0
Parking Lot	226.00	Space	1.80	90,400.00	0
City Park	0.33	Acre	0.33	14,374.80	0
Recreational Swimming Pool	3.00	1000sqft	0.07	3,000.00	0
Apartments Mid Rise	259.00	Dwelling Unit	3.00	259,000.00	741
Condo/Townhouse	1.00	Dwelling Unit	0.00	1,570.00	3
Strip Mall	3.34	1000sqft	0.00	3,339.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See SWAPE comment on "Incorrect CO2 Intensity Factor"

Land Use - See SWAPE comments on "Failure to Model Required Amount of Parking" and "Unsubstantiated Reduction to Land Us
Enclosed Parking= 57% of total, Parking Lot = 43% of total parking.

Construction Phase - Consistent with IS/MND's model
Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"

Off-road Equipment - Consistent with the IS/MND's model.

Trips and VMT - Consistent with the IS/MND's model.

Grading - Consistent with the IS/MND's model.

Architectural Coating - See SWAPE comment on "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the IS/MND's model.

Woodstoves - Woodstoves: consistent with IS/MND's model.
Fireplaces: See SWAPE comment on "Unsubstantiated Changes to Gas Fireplace Values"

Area Coating - See SWAPE comment on "Unsubstantiated Changes to Architectural and Area Coating Emission Factors"

Energy Use -

Water And Wastewater - Consistent with the IS/MND's model.

Solid Waste - See SWAPE comment on "Unsubstantiated Reductions to Solid Waste Generation Rates"
Total adds up to 584 tons/year

Construction Off-road Equipment Mitigation - See SWAPE comment on "Incorrect Application of Construction-related Mitigation Measures"

Area Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Energy Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Water Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	220.15	259.00
tblFireplaces	NumberGas	0.85	1.00
tblFireplaces	NumberNoFireplace	25.90	0.00
tblFireplaces	NumberNoFireplace	0.10	0.00
tblFireplaces	NumberWood	12.95	0.00
tblFireplaces	NumberWood	0.05	0.00
tblGrading	AcresOfGrading	50.00	60.00
tblGrading	AcresOfGrading	50.00	45.00
tblGrading	AcresOfGrading	10.00	24.00
tblGrading	AcresOfGrading	10.00	12.00
tblGrading	MaterialExported	0.00	21,180.00
tblGrading	MaterialExported	0.00	10,590.00
tblLandUse	LandUseSquareFeet	7,600.00	4,900.00
tblLandUse	LandUseSquareFeet	1,000.00	1,570.00
tblLandUse	LandUseSquareFeet	3,340.00	3,339.00
tblLandUse	LotAcreage	0.17	0.00
tblLandUse	LotAcreage	2.70	0.00
tblLandUse	LotAcreage	2.03	1.80
tblLandUse	LotAcreage	6.82	3.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.08	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00

Alta Cuvee Mixed-Use Project - San Bernardino-South Coast County, Summer

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	630
tblSolidWaste	SolidWasteGenerationRate	119.14	555.83
tblTripsAndVMT	HaulingTripNumber	2,648.00	2,880.00
tblTripsAndVMT	HaulingTripNumber	1,324.00	1,440.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00

tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblVehicleTrips	CC_TL	8.40	10.90
tblVehicleTrips	CNW_TL	6.90	10.90
tblVehicleTrips	CW_TL	16.60	10.90
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	HO_TL	8.70	10.90
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TL	5.90	10.90
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HW_TL	14.70	10.90
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	HW_TTP	40.20	40.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	6.39	5.48
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	42.04	24.86
tblVehicleTrips	SU_TR	5.86	5.48
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	20.43	24.86
tblVehicleTrips	WD_TR	6.65	5.48
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	0.00
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblVehicleTrips	WD_TR	44.32	24.86
tblWater	IndoorWaterUseRate	16,874,892.64	16,940,046.66
tblWater	IndoorWaterUseRate	177,429.43	0.00
tblWater	OutdoorWaterUseRate	10,638,519.27	10,679,594.63

tblWater	OutdoorWaterUseRate	827,895.26	0.00
tblWoodstoves	NumberCatalytic	12.95	0.00
tblWoodstoves	NumberCatalytic	0.05	0.00
tblWoodstoves	NumberNoncatalytic	12.95	0.00
tblWoodstoves	NumberNoncatalytic	0.05	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.9826	82.5898	46.0429	0.2561	8.2717	1.6581	9.5368	1.8114	1.6363	2.9810	0.0000	26,896.4657	26,896.4657	2.2163	0.0000	26,951.8740
2023	4.6469	32.2831	45.2356	0.0955	2.4917	1.4464	3.9381	0.6666	1.4268	2.0935	0.0000	9,283.0618	9,283.0618	0.7593	0.0000	9,302.0452
2024	89.1573	27.3471	43.1163	0.0898	2.4917	1.1320	3.6237	0.6666	1.1243	1.7909	0.0000	8,726.7297	8,726.7297	0.7790	0.0000	8,741.2084
Maximum	**89.1573**	**82.5898**	**46.0429**	**0.2561**	**8.2717**	**1.6581**	**9.5368**	**1.8114**	**1.6363**	**2.9810**	**0.0000**	**26,896.4657**	**26,896.4657**	**2.2163**	**0.0000**	**26,951.8740**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.9826	82.5898	46.0429	0.2561	8.2717	1.6581	9.5368	1.8114	1.6363	2.9810	0.0000	26,896.4657	26,896.4657	2.2163	0.0000	26,951.8740
2023	4.6469	32.2831	45.2356	0.0955	2.4917	1.4464	3.9381	0.6666	1.4268	2.0935	0.0000	9,283.0618	9,283.0618	0.7593	0.0000	9,302.0452
2024	89.1573	27.3471	43.1163	0.0898	2.4917	1.1320	3.6237	0.6666	1.1243	1.7909	0.0000	8,726.7297	8,726.7297	0.7790	0.0000	8,741.2084
Maximum	**89.1573**	**82.5898**	**46.0429**	**0.2561**	**8.2717**	**1.6581**	**9.5368**	**1.8114**	**1.6363**	**2.9810**	**0.0000**	**26,896.4657**	**26,896.4657**	**2.2163**	**0.0000**	**26,951.8740**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Energy	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
Mobile	2.8630	16.4952	37.0284	0.1600	12.7073	0.0913	12.7986	3.3998	0.0851	3.4849		16,342.1546	16,342.1546	0.6809		16,359.1774
Total	**10.0134**	**22.0354**	**60.7797**	**0.1949**	**12.7073**	**0.6382**	**13.3455**	**3.3998**	**0.6320**	**4.0318**	**0.0000**	**23,136.9789**	**23,136.9789**	**0.8478**	**0.1239**	**23,195.0840**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Energy	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
Mobile	2.8630	16.4952	37.0284	0.1600	12.7073	0.0913	12.7986	3.3998	0.0851	3.4849		16,342.1546	16,342.1546	0.6809		16,359.1774
Total	**10.0134**	**22.0354**	**60.7797**	**0.1949**	**12.7073**	**0.6382**	**13.3455**	**3.3998**	**0.6320**	**4.0318**	**0.0000**	**23,136.9789**	**23,136.9789**	**0.8478**	**0.1239**	**23,195.0840**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/5/2022	4/1/2022	5	20	
2	Site Preparation	Grading	4/30/2022	5/27/2022	5	20	
3	Trenching/Utilites - East Building	Site Preparation	4/2/2022	4/15/2022	5	10	
4	Construction - East Building	Building Construction	6/25/2022	5/12/2023	5	230	
5	Grading	Grading	5/28/2022	6/24/2022	5	20	
6	Trenching/Utilities - West Building	Site Preparation	4/16/2022	4/29/2022	5	10	
7	Construction - West Building	Building Construction	5/13/2023	3/29/2024	5	230	
8	Paving - East Building	Paving	3/30/2024	4/26/2024	5	20	
9	Architectural Coatings East Bldg	Architectural Coating	5/25/2024	6/21/2024	5	20	
10	Paving - West Building	Paving	4/27/2024	5/24/2024	5	20	
11	Architectural Coatings - West Bldg	Architectural Coating	6/22/2024	7/19/2024	5	20	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 45

Acres of Paving: 1.8

Residential Indoor: 527,654; Residential Outdoor: 175,885; Non-Residential Indoor: 12,359; Non-Residential Outdoor: 4,120; Striped Parking Area: 12,624 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Generator Sets	2	4.00	84	0.74
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Crawler Tractors	2	8.00	212	0.43
Site Preparation	Excavators	0	8.00	158	0.38
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilites - East Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilites - East Building	Excavators	1	8.00	158	0.38
Trenching/Utilites - East Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilites - East Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilites - East Building	Trenchers	2	8.00	78	0.50
Construction - East Building	Air Compressors	10	8.00	78	0.48
Construction - East Building	Cranes	1	7.00	231	0.29
Construction - East Building	Forklifts	0	8.00	89	0.20
Construction - East Building	Generator Sets	2	8.00	84	0.74
Construction - East Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - East Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - East Building	Welders	0	8.00	46	0.45
Grading	Crawler Tractors	2	8.00	212	0.43
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41

Grading	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilities - West Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilities - West Building	Excavators	1	8.00	158	0.38
Trenching/Utilities - West Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilities - West Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilities - West Building	Trenchers	2	8.00	78	0.50
Construction - West Building	Air Compressors	10	8.00	78	0.48
Construction - West Building	Cranes	0	7.00	231	0.29
Construction - West Building	Forklifts	0	8.00	89	0.20
Construction - West Building	Generator Sets	2	8.00	84	0.74
Construction - West Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - West Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - West Building	Welders	0	8.00	46	0.45
Paving - East Building	Pavers	2	8.00	130	0.42
Paving - East Building	Paving Equipment	2	8.00	132	0.36
Paving - East Building	Rollers	2	8.00	80	0.38
Architectural Coatings East Bldg	Air Compressors	4	6.00	78	0.48
Paving - West Building	Pavers	2	8.00	130	0.42
Paving - West Building	Paving Equipment	2	8.00	132	0.36
Paving - West Building	Rollers	2	8.00	80	0.38
Architectural Coatings - West Bldg	Air Compressors	4	6.00	78	0.48

Trips and VMT

Alta Cuvee Mixed-Use Project - San Bernardino-South Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilites - East Building	6	40.00	0.00	2,880.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - East Building	15	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities - West Building	6	40.00	0.00	1,440.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - West Building	14	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - East Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings East Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - West Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings - West Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5643	25.0937	17.7597	0.0351		1.2177	1.2177		1.1441	1.1441		3,369.7852	3,369.7852	0.7586		3,388.7503
Total	**2.5643**	**25.0937**	**17.7597**	**0.0351**		**1.2177**	**1.2177**		**1.1441**	**1.1441**		**3,369.7852**	**3,369.7852**	**0.7586**		**3,388.7503**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5643	25.0937	17.7597	0.0351		1.2177	1.2177		1.1441	1.1441	0.0000	3,369.785 2	3,369.785 2	0.7586		3,388.750 3
Total	**2.5643**	**25.0937**	**17.7597**	**0.0351**		**1.2177**	**1.2177**		**1.1441**	**1.1441**	**0.0000**	**3,369.785 2**	**3,369.785 2**	**0.7586**		**3,388.750 3**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752		4,137.845 2	4,137.845 2	1.3383		4,171.301 8
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**3.1815**	**1.1687**	**4.3502**	**0.3435**	**1.0752**	**1.4187**		**4,137.845 2**	**4,137.845 2**	**1.3383**		**4,171.301 8**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752	0.0000	4,137.8452	4,137.8452	1.3383		4,171.3018
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**3.1815**	**1.1687**	**4.3502**	**0.3435**	**1.0752**	**1.4187**	**0.0000**	**4,137.8452**	**4,137.8452**	**1.3383**		**4,171.3018**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Fugitive Dust					2.7847	0.0000	2.7847	0.3111	0.0000	0.3111			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197		2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**2.7847**	**1.1084**	**3.8931**	**0.3111**	**1.0197**	**1.3308**		**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6178	60.2492	9.8639	0.2212	5.0399	0.1540	5.1938	1.3817	0.1473	1.5290		23,501.4069	23,501.4069	1.2436		23,532.4959
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**1.8076**	**60.3621**	**11.3851**	**0.2254**	**5.4870**	**0.1568**	**5.6437**	**1.5003**	**0.1499**	**1.6502**		**23,923.2479**	**23,923.2479**	**1.2547**		**23,954.6162**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7847	0.0000	2.7847	0.3111	0.0000	0.3111			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197	0.0000	2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**2.7847**	**1.1084**	**3.8931**	**0.3111**	**1.0197**	**1.3308**	**0.0000**	**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.4 Trenching/Utilites - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6178	60.2492	9.8639	0.2212	5.0399	0.1540	5.1938	1.3817	0.1473	1.5290		23,501.4069	23,501.4069	1.2436		23,532.4959
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**1.8076**	**60.3621**	**11.3851**	**0.2254**	**5.4870**	**0.1568**	**5.6437**	**1.5003**	**0.1499**	**1.6502**		**23,923.2479**	**23,923.2479**	**1.2547**		**23,954.6162**

3.5 Construction - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9372	31.2581	37.7657	0.0647		1.6386	1.6386		1.6182	1.6182		6,155.1953	6,155.1953	0.6776		6,172.1341
Total	**3.9372**	**31.2581**	**37.7657**	**0.0647**		**1.6386**	**1.6386**		**1.6182**	**1.6182**		**6,155.1953**	**6,155.1953**	**0.6776**		**6,172.1341**

3.5 Construction - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0964	3.6585	0.6711	0.0107	0.2562	5.5600e-003	0.2617	0.0738	5.3100e-003	0.0791		1,129.2303	1,129.2303	0.0695		1,130.9666
Worker	0.9490	0.5648	7.6061	0.0212	2.2355	0.0139	2.2494	0.5929	0.0128	0.6057		2,109.2048	2,109.2048	0.0559		2,110.6014
Total	**1.0454**	**4.2232**	**8.2772**	**0.0319**	**2.4917**	**0.0194**	**2.5112**	**0.6666**	**0.0181**	**0.6847**		**3,238.4352**	**3,238.4352**	**0.1253**		**3,241.5679**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9372	31.2581	37.7657	0.0647		1.6386	1.6386		1.6182	1.6182	0.0000	6,155.1953	6,155.1953	0.6776		6,172.1341
Total	**3.9372**	**31.2581**	**37.7657**	**0.0647**		**1.6386**	**1.6386**		**1.6182**	**1.6182**	**0.0000**	**6,155.1953**	**6,155.1953**	**0.6776**		**6,172.1341**

3.5 Construction - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0964	3.6585	0.6711	0.0107	0.2562	5.5600e-003	0.2617	0.0738	5.3100e-003	0.0791		1,129.2303	1,129.2303	0.0695		1,130.9666
Worker	0.9490	0.5648	7.6061	0.0212	2.2355	0.0139	2.2494	0.5929	0.0128	0.6057		2,109.2048	2,109.2048	0.0559		2,110.6014
Total	**1.0454**	**4.2232**	**8.2772**	**0.0319**	**2.4917**	**0.0194**	**2.5112**	**0.6666**	**0.0181**	**0.6847**		**3,238.4352**	**3,238.4352**	**0.1253**		**3,241.5679**

3.5 Construction - East Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6862	28.9417	37.6666	0.0647		1.4301	1.4301		1.4118	1.4118		6,155.2835	6,155.2835	0.6534		6,171.6182
Total	**3.6862**	**28.9417**	**37.6666**	**0.0647**		**1.4301**	**1.4301**		**1.4118**	**1.4118**		**6,155.2835**	**6,155.2835**	**0.6534**		**6,171.6182**

3.5 Construction - East Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0728	2.8328	0.5848	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,097.8779	1,097.8779	0.0559		1,099.2763
Worker	0.8878	0.5086	6.9841	0.0204	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		2,029.9004	2,029.9004	0.0500		2,031.1507
Total	**0.9606**	**3.3414**	**7.5689**	**0.0308**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6817**		**3,127.7783**	**3,127.7783**	**0.1060**		**3,130.4270**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6862	28.9417	37.6666	0.0647		1.4301	1.4301		1.4118	1.4118	0.0000	6,155.2835	6,155.2835	0.6534		6,171.6182
Total	**3.6862**	**28.9417**	**37.6666**	**0.0647**		**1.4301**	**1.4301**		**1.4118**	**1.4118**	**0.0000**	**6,155.2835**	**6,155.2835**	**0.6534**		**6,171.6182**

3.5 Construction - East Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0728	2.8328	0.5848	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,097.8779	1,097.8779	0.0559		1,099.2763
Worker	0.8878	0.5086	6.9841	0.0204	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		2,029.9004	2,029.9004	0.0500		2,031.1507
Total	**0.9606**	**3.3414**	**7.5689**	**0.0308**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6817**		**3,127.7783**	**3,127.7783**	**0.1060**		**3,130.4270**

3.6 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3861	0.0000	2.3861	0.2577	0.0000	0.2577			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752		4,137.8452	4,137.8452	1.3383		4,171.3018
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**2.3861**	**1.1687**	**3.5548**	**0.2577**	**1.0752**	**1.3328**		**4,137.8452**	**4,137.8452**	**1.3383**		**4,171.3018**

3.6 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3861	0.0000	2.3861	0.2577	0.0000	0.2577			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752	0.0000	4,137.845 2	4,137.845 2	1.3383		4,171.301 8
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**2.3861**	**1.1687**	**3.5548**	**0.2577**	**1.0752**	**1.3328**	**0.0000**	**4,137.845 2**	**4,137.845 2**	**1.3383**		**4,171.301 8**

3.6 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.1898**	**0.1130**	**1.5212**	**4.2400e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**421.8410**	**421.8410**	**0.0112**		**422.1203**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3924	0.0000	1.3924	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197		2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**1.3924**	**1.1084**	**2.5008**	**0.1556**	**1.0197**	**1.1753**		**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8089	30.1246	4.9320	0.1106	2.5199	0.0770	2.5969	0.6909	0.0737	0.7645		11,750.7035	11,750.7035	0.6218		11,766.2480
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.9987**	**30.2376**	**6.4532**	**0.1148**	**2.9671**	**0.0798**	**3.0468**	**0.8094**	**0.0762**	**0.8857**		**12,172.5444**	**12,172.5444**	**0.6330**		**12,188.3682**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3924	0.0000	1.3924	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197	0.0000	2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**1.3924**	**1.1084**	**2.5008**	**0.1556**	**1.0197**	**1.1753**	**0.0000**	**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.7 Trenching/Utilities - West Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8089	30.1246	4.9320	0.1106	2.5199	0.0770	2.5969	0.6909	0.0737	0.7645		11,750.7035	11,750.7035	0.6218		11,766.2480
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1898	0.1130	1.5212	4.2400e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		421.8410	421.8410	0.0112		422.1203
Total	**0.9987**	**30.2376**	**6.4532**	**0.1148**	**2.9671**	**0.0798**	**3.0468**	**0.8094**	**0.0762**	**0.8857**		**12,172.5444**	**12,172.5444**	**0.6330**		**12,188.3682**

3.8 Construction - West Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3787	25.6032	36.0615	0.0597		1.2907	1.2907		1.2835	1.2835		5,666.3167	5,666.3167	0.4953		5,678.6978
Total	**3.3787**	**25.6032**	**36.0615**	**0.0597**		**1.2907**	**1.2907**		**1.2835**	**1.2835**		**5,666.3167**	**5,666.3167**	**0.4953**		**5,678.6978**

3.8 Construction - West Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0728	2.8328	0.5848	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,097.8779	1,097.8779	0.0559		1,099.2763
Worker	0.8878	0.5086	6.9841	0.0204	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		2,029.9004	2,029.9004	0.0500		2,031.1507
Total	**0.9606**	**3.3414**	**7.5689**	**0.0308**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6817**		**3,127.7783**	**3,127.7783**	**0.1060**		**3,130.4270**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3787	25.6032	36.0615	0.0597		1.2907	1.2907		1.2835	1.2835	0.0000	5,666.3167	5,666.3167	0.4953		5,678.6978
Total	**3.3787**	**25.6032**	**36.0615**	**0.0597**		**1.2907**	**1.2907**		**1.2835**	**1.2835**	**0.0000**	**5,666.3167**	**5,666.3167**	**0.4953**		**5,678.6978**

3.8 Construction - West Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0728	2.8328	0.5848	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,097.877 9	1,097.877 9	0.0559		1,099.276 3
Worker	0.8878	0.5086	6.9841	0.0204	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		2,029.900 4	2,029.900 4	0.0500		2,031.150 7
Total	**0.9606**	**3.3414**	**7.5689**	**0.0308**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6817**		**3,127.778 3**	**3,127.778 3**	**0.1060**		**3,130.427 0**

3.8 Construction - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1851	24.0403	36.0409	0.0597		1.1159	1.1159		1.1093	1.1093		5,666.182 2	5,666.182 2	0.4776		5,678.122 5
Total	**3.1851**	**24.0403**	**36.0409**	**0.0597**		**1.1159**	**1.1159**		**1.1093**	**1.1093**		**5,666.182 2**	**5,666.182 2**	**0.4776**		**5,678.122 5**

3.8 Construction - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.8353	0.4609	6.5130	0.0197	2.2355	0.0134	2.2489	0.5929	0.0123	0.6052		1,964.0716	1,964.0716	0.0457		1,965.2129
Total	**0.9071**	**3.3068**	**7.0755**	**0.0301**	**2.4917**	**0.0161**	**2.5078**	**0.6666**	**0.0149**	**0.6816**		**3,060.5475**	**3,060.5475**	**0.1015**		**3,063.0860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1851	24.0403	36.0409	0.0597		1.1159	1.1159		1.1093	1.1093	0.0000	5,666.1822	5,666.1822	0.4776		5,678.1225
Total	**3.1851**	**24.0403**	**36.0409**	**0.0597**		**1.1159**	**1.1159**		**1.1093**	**1.1093**	**0.0000**	**5,666.1822**	**5,666.1822**	**0.4776**		**5,678.1225**

3.8 Construction - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.8353	0.4609	6.5130	0.0197	2.2355	0.0134	2.2489	0.5929	0.0123	0.6052		1,964.0716	1,964.0716	0.0457		1,965.2129
Total	**0.9071**	**3.3068**	**7.0755**	**0.0301**	**2.4917**	**0.0161**	**2.5078**	**0.6666**	**0.0149**	**0.6816**		**3,060.5475**	**3,060.5475**	**0.1015**		**3,063.0860**

3.9 Paving - East Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.9 Paving - East Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.2389**	**2.9381**	**1.8651**	**0.0143**	**0.7033**	**5.4100e-003**	**0.7087**	**0.1923**	**5.0700e-003**	**0.1974**		**1,489.2902**	**1,489.2902**	**0.0650**		**1,490.9157**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.9 Paving - East Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.2389**	**2.9381**	**1.8651**	**0.0143**	**0.7033**	**5.4100e-003**	**0.7087**	**0.1923**	**5.0700e-003**	**0.1974**		**1,489.2902**	**1,489.2902**	**0.0650**		**1,490.9157**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437		1,125.7922	1,125.7922	0.0634		1,127.3770
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**		**1,125.7922**	**1,125.7922**	**0.0634**		**1,127.3770**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.1671**	**0.0922**	**1.3026**	**3.9400e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**392.8143**	**392.8143**	**9.1300e-003**		**393.0426**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437	0.0000	1,125.7922	1,125.7922	0.0634		1,127.3770
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**	**0.0000**	**1,125.7922**	**1,125.7922**	**0.0634**		**1,127.3770**

3.10 Architectural Coatings East Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.1671**	**0.0922**	**1.3026**	**3.9400e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**392.8143**	**392.8143**	**9.1300e-003**		**393.0426**

3.11 Paving - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

3.11 Paving - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.2389**	**2.9381**	**1.8651**	**0.0143**	**0.7033**	**5.4100e-003**	**0.7087**	**0.1923**	**5.0700e-003**	**0.1974**		**1,489.2902**	**1,489.2902**	**0.0650**		**1,490.9157**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.11 Paving - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0718	2.8460	0.5625	0.0104	0.2562	2.7300e-003	0.2589	0.0738	2.6100e-003	0.0764		1,096.4759	1,096.4759	0.0559		1,097.8731
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.2389**	**2.9381**	**1.8651**	**0.0143**	**0.7033**	**5.4100e-003**	**0.7087**	**0.1923**	**5.0700e-003**	**0.1974**		**1,489.2902**	**1,489.2902**	**0.0650**		**1,490.9157**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437		1,125.7922	1,125.7922	0.0634		1,127.3770
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**		**1,125.7922**	**1,125.7922**	**0.0634**		**1,127.3770**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.1671**	**0.0922**	**1.3026**	**3.9400e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**392.8143**	**392.8143**	**9.1300e-003**		**393.0426**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437	0.0000	1,125.792 2	1,125.792 2	0.0634		1,127.377 0
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**	**0.0000**	**1,125.792 2**	**1,125.792 2**	**0.0634**		**1,127.377 0**

3.12 Architectural Coatings - West Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1671	0.0922	1.3026	3.9400e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		392.8143	392.8143	9.1300e-003		393.0426
Total	**0.1671**	**0.0922**	**1.3026**	**3.9400e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**392.8143**	**392.8143**	**9.1300e-003**		**393.0426**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.8630	16.4952	37.0284	0.1600	12.7073	0.0913	12.7986	3.3998	0.0851	3.4849		16,342.1546	16,342.1546	0.6809		16,359.1774
Unmitigated	2.8630	16.4952	37.0284	0.1600	12.7073	0.0913	12.7986	3.3998	0.0851	3.4849		16,342.1546	16,342.1546	0.6809		16,359.1774

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,419.32	1,419.32	1419.32	5,631,294	5,631,294
City Park	0.00	0.00	0.00		
Condo/Townhouse	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Strip Mall	83.03	83.03	83.03	329,439	329,439
Total	1,502.35	1,502.35	1,502.35	5,960,733	5,960,733

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.90	10.90	10.90	40.00	20.00	40.00	100	0	0
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.00	20.00	40.00	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
Strip Mall	10.90	10.90	10.90	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
City Park	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Condo/Townhouse	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Enclosed Parking with Elevator	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
General Office Building	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Parking Lot	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Recreational Swimming Pool	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Strip Mall	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
NaturalGas Unmitigated	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	10497.7	0.1132	0.9674	0.4117	6.1800e-003		0.0782	0.0782		0.0782	0.0782		1,235.0255	1,235.0255	0.0237	0.0226	1,242.3647
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	62.0919	6.7000e-004	5.7200e-003	2.4300e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004		7.3049	7.3049	1.4000e-004	1.3000e-004	7.3483
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	46.5836	5.0000e-004	4.5700e-003	3.8400e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.4804	5.4804	1.1000e-004	1.0000e-004	5.5130
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	20.3084	2.2000e-004	1.9900e-003	1.6700e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3892	2.3892	5.0000e-005	4.0000e-005	2.4034
Total		**0.1146**	**0.9797**	**0.4196**	**6.2600e-003**		**0.0792**	**0.0792**		**0.0792**	**0.0792**		**1,250.2001**	**1,250.2001**	**0.0240**	**0.0229**	**1,257.6294**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	10.4977	0.1132	0.9674	0.4117	6.1800e-003		0.0782	0.0782		0.0782	0.0782		1,235.0255	1,235.0255	0.0237	0.0226	1,242.3647
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0.0620919	6.7000e-004	5.7200e-003	2.4300e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004		7.3049	7.3049	1.4000e-004	1.3000e-004	7.3483
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0.0465836	5.0000e-004	4.5700e-003	3.8400e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.4804	5.4804	1.1000e-004	1.0000e-004	5.5130
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.0203084	2.2000e-004	1.9900e-003	1.6700e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3892	2.3892	5.0000e-005	4.0000e-005	2.4034
Total		**0.1146**	**0.9797**	**0.4196**	**6.2600e-003**		**0.0792**	**0.0792**		**0.0792**	**0.0792**		**1,250.2001**	**1,250.2001**	**0.0240**	**0.0229**	**1,257.6294**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Unmitigated	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4837					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5047	4.3129	1.8353	0.0275		0.3487	0.3487		0.3487	0.3487	0.0000	5,505.8824	5,505.8824	0.1055	0.1009	5,538.6011
Landscaping	0.6498	0.2475	21.4964	1.1400e-003		0.1190	0.1190		0.1190	0.1190		38.7418	38.7418	0.0374		39.6760
Total	**7.0358**	**4.5605**	**23.3317**	**0.0287**		**0.4678**	**0.4678**		**0.4678**	**0.4678**	**0.0000**	**5,544.6242**	**5,544.6242**	**0.1429**	**0.1009**	**5,578.2771**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4837					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5047	4.3129	1.8353	0.0275		0.3487	0.3487		0.3487	0.3487	0.0000	5,505.882 4	5,505.882 4	0.1055	0.1009	5,538.601 1
Landscaping	0.6498	0.2475	21.4964	1.1400e-003		0.1190	0.1190		0.1190	0.1190		38.7418	38.7418	0.0374		39.6760
Total	**7.0358**	**4.5605**	**23.3317**	**0.0287**		**0.4678**	**0.4678**		**0.4678**	**0.4678**	**0.0000**	**5,544.624 2**	**5,544.624 2**	**0.1429**	**0.1009**	**5,578.277 1**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Alta Cuvee Mixed-Use Project

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	7.60	1000sqft	0.00	4,900.00	0
Enclosed Parking with Elevator	300.00	Space	0.00	120,000.00	0
Parking Lot	226.00	Space	1.80	90,400.00	0
City Park	0.33	Acre	0.33	14,374.80	0
Recreational Swimming Pool	3.00	1000sqft	0.07	3,000.00	0
Apartments Mid Rise	259.00	Dwelling Unit	3.00	259,000.00	741
Condo/Townhouse	1.00	Dwelling Unit	0.00	1,570.00	3
Strip Mall	3.34	1000sqft	0.00	3,339.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See SWAPE comment on "Incorrect CO2 Intensity Factor"

Land Use - See SWAPE comments on "Failure to Model Required Amount of Parking" and "Unsubstantiated Reduction to Land Us
Enclosed Parking= 57% of total, Parking Lot = 43% of total parking.

Construction Phase - Consistent with IS/MND's model
Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"
Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - Consistent with the IS/MND's model.

Off-road Equipment - See SWAPE comment on "Unsubstantiated Changes to Off-Road Equipment Horsepower Values"

Off-road Equipment - Consistent with the IS/MND's model.

Trips and VMT - Consistent with the IS/MND's model.

Grading - Consistent with the IS/MND's model.

Architectural Coating - See SWAPE comment on "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the IS/MND's model.

Woodstoves - Woodstoves: consistent with IS/MND's model.
Fireplaces: See SWAPE comment on "Unsubstantiated Changes to Gas Fireplace Values"

Area Coating - See SWAPE comment on "Unsubstantiated Changes to Architectural and Area Coating Emission Factors"

Energy Use -

Water And Wastewater - Consistent with the IS/MND's model.

Solid Waste - See SWAPE comment on "Unsubstantiated Reductions to Solid Waste Generation Rates"
Total adds up to 584 tons/year

Construction Off-road Equipment Mitigation - See SWAPE comment on "Incorrect Application of Construction-related Mitigation Measures"

Area Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Energy Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Water Mitigation - See SWAPE comment on "Incorrect Application of Operational Mitigation Measures"

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	220.15	259.00
tblFireplaces	NumberGas	0.85	1.00
tblFireplaces	NumberNoFireplace	25.90	0.00
tblFireplaces	NumberNoFireplace	0.10	0.00
tblFireplaces	NumberWood	12.95	0.00
tblFireplaces	NumberWood	0.05	0.00
tblGrading	AcresOfGrading	50.00	60.00
tblGrading	AcresOfGrading	50.00	45.00
tblGrading	AcresOfGrading	10.00	24.00
tblGrading	AcresOfGrading	10.00	12.00
tblGrading	MaterialExported	0.00	21,180.00
tblGrading	MaterialExported	0.00	10,590.00
tblLandUse	LandUseSquareFeet	7,600.00	4,900.00
tblLandUse	LandUseSquareFeet	1,000.00	1,570.00
tblLandUse	LandUseSquareFeet	3,340.00	3,339.00
tblLandUse	LotAcreage	0.17	0.00
tblLandUse	LotAcreage	2.70	0.00
tblLandUse	LotAcreage	2.03	1.80
tblLandUse	LotAcreage	6.82	3.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.08	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	630
tblSolidWaste	SolidWasteGenerationRate	119.14	555.83
tblTripsAndVMT	HaulingTripNumber	2,648.00	2,880.00
tblTripsAndVMT	HaulingTripNumber	1,324.00	1,440.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00
tblTripsAndVMT	VendorTripNumber	66.00	40.00

Alta Cuvee Mixed-Use Project - San Bernardino-South Coast County, Winter

tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	286.00	200.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblTripsAndVMT	WorkerTripNumber	57.00	40.00
tblVehicleTrips	CC_TL	8.40	10.90
tblVehicleTrips	CNW_TL	6.90	10.90
tblVehicleTrips	CW_TL	16.60	10.90
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	HO_TL	8.70	10.90
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HO_TTP	40.60	40.00
tblVehicleTrips	HS_TL	5.90	10.90
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HS_TTP	19.20	20.00
tblVehicleTrips	HW_TL	14.70	10.90
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	HW_TTP	40.20	40.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	6.39	5.48
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	42.04	24.86
tblVehicleTrips	SU_TR	5.86	5.48
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	20.43	24.86
tblVehicleTrips	WD_TR	6.65	5.48
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	0.00
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	33.82	0.00
tblVehicleTrips	WD_TR	44.32	24.86
tblWater	IndoorWaterUseRate	16,874,892.64	16,940,046.66
tblWater	IndoorWaterUseRate	177,429.43	0.00
tblWater	OutdoorWaterUseRate	10,638,519.27	10,679,594.63

tblWater	OutdoorWaterUseRate	827,895.26	0.00
tblWoodstoves	NumberCatalytic	12.95	0.00
tblWoodstoves	NumberCatalytic	0.05	0.00
tblWoodstoves	NumberNoncatalytic	12.95	0.00
tblWoodstoves	NumberNoncatalytic	0.05	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.9932	82.6995	44.7823	0.2498	8.2717	1.6582	9.5391	1.8114	1.6365	2.9832	0.0000	26,230.5829	26,230.5829	2.3224	0.0000	26,288.6433
2023	4.6581	32.2705	44.0472	0.0930	2.4917	1.4465	3.9382	0.6666	1.4269	2.0936	0.0000	9,032.1438	9,032.1438	0.7591	0.0000	9,051.1215
2024	89.1591	27.3329	42.0026	0.0873	2.4917	1.1321	3.6238	0.6666	1.1243	1.7910	0.0000	8,483.0694	8,483.0694	0.7838	0.0000	8,497.5573
Maximum	**89.1591**	**82.6995**	**44.7823**	**0.2498**	**8.2717**	**1.6582**	**9.5391**	**1.8114**	**1.6365**	**2.9832**	**0.0000**	**26,230.5829**	**26,230.5829**	**2.3224**	**0.0000**	**26,288.6433**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.9932	82.6995	44.7823	0.2498	8.2717	1.6582	9.5391	1.8114	1.6365	2.9832	0.0000	26,230.5829	26,230.5829	2.3224	0.0000	26,288.6433
2023	4.6581	32.2705	44.0472	0.0930	2.4917	1.4465	3.9382	0.6666	1.4269	2.0936	0.0000	9,032.1438	9,032.1438	0.7591	0.0000	9,051.1215
2024	89.1591	27.3329	42.0026	0.0873	2.4917	1.1321	3.6238	0.6666	1.1243	1.7910	0.0000	8,483.0694	8,483.0694	0.7838	0.0000	8,497.5573
Maximum	**89.1591**	**82.6995**	**44.7823**	**0.2498**	**8.2717**	**1.6582**	**9.5391**	**1.8114**	**1.6365**	**2.9832**	**0.0000**	**26,230.5829**	**26,230.5829**	**2.3224**	**0.0000**	**26,288.6433**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Energy	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
Mobile	2.4971	16.5393	32.0045	0.1477	12.7073	0.0917	12.7990	3.3998	0.0855	3.4853		15,111.7681	15,111.7681	0.6865		15,128.9314
Total	**9.6475**	**22.0795**	**55.7558**	**0.1827**	**12.7073**	**0.6387**	**13.3459**	**3.3998**	**0.6324**	**4.0323**	**0.0000**	**21,906.5924**	**21,906.5924**	**0.8534**	**0.1239**	**21,964.8379**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Energy	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
Mobile	2.4971	16.5393	32.0045	0.1477	12.7073	0.0917	12.7990	3.3998	0.0855	3.4853		15,111.7681	15,111.7681	0.6865		15,128.9314
Total	**9.6475**	**22.0795**	**55.7558**	**0.1827**	**12.7073**	**0.6387**	**13.3459**	**3.3998**	**0.6324**	**4.0323**	**0.0000**	**21,906.5924**	**21,906.5924**	**0.8534**	**0.1239**	**21,964.8379**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/5/2022	4/1/2022	5	20	
2	Site Preparation	Grading	4/30/2022	5/27/2022	5	20	
3	Trenching/Utilites - East Building	Site Preparation	4/2/2022	4/15/2022	5	10	
4	Construction - East Building	Building Construction	6/25/2022	5/12/2023	5	230	
5	Grading	Grading	5/28/2022	6/24/2022	5	20	
6	Trenching/Utilities - West Building	Site Preparation	4/16/2022	4/29/2022	5	10	
7	Construction - West Building	Building Construction	5/13/2023	3/29/2024	5	230	
8	Paving - East Building	Paving	3/30/2024	4/26/2024	5	20	
9	Architectural Coatings East Bldg	Architectural Coating	5/25/2024	6/21/2024	5	20	
10	Paving - West Building	Paving	4/27/2024	5/24/2024	5	20	
11	Architectural Coatings - West Bldg	Architectural Coating	6/22/2024	7/19/2024	5	20	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 45

Acres of Paving: 1.8

Residential Indoor: 527,654; Residential Outdoor: 175,885; Non-Residential Indoor: 12,359; Non-Residential Outdoor: 4,120; Striped Parking Area: 12,624 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Generator Sets	2	4.00	84	0.74
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Crawler Tractors	2	8.00	212	0.43
Site Preparation	Excavators	0	8.00	158	0.38
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilites - East Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilites - East Building	Excavators	1	8.00	158	0.38
Trenching/Utilites - East Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilites - East Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilites - East Building	Trenchers	2	8.00	78	0.50
Construction - East Building	Air Compressors	10	8.00	78	0.48
Construction - East Building	Cranes	1	7.00	231	0.29
Construction - East Building	Forklifts	0	8.00	89	0.20
Construction - East Building	Generator Sets	2	8.00	84	0.74
Construction - East Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - East Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - East Building	Welders	0	8.00	46	0.45
Grading	Crawler Tractors	2	8.00	212	0.43
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41

Grading	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Trenching/Utilities - West Building	Crawler Tractors	2	8.00	212	0.43
Trenching/Utilities - West Building	Excavators	1	8.00	158	0.38
Trenching/Utilities - West Building	Rubber Tired Dozers	0	8.00	247	0.40
Trenching/Utilities - West Building	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Utilities - West Building	Trenchers	2	8.00	78	0.50
Construction - West Building	Air Compressors	10	8.00	78	0.48
Construction - West Building	Cranes	0	7.00	231	0.29
Construction - West Building	Forklifts	0	8.00	89	0.20
Construction - West Building	Generator Sets	2	8.00	84	0.74
Construction - West Building	Rough Terrain Forklifts	2	8.00	100	0.40
Construction - West Building	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Construction - West Building	Welders	0	8.00	46	0.45
Paving - East Building	Pavers	2	8.00	130	0.42
Paving - East Building	Paving Equipment	2	8.00	132	0.36
Paving - East Building	Rollers	2	8.00	80	0.38
Architectural Coatings East Bldg	Air Compressors	4	6.00	78	0.48
Paving - West Building	Pavers	2	8.00	130	0.42
Paving - West Building	Paving Equipment	2	8.00	132	0.36
Paving - West Building	Rollers	2	8.00	80	0.38
Architectural Coatings - West Bldg	Air Compressors	4	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilites - East Building	6	40.00	0.00	2,880.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - East Building	15	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Utilities - West Building	6	40.00	0.00	1,440.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Construction - West Building	14	200.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - East Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings East Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - West Building	6	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coatings - West Bldg	4	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5643	25.0937	17.7597	0.0351		1.2177	1.2177		1.1441	1.1441		3,369.7852	3,369.7852	0.7586		3,388.7503
Total	**2.5643**	**25.0937**	**17.7597**	**0.0351**		**1.2177**	**1.2177**		**1.1441**	**1.1441**		**3,369.7852**	**3,369.7852**	**0.7586**		**3,388.7503**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5643	25.0937	17.7597	0.0351		1.2177	1.2177		1.1441	1.1441	0.0000	3,369.785 2	3,369.785 2	0.7586		3,388.750 3
Total	**2.5643**	**25.0937**	**17.7597**	**0.0351**		**1.2177**	**1.2177**		**1.1441**	**1.1441**	**0.0000**	**3,369.785 2**	**3,369.785 2**	**0.7586**		**3,388.750 3**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752		4,137.8452	4,137.8452	1.3383		4,171.3018
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**3.1815**	**1.1687**	**4.3502**	**0.3435**	**1.0752**	**1.4187**		**4,137.8452**	**4,137.8452**	**1.3383**		**4,171.3018**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752	0.0000	4,137.8452	4,137.8452	1.3383		4,171.3018
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**3.1815**	**1.1687**	**4.3502**	**0.3435**	**1.0752**	**1.4187**	**0.0000**	**4,137.8452**	**4,137.8452**	**1.3383**		**4,171.3018**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7847	0.0000	2.7847	0.3111	0.0000	0.3111			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197		2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**2.7847**	**1.1084**	**3.8931**	**0.3111**	**1.0197**	**1.3308**		**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.4 Trenching/Utilites - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6919	60.3531	11.2441	0.2153	5.0399	0.1562	5.1961	1.3817	0.1495	1.5312		22,878.9067	22,878.9067	1.3510		22,912.6819
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**1.8826**	**60.4719**	**12.4898**	**0.2191**	**5.4870**	**0.1590**	**5.6460**	**1.5003**	**0.1520**	**1.6524**		**23,257.3651**	**23,257.3651**	**1.3608**		**23,291.3855**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7847	0.0000	2.7847	0.3111	0.0000	0.3111			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197	0.0000	2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**2.7847**	**1.1084**	**3.8931**	**0.3111**	**1.0197**	**1.3308**	**0.0000**	**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.4 Trenching/Utilites - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6919	60.3531	11.2441	0.2153	5.0399	0.1562	5.1961	1.3817	0.1495	1.5312		22,878.9067	22,878.9067	1.3510		22,912.6819
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**1.8826**	**60.4719**	**12.4898**	**0.2191**	**5.4870**	**0.1590**	**5.6460**	**1.5003**	**0.1520**	**1.6524**		**23,257.3651**	**23,257.3651**	**1.3608**		**23,291.3855**

3.5 Construction - East Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9372	31.2581	37.7657	0.0647		1.6386	1.6386		1.6182	1.6182		6,155.1953	6,155.1953	0.6776		6,172.1341
Total	**3.9372**	**31.2581**	**37.7657**	**0.0647**		**1.6386**	**1.6386**		**1.6182**	**1.6182**		**6,155.1953**	**6,155.1953**	**0.6776**		**6,172.1341**

3.5 Construction - East Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1024	3.6155	0.7882	0.0103	0.2562	5.7200e-003	0.2619	0.0738	5.4700e-003	0.0792		1,085.0250	1,085.0250	0.0771		1,086.9524
Worker	0.9535	0.5937	6.2284	0.0190	2.2355	0.0139	2.2494	0.5929	0.0128	0.6057		1,892.2920	1,892.2920	0.0490		1,893.5180
Total	**1.0559**	**4.2092**	**7.0166**	**0.0293**	**2.4917**	**0.0196**	**2.5113**	**0.6666**	**0.0183**	**0.6849**		**2,977.3170**	**2,977.3170**	**0.1261**		**2,980.4704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9372	31.2581	37.7657	0.0647		1.6386	1.6386		1.6182	1.6182	0.0000	6,155.1953	6,155.1953	0.6776		6,172.1341
Total	**3.9372**	**31.2581**	**37.7657**	**0.0647**		**1.6386**	**1.6386**		**1.6182**	**1.6182**	**0.0000**	**6,155.1953**	**6,155.1953**	**0.6776**		**6,172.1341**

3.5 Construction - East Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1024	3.6155	0.7882	0.0103	0.2562	5.7200e-003	0.2619	0.0738	5.4700e-003	0.0792		1,085.0250	1,085.0250	0.0771		1,086.9524
Worker	0.9535	0.5937	6.2284	0.0190	2.2355	0.0139	2.2494	0.5929	0.0128	0.6057		1,892.2920	1,892.2920	0.0490		1,893.5180
Total	**1.0559**	**4.2092**	**7.0166**	**0.0293**	**2.4917**	**0.0196**	**2.5113**	**0.6666**	**0.0183**	**0.6849**		**2,977.3170**	**2,977.3170**	**0.1261**		**2,980.4704**

3.5 Construction - East Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6862	28.9417	37.6666	0.0647		1.4301	1.4301		1.4118	1.4118		6,155.2835	6,155.2835	0.6534		6,171.6182
Total	**3.6862**	**28.9417**	**37.6666**	**0.0647**		**1.4301**	**1.4301**		**1.4118**	**1.4118**		**6,155.2835**	**6,155.2835**	**0.6534**		**6,171.6182**

3.5 Construction - East Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0772	2.7944	0.6705	0.0100	0.2562	2.8300e-003	0.2590	0.0738	2.7100e-003	0.0765		1,055.5934	1,055.5934	0.0618		1,057.1377
Worker	0.8947	0.5344	5.7101	0.0183	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		1,821.2668	1,821.2668	0.0440		1,822.3657
Total	**0.9719**	**3.3287**	**6.3806**	**0.0283**	**2.4917**	**0.0163**	**2.5080**	**0.6666**	**0.0151**	**0.6818**		**2,876.8602**	**2,876.8602**	**0.1057**		**2,879.5033**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6862	28.9417	37.6666	0.0647		1.4301	1.4301		1.4118	1.4118	0.0000	6,155.2835	6,155.2835	0.6534		6,171.6182
Total	**3.6862**	**28.9417**	**37.6666**	**0.0647**		**1.4301**	**1.4301**		**1.4118**	**1.4118**	**0.0000**	**6,155.2835**	**6,155.2835**	**0.6534**		**6,171.6182**

3.5 Construction - East Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0772	2.7944	0.6705	0.0100	0.2562	2.8300e-003	0.2590	0.0738	2.7100e-003	0.0765		1,055.5934	1,055.5934	0.0618		1,057.1377
Worker	0.8947	0.5344	5.7101	0.0183	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		1,821.2668	1,821.2668	0.0440		1,822.3657
Total	**0.9719**	**3.3287**	**6.3806**	**0.0283**	**2.4917**	**0.0163**	**2.5080**	**0.6666**	**0.0151**	**0.6818**		**2,876.8602**	**2,876.8602**	**0.1057**		**2,879.5033**

3.6 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3861	0.0000	2.3861	0.2577	0.0000	0.2577			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752		4,137.8452	4,137.8452	1.3383		4,171.3018
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**2.3861**	**1.1687**	**3.5548**	**0.2577**	**1.0752**	**1.3328**		**4,137.8452**	**4,137.8452**	**1.3383**		**4,171.3018**

3.6 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3861	0.0000	2.3861	0.2577	0.0000	0.2577			0.0000			0.0000
Off-Road	2.5506	29.6686	16.4479	0.0427		1.1687	1.1687		1.0752	1.0752	0.0000	4,137.845 2	4,137.845 2	1.3383		4,171.301 8
Total	**2.5506**	**29.6686**	**16.4479**	**0.0427**	**2.3861**	**1.1687**	**3.5548**	**0.2577**	**1.0752**	**1.3328**	**0.0000**	**4,137.845 2**	**4,137.845 2**	**1.3383**		**4,171.301 8**

3.6 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**0.1907**	**0.1188**	**1.2457**	**3.8000e-003**	**0.4471**	**2.7800e-003**	**0.4499**	**0.1186**	**2.5600e-003**	**0.1211**		**378.4584**	**378.4584**	**9.8100e-003**		**378.7036**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3924	0.0000	1.3924	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197		2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**1.3924**	**1.1084**	**2.5008**	**0.1556**	**1.0197**	**1.1753**		**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.7 Trenching/Utilities - West Building - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8459	30.1766	5.6221	0.1077	2.5199	0.0781	2.5981	0.6909	0.0747	0.7656		11,439.4534	11,439.4534	0.6755		11,456.3410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**1.0366**	**30.2953**	**6.8677**	**0.1115**	**2.9671**	**0.0809**	**3.0479**	**0.8094**	**0.0773**	**0.8867**		**11,817.9118**	**11,817.9118**	**0.6853**		**11,835.0446**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3924	0.0000	1.3924	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	2.0787	22.2277	15.3206	0.0307		1.1084	1.1084		1.0197	1.0197	0.0000	2,973.2178	2,973.2178	0.9616		2,997.2578
Total	**2.0787**	**22.2277**	**15.3206**	**0.0307**	**1.3924**	**1.1084**	**2.5008**	**0.1556**	**1.0197**	**1.1753**	**0.0000**	**2,973.2178**	**2,973.2178**	**0.9616**		**2,997.2578**

3.7 Trenching/Utilities - West Building - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8459	30.1766	5.6221	0.1077	2.5199	0.0781	2.5981	0.6909	0.0747	0.7656		11,439.4534	11,439.4534	0.6755		11,456.3410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1907	0.1188	1.2457	3.8000e-003	0.4471	2.7800e-003	0.4499	0.1186	2.5600e-003	0.1211		378.4584	378.4584	9.8100e-003		378.7036
Total	**1.0366**	**30.2953**	**6.8677**	**0.1115**	**2.9671**	**0.0809**	**3.0479**	**0.8094**	**0.0773**	**0.8867**		**11,817.9118**	**11,817.9118**	**0.6853**		**11,835.0446**

3.8 Construction - West Building - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3787	25.6032	36.0615	0.0597		1.2907	1.2907		1.2835	1.2835		5,666.3167	5,666.3167	0.4953		5,678.6978
Total	**3.3787**	**25.6032**	**36.0615**	**0.0597**		**1.2907**	**1.2907**		**1.2835**	**1.2835**		**5,666.3167**	**5,666.3167**	**0.4953**		**5,678.6978**

3.8 Construction - West Building - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0772	2.7944	0.6705	0.0100	0.2562	2.8300e-003	0.2590	0.0738	2.7100e-003	0.0765		1,055.5934	1,055.5934	0.0618		1,057.1377
Worker	0.8947	0.5344	5.7101	0.0183	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		1,821.2668	1,821.2668	0.0440		1,822.3657
Total	**0.9719**	**3.3287**	**6.3806**	**0.0283**	**2.4917**	**0.0163**	**2.5080**	**0.6666**	**0.0151**	**0.6818**		**2,876.8602**	**2,876.8602**	**0.1057**		**2,879.5033**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3787	25.6032	36.0615	0.0597		1.2907	1.2907		1.2835	1.2835	0.0000	5,666.3167	5,666.3167	0.4953		5,678.6978
Total	**3.3787**	**25.6032**	**36.0615**	**0.0597**		**1.2907**	**1.2907**		**1.2835**	**1.2835**	**0.0000**	**5,666.3167**	**5,666.3167**	**0.4953**		**5,678.6978**

3.8 Construction - West Building - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0772	2.7944	0.6705	0.0100	0.2562	2.8300e-003	0.2590	0.0738	2.7100e-003	0.0765		1,055.593 4	1,055.593 4	0.0618		1,057.137 7
Worker	0.8947	0.5344	5.7101	0.0183	2.2355	0.0135	2.2490	0.5929	0.0124	0.6053		1,821.266 8	1,821.266 8	0.0440		1,822.365 7
Total	**0.9719**	**3.3287**	**6.3806**	**0.0283**	**2.4917**	**0.0163**	**2.5080**	**0.6666**	**0.0151**	**0.6818**		**2,876.860 2**	**2,876.860 2**	**0.1057**		**2,879.503 3**

3.8 Construction - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1851	24.0403	36.0409	0.0597		1.1159	1.1159		1.1093	1.1093		5,666.182 2	5,666.182 2	0.4776		5,678.122 5
Total	**3.1851**	**24.0403**	**36.0409**	**0.0597**		**1.1159**	**1.1159**		**1.1093**	**1.1093**		**5,666.182 2**	**5,666.182 2**	**0.4776**		**5,678.122 5**

3.8 Construction - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.8442	0.4839	5.3154	0.0177	2.2355	0.0134	2.2489	0.5929	0.0123	0.6052		1,762.225 0	1,762.225 0	0.0401		1,763.228 6
Total	**0.9203**	**3.2927**	**5.9617**	**0.0277**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6816**		**2,816.887 2**	**2,816.887 2**	**0.1019**		**2,819.434 9**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1851	24.0403	36.0409	0.0597		1.1159	1.1159		1.1093	1.1093	0.0000	5,666.182 2	5,666.182 2	0.4776		5,678.122 5
Total	**3.1851**	**24.0403**	**36.0409**	**0.0597**		**1.1159**	**1.1159**		**1.1093**	**1.1093**	**0.0000**	**5,666.182 2**	**5,666.182 2**	**0.4776**		**5,678.122 5**

3.8 Construction - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.8442	0.4839	5.3154	0.0177	2.2355	0.0134	2.2489	0.5929	0.0123	0.6052		1,762.225 0	1,762.225 0	0.0401		1,763.228 6
Total	**0.9203**	**3.2927**	**5.9617**	**0.0277**	**2.4917**	**0.0162**	**2.5079**	**0.6666**	**0.0150**	**0.6816**		**2,816.887 2**	**2,816.887 2**	**0.1019**		**2,819.434 9**

3.9 Paving - East Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

3.9 Paving - East Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.2449**	**2.9055**	**1.7094**	**0.0135**	**0.7033**	**5.5000e-003**	**0.7088**	**0.1923**	**5.1500e-003**	**0.1975**		**1,407.107 2**	**1,407.107 2**	**0.0698**		**1,408.852 0**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

3.9 Paving - East Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.2449**	**2.9055**	**1.7094**	**0.0135**	**0.7033**	**5.5000e-003**	**0.7088**	**0.1923**	**5.1500e-003**	**0.1975**		**1,407.107 2**	**1,407.107 2**	**0.0698**		**1,408.852 0**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437		1,125.792 2	1,125.792 2	0.0634		1,127.377 0
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**		**1,125.792 2**	**1,125.792 2**	**0.0634**		**1,127.377 0**

3.10 Architectural Coatings East Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.1688**	**0.0968**	**1.0631**	**3.5300e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**352.4450**	**352.4450**	**8.0300e-003**		**352.6457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437	0.0000	1,125.7922	1,125.7922	0.0634		1,127.3770
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**	**0.0000**	**1,125.7922**	**1,125.7922**	**0.0634**		**1,127.3770**

3.10 Architectural Coatings East Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.1688**	**0.0968**	**1.0631**	**3.5300e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**352.4450**	**352.4450**	**8.0300e-003**		**352.6457**

3.11 Paving - West Building - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.11 Paving - West Building - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.2449**	**2.9055**	**1.7094**	**0.0135**	**0.7033**	**5.5000e-003**	**0.7088**	**0.1923**	**5.1500e-003**	**0.1975**		**1,407.107 2**	**1,407.107 2**	**0.0698**		**1,408.852 0**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2240**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

3.11 Paving - West Building - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0761	2.8087	0.6463	9.9900e-003	0.2562	2.8200e-003	0.2590	0.0738	2.6900e-003	0.0765		1,054.662 3	1,054.662 3	0.0618		1,056.206 3
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.2449**	**2.9055**	**1.7094**	**0.0135**	**0.7033**	**5.5000e-003**	**0.7088**	**0.1923**	**5.1500e-003**	**0.1975**		**1,407.107 2**	**1,407.107 2**	**0.0698**		**1,408.852 0**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437		1,125.792 2	1,125.792 2	0.0634		1,127.377 0
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**		**1,125.792 2**	**1,125.792 2**	**0.0634**		**1,127.377 0**

3.12 Architectural Coatings - West Bldg - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.1688**	**0.0968**	**1.0631**	**3.5300e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**352.4450**	**352.4450**	**8.0300e-003**		**352.6457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	88.2672					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7231	4.8752	7.2405	0.0119		0.2437	0.2437		0.2437	0.2437	0.0000	1,125.7922	1,125.7922	0.0634		1,127.3770
Total	**88.9903**	**4.8752**	**7.2405**	**0.0119**		**0.2437**	**0.2437**		**0.2437**	**0.2437**	**0.0000**	**1,125.7922**	**1,125.7922**	**0.0634**		**1,127.3770**

3.12 Architectural Coatings - West Bldg - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1688	0.0968	1.0631	3.5300e-003	0.4471	2.6800e-003	0.4498	0.1186	2.4600e-003	0.1210		352.4450	352.4450	8.0300e-003		352.6457
Total	**0.1688**	**0.0968**	**1.0631**	**3.5300e-003**	**0.4471**	**2.6800e-003**	**0.4498**	**0.1186**	**2.4600e-003**	**0.1210**		**352.4450**	**352.4450**	**8.0300e-003**		**352.6457**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4971	16.5393	32.0045	0.1477	12.7073	0.0917	12.7990	3.3998	0.0855	3.4853		15,111.7681	15,111.7681	0.6865		15,128.9314
Unmitigated	2.4971	16.5393	32.0045	0.1477	12.7073	0.0917	12.7990	3.3998	0.0855	3.4853		15,111.7681	15,111.7681	0.6865		15,128.9314

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,419.32	1,419.32	1419.32	5,631,294	5,631,294
City Park	0.00	0.00	0.00		
Condo/Townhouse	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Strip Mall	83.03	83.03	83.03	329,439	329,439
Total	1,502.35	1,502.35	1,502.35	5,960,733	5,960,733

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.90	10.90	10.90	40.00	20.00	40.00	100	0	0
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.00	20.00	40.00	100	0	0
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
Strip Mall	10.90	10.90	10.90	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
City Park	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Condo/Townhouse	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Enclosed Parking with Elevator	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
General Office Building	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Parking Lot	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Recreational Swimming Pool	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830
Strip Mall	0.558745	0.035303	0.181800	0.111169	0.014289	0.004794	0.018611	0.065078	0.001365	0.001491	0.005725	0.000799	0.000830

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294
NaturalGas Unmitigated	0.1146	0.9797	0.4196	6.2500e-003		0.0792	0.0792		0.0792	0.0792		1,250.2001	1,250.2001	0.0240	0.0229	1,257.6294

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	10497.7	0.1132	0.9674	0.4117	6.1800e-003		0.0782	0.0782		0.0782	0.0782		1,235.0255	1,235.0255	0.0237	0.0226	1,242.3647
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	62.0919	6.7000e-004	5.7200e-003	2.4300e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004		7.3049	7.3049	1.4000e-004	1.3000e-004	7.3483
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	46.5836	5.0000e-004	4.5700e-003	3.8400e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.4804	5.4804	1.1000e-004	1.0000e-004	5.5130
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	20.3084	2.2000e-004	1.9900e-003	1.6700e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3892	2.3892	5.0000e-005	4.0000e-005	2.4034
Total		**0.1146**	**0.9797**	**0.4196**	**6.2600e-003**		**0.0792**	**0.0792**		**0.0792**	**0.0792**		**1,250.2001**	**1,250.2001**	**0.0240**	**0.0229**	**1,257.6294**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	10.4977	0.1132	0.9674	0.4117	6.1800e-003		0.0782	0.0782		0.0782	0.0782		1,235.0255	1,235.0255	0.0237	0.0226	1,242.3647
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0.0620919	6.7000e-004	5.7200e-003	2.4300e-003	4.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004		7.3049	7.3049	1.4000e-004	1.3000e-004	7.3483
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0.0465836	5.0000e-004	4.5700e-003	3.8400e-003	3.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004		5.4804	5.4804	1.1000e-004	1.0000e-004	5.5130
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.0203084	2.2000e-004	1.9900e-003	1.6700e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3892	2.3892	5.0000e-005	4.0000e-005	2.4034
Total		**0.1146**	**0.9797**	**0.4196**	**6.2600e-003**		**0.0792**	**0.0792**		**0.0792**	**0.0792**		**1,250.2001**	**1,250.2001**	**0.0240**	**0.0229**	**1,257.6294**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771
Unmitigated	7.0358	4.5605	23.3317	0.0287		0.4677	0.4677		0.4677	0.4677	0.0000	5,544.6242	5,544.6242	0.1429	0.1009	5,578.2771

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4837					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5047	4.3129	1.8353	0.0275		0.3487	0.3487		0.3487	0.3487	0.0000	5,505.8824	5,505.8824	0.1055	0.1009	5,538.6011
Landscaping	0.6498	0.2475	21.4964	1.1400e-003		0.1190	0.1190		0.1190	0.1190		38.7418	38.7418	0.0374		39.6760
Total	**7.0358**	**4.5605**	**23.3317**	**0.0287**		**0.4678**	**0.4678**		**0.4678**	**0.4678**	**0.0000**	**5,544.6242**	**5,544.6242**	**0.1429**	**0.1009**	**5,578.2771**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4837					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.5047	4.3129	1.8353	0.0275		0.3487	0.3487		0.3487	0.3487	0.0000	5,505.882 4	5,505.882 4	0.1055	0.1009	5,538.601 1
Landscaping	0.6498	0.2475	21.4964	1.1400e-003		0.1190	0.1190		0.1190	0.1190		38.7418	38.7418	0.0374		39.6760
Total	**7.0358**	**4.5605**	**23.3317**	**0.0287**		**0.4678**	**0.4678**		**0.4678**	**0.4678**	**0.0000**	**5,544.624 2**	**5,544.624 2**	**0.1429**	**0.1009**	**5,578.277 1**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment B

Construction

2022		Total	
Annual Emissions (tons/year)	0.1315	Total DPM (lbs)	799.2306849
Daily Emissions (lbs/day)	0.720547945	Total DPM (g)	362531.0387
Construction Duration (days)	302	Total Construction Days	735
Total DPM (lbs)	217.6054795	Emission Rate (g/s)	0.005708791
Total DPM (g)	98705.84548	Release Height (meters)	3
Start Date	3/5/2022	Total Acreage	5.2
End Date	1/1/2023	Max Horizontal (meters)	205.15
Construction Days	302	Min Horizontal (meters)	102.58
2023		Initial Vertical Dimension (meters)	1.5
Annual Emissions (tons/year)	0.285	Setting	Urban
Daily Emissions (lbs/day)	1.561643836	Population	176,379
Construction Duration (days)	365	Start Date	3/5/2022
Total DPM (lbs)	570	End Date	3/9/2024
Total DPM (g)	258552	Total Construction Days	735
Start Date	1/1/2023	Total Years of Construction	2.01
End Date	1/1/2024	Total Years of Operation	27.99
Construction Days	365		
2024			
Annual Emissions (tons/year)	0.0312		
Daily Emissions (lbs/day)	0.170958904		
Construction Duration (days)	68		
Total DPM (lbs)	11.62520548		
Total DPM (g)	5273.193205		
Start Date	1/1/2024		
End Date	3/9/2024		
Construction Days	68		

Operation

Emission Rate	
Annual Emissions (tons/year)	0.0429
Daily Emissions (lbs/day)	0.235068493
Emission Rate (g/s)	0.00123411
Release Height (meters)	3
Total Acreage	5.2
Max Horizontal (meters)	205.15
Min Horizontal (meters)	102.58
Initial Vertical Dimension (meters)	1.5
Setting	Urban
Population	176,379
Total Pounds of DPM	
Total DPM (lbs)	85.8

```
Start date and time  09/28/21 09:59:53
                               AERSCREEN 21112

Alta Cuvee Mixed-Use Project AERSCREEN Construction

            Alta Cuvee Mixed-Use Project AERSCREEN Construction


         -----------------  DATA ENTRY VALIDATION  -----------------
                        METRIC              ENGLISH
 ** AREADATA **  ---------------     ----------------

 Emission Rate:    0.571E-02 g/s         0.453E-01 lb/hr
 Area Height:           3.00 meters           9.84 feet
 Area Source Length:  205.15 meters         673.06 feet
 Area Source Width:   102.58 meters         336.55 feet
 Vertical Dimension:    1.50 meters           4.92 feet
 Model Mode:           URBAN
 Population:          176379
 Dist to Ambient Air:           1.0 meters            3. feet


 ** BUILDING DATA **
```

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters   0.0 feet

Probe distance: 5000. meters   16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K   -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2021.09.28_AltaCuvee_AERSCREEN_Construction.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR   started 09/28/21 10:01:53

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

```
*****************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***
```

```
*****************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************
```

```
Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 *******************************************


  Running AERMOD

 Processing Spring


Processing surface roughness sector  1


****************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


****************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
```

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
```

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ********************************************

  Running AERMOD
 Processing Summer

Processing surface roughness sector  1
```

```
*****************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
```

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 15

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 20

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 25

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ********************************************

  Running AERMOD
 Processing Autumn

Processing surface roughness sector  1

*****************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5
```

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20

    ********   WARNING MESSAGES   ********
```

*** NONE ***

****

Processing wind flow sector 6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 25

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 7

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 30

******** WARNING MESSAGES ********

*** NONE ***

FLOWSECTOR ended 09/28/21 10:02:04

REFINE started 09/28/21 10:02:04

AERMOD Finishes Successfully for REFINE stage 3 Winter sector 0

******** WARNING MESSAGES ********

*** NONE ***

REFINE ended 09/28/21 10:02:05

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 09/28/21 10:02:07

```
 Concentration     Distance Elevation  Diag  Season/Month  Zo sector      Date      H0     U*     W*  DT/DZ ZICNV
ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS      HT  REF TA      HT
   0.69621E+01        1.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.76131E+01       25.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.81622E+01       50.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.86250E+01       75.00      0.00   5.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.91010E+01      100.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
 * 0.91461E+01      103.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.71251E+01      125.00      0.00  25.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.50963E+01      150.00      0.00  20.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.41465E+01      175.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.34837E+01      200.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.29835E+01      225.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.25963E+01      250.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.22878E+01      275.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.20380E+01      300.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.18332E+01      325.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.16593E+01      350.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.15140E+01      375.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.13882E+01      400.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.12804E+01      425.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.11859E+01      450.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.11024E+01      475.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.10291E+01      500.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.96428E+00      525.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.90598E+00      550.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.85308E+00      575.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
   0.80534E+00      600.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
```

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.76221E+00 625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.72306E+00 650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.68740E+00 675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.65438E+00 700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.62404E+00 725.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.59613E+00 750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.57038E+00 775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.54648E+00 800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.52418E+00 825.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.50344E+00 850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.48412E+00 875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46607E+00 900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44906E+00 925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43305E+00 950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41800E+00 975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40385E+00 1000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39057E+00 1025.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37798E+00 1050.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36608E+00 1075.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.35485E+00 1100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.34421E+00 1125.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.33412E+00 1150.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.32454E+00 1175.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.31543E+00 1200.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.30676E+00 1225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29846E+00 1250.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29054E+00 1275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

```
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.28299E+00    1325.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
```

```
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.28299E+00    1300.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.27577E+00    1325.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.26885E+00    1350.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.26220E+00    1375.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.25584E+00    1400.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24973E+00    1425.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24388E+00    1450.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23826E+00    1475.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23287E+00    1500.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22770E+00    1525.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22272E+00    1550.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21792E+00    1575.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21330E+00    1600.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20884E+00    1625.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20455E+00    1650.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20041E+00    1675.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19641E+00    1700.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19255E+00    1725.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18882E+00    1750.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18522E+00    1775.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18173E+00    1800.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17836E+00    1825.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17510E+00    1850.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17194E+00    1875.01     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17018E+00    1900.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.16716E+00    1925.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.16423E+00    1950.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.16139E+00     1975.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15863E+00     2000.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15596E+00     2025.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15336E+00     2050.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15083E+00     2075.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14838E+00     2100.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14599E+00     2125.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14367E+00     2150.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14141E+00     2175.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13922E+00     2200.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13708E+00     2225.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13500E+00     2250.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13297E+00     2275.00     0.00  5.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13099E+00     2300.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12907E+00     2325.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12719E+00     2350.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12536E+00     2375.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12358E+00     2400.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12184E+00     2425.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12014E+00     2450.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11848E+00     2475.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11686E+00     2500.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11528E+00     2525.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11373E+00     2550.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11222E+00     2575.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11075E+00     2600.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10931E+00     2625.00     0.00  0.0     Winter     0-360  10011001  -1.30  0.043 -9.000  0.020 -999.  21.     6.0
```

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10790E+00 2650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10652E+00 2675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10517E+00 2700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10385E+00 2725.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10256E+00 2750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10130E+00 2775.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10006E+00 2800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.98853E-01 2825.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.97668E-01 2850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.96507E-01 2875.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.95370E-01 2900.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.94256E-01 2925.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.93165E-01 2950.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.92095E-01 2975.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.91046E-01 3000.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.90017E-01 3025.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.89009E-01 3050.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.88020E-01 3074.99 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.87050E-01 3100.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.86098E-01 3125.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.85164E-01 3150.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.84248E-01 3174.99 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.83348E-01 3200.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.82465E-01 3225.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.81598E-01 3250.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.80747E-01 3275.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.79911E-01 3300.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.79090E-01     3325.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.78283E-01     3350.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.77491E-01     3375.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.76712E-01     3400.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.75947E-01     3425.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.75195E-01     3450.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.74455E-01     3475.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.73728E-01     3500.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.73014E-01     3525.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.72311E-01     3550.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.71620E-01     3575.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70940E-01     3600.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70272E-01     3625.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.69614E-01     3650.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.68967E-01     3675.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.68330E-01     3700.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.67703E-01     3725.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.67086E-01     3750.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.66479E-01     3775.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.65881E-01     3800.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.65293E-01     3825.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.64714E-01     3849.99     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.64143E-01     3875.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.63581E-01     3900.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.63028E-01     3925.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.62482E-01     3950.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.61946E-01     3975.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.61416E-01     4000.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.60895E-01     4025.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.60381E-01     4050.00     0.00  30.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.59875E-01     4075.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.59376E-01     4100.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.58885E-01     4125.00     0.00  15.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.58400E-01     4150.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.57922E-01     4175.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.57451E-01     4200.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.56986E-01     4225.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.56528E-01     4250.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.56076E-01     4275.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.55631E-01     4300.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.55191E-01     4325.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.54758E-01     4350.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.54330E-01     4375.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.53908E-01     4400.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.53492E-01     4425.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.53082E-01     4450.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.52676E-01     4475.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.52276E-01     4500.00     0.00  10.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.51882E-01     4525.00     0.00   5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.51492E-01     4550.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.51107E-01     4575.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.50728E-01     4600.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.50353E-01     4625.00     0.00   0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.49983E-01     4650.00     0.00  20.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
```

```
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.49618E-01    4675.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.49257E-01    4700.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.48901E-01    4725.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.48549E-01    4750.00    0.00   5.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.48202E-01    4775.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.47859E-01    4800.00    0.00   5.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.47520E-01    4825.00    0.00  15.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.47185E-01    4850.00    0.00   5.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.46855E-01    4875.00    0.00  20.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.46528E-01    4900.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.46205E-01    4924.99    0.00  15.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.45887E-01    4950.00    0.00   5.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.45571E-01    4975.00    0.00   0.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
  0.45260E-01    5000.00    0.00   5.0     Winter    0-360   10011001  -1.30  0.043 -9.000  0.020 -999.  21.    6.0
1.000   1.50   0.35   0.50  10.0  310.0   2.0
```

Start date and time 09/28/21 10:03:51

AERSCREEN 21112

Alta Cuvee Mixed-Use Project AERSCREEN Operations

----------------- DATA ENTRY VALIDATION -----------------

	METRIC	ENGLISH
** AREADATA **	---------------	----------------
Emission Rate:	0.123E-02 g/s	0.979E-02 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	205.15 meters	673.06 feet
Area Source Width:	102.58 meters	336.55 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	176379	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters   0.0 feet

Probe distance: 5000. meters   16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K   -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION ON

AERSCREEN output file:

2021.09.28_AltaCuvee_AERSCREEN_Operations.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 09/28/21 10:05:47

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

****

```
Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************
Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************
Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************
Processing wind flow sector   4
```

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 15

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
*****************************************************
```

Processing wind flow sector   5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 20

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
*****************************************************
```

Processing wind flow sector   6

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 25

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
*****************************************************
```

Processing wind flow sector   7

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ********************************************


  Running AERMOD
 Processing Spring


Processing surface roughness sector  1


*****************************************************
Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************
Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***


*****************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20


    ********   WARNING MESSAGES   ********

               ***  NONE  ***
```

```
*****************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ********************************************

  Running AERMOD
 Processing Summer

Processing surface roughness sector  1

*****************************************************
Processing wind flow sector   1
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************

Processing wind flow sector   4
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************
Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************
Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


*****************************************************
Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30
```

```
    ********   WARNING MESSAGES   ********
               ***  NONE  ***
 ********************************************

  Running AERMOD
 Processing Autumn

Processing surface roughness sector  1

*****************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
*****************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15


    ********   WARNING MESSAGES   ********
               ***  NONE  ***


*****************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
*****************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

*****************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

FLOWSECTOR   ended 09/28/21 10:05:57

REFINE       started 09/28/21 10:05:57

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

REFINE   ended 09/28/21 10:05:59

```
 ***********************************************
 AERSCREEN Finished Successfully
 With no errors or warnings
 Check log file for details
 ************************************************


 Ending date and time  09/28/21 10:06:00
```

```
 Concentration     Distance Elevation  Diag  Season/Month   Zo sector       Date      H0     U*      W*  DT/DZ ZICNV
ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS      HT  REF TA     HT
   0.15048E+01       1.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.16455E+01      25.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.17642E+01      50.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.18642E+01      75.00      0.00   5.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.19671E+01     100.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
 * 0.19769E+01     103.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.15400E+01     125.00      0.00  25.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.11015E+01     150.00      0.00  20.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.89625E+00     175.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.75298E+00     200.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.64487E+00     225.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.56118E+00     250.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.49449E+00     275.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.44051E+00     300.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.39624E+00     325.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.35865E+00     350.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.32724E+00     375.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.30006E+00     400.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.27675E+00     425.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.25632E+00     450.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.23828E+00     475.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.22244E+00     500.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.20842E+00     525.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.19582E+00     550.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.18439E+00     575.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50  10.0   310.0    2.0
   0.17407E+00     600.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
```

```
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.16475E+00      625.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15629E+00      650.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14858E+00      675.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14144E+00      700.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13488E+00      725.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12885E+00      750.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12329E+00      775.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11812E+00      800.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11330E+00      825.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10882E+00      850.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10464E+00      875.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10074E+00      900.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.97063E-01      925.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.93600E-01      950.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.90348E-01      975.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.87290E-01     1000.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.84419E-01     1025.00      0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.81698E-01     1050.00      0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.79126E-01     1075.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.76698E-01     1100.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.74399E-01     1125.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.72218E-01     1150.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70147E-01     1175.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.68179E-01     1200.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.66305E-01     1225.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.64510E-01     1250.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.62799E-01     1275.00      0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.61166E-01     1300.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.59606E-01     1325.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.58111E-01     1350.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.56674E-01     1375.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.55298E-01     1400.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.53978E-01     1425.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.52713E-01     1450.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.51499E-01     1475.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.50334E-01     1500.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.49216E-01     1525.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.48139E-01     1550.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.47101E-01     1575.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.46103E-01     1600.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.45140E-01     1625.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.44212E-01     1650.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.43317E-01     1675.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.42454E-01     1700.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.41619E-01     1725.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.40813E-01     1750.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.40034E-01     1775.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.39281E-01     1800.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.38552E-01     1825.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.37846E-01     1850.00     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.37163E-01     1875.01     0.00  5.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.36784E-01     1900.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.36131E-01     1925.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.35498E-01     1950.00     0.00  0.0     Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.34884E-01     1975.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.34288E-01     2000.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.33709E-01     2025.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.33147E-01     2050.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.32601E-01     2075.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.32071E-01     2100.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.31555E-01     2125.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.31054E-01     2150.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.30566E-01     2175.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.30091E-01     2200.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.29629E-01     2225.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.29179E-01     2250.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.28741E-01     2275.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.28314E-01     2300.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.27897E-01     2325.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.27492E-01     2350.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.27096E-01     2375.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.26710E-01     2400.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.26334E-01     2425.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.25967E-01     2450.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.25608E-01     2475.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.25258E-01     2500.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24917E-01     2525.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24583E-01     2550.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24256E-01     2575.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23938E-01     2600.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23626E-01     2625.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23322E-01     2650.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23024E-01     2675.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22732E-01     2700.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22447E-01     2725.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22168E-01     2750.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21895E-01     2775.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21628E-01     2800.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21366E-01     2825.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21110E-01     2850.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20860E-01     2875.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20614E-01     2900.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20373E-01     2925.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20137E-01     2950.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19906E-01     2975.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19679E-01     3000.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19457E-01     3025.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19239E-01     3050.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19025E-01     3075.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18815E-01     3100.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18610E-01     3125.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18408E-01     3150.00     0.00  10.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18210E-01     3174.99     0.00  10.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18015E-01     3200.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17824E-01     3225.00     0.00  10.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17637E-01     3250.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17453E-01     3275.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17272E-01     3300.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
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1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.17095E-01     3325.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16920E-01     3350.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16749E-01     3375.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16581E-01     3400.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16415E-01     3425.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16253E-01     3450.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.16093E-01     3475.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15936E-01     3500.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15781E-01     3525.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15630E-01     3550.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15480E-01     3575.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15333E-01     3600.00     0.00  20.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15189E-01     3625.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.15047E-01     3650.00     0.00  25.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14907E-01     3675.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14769E-01     3700.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14634E-01     3725.00     0.00  15.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14500E-01     3750.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14369E-01     3775.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14240E-01     3800.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.14113E-01     3825.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13988E-01     3850.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13864E-01     3875.00     0.00   5.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13743E-01     3900.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13623E-01     3925.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13505E-01     3950.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000  1.50  0.35   0.50  10.0  310.0    2.0
  0.13389E-01     3975.00     0.00   0.0      Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
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1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13275E-01 4000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13162E-01 4025.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13051E-01 4050.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12942E-01 4075.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12834E-01 4100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12728E-01 4125.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12623E-01 4150.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12520E-01 4175.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12418E-01 4200.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12317E-01 4225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12218E-01 4250.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12121E-01 4275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12024E-01 4300.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11929E-01 4325.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11836E-01 4350.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11743E-01 4375.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11652E-01 4400.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11562E-01 4425.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11473E-01 4450.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11386E-01 4475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11299E-01 4500.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11214E-01 4525.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11130E-01 4550.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11047E-01 4575.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10965E-01 4600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10884E-01 4625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10804E-01 4650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

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1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10725E-01      4675.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10647E-01      4700.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10570E-01      4725.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10494E-01      4750.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10419E-01      4775.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10344E-01      4800.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10271E-01      4825.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10199E-01      4850.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10127E-01      4875.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.10057E-01      4900.00      0.00   0.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.99870E-02      4924.99      0.00  15.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.99181E-02      4950.00      0.00   5.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.98500E-02      4975.00      0.00  15.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
  0.97827E-02      5000.00      0.00   5.0       Winter      0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.      6.0
1.000   1.50   0.35    0.50   10.0   310.0    2.0
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SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Geologic and Hydrogeologic Characterization, Investigation and Remediation Strategies

Expert Testimony

Industrial Stormwater Compliance

CEQA Review

Professional Certifications:

*Professional Geologist
**Certified Hydrogeologist

Education:

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

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist

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 he identified emerging threats to groundwater. While with EPA, 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, developed extensive client relationships and has managed complex projects that include consultations as an expert witness and a regulatory specialist, and managing projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions held include:

Government:

- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Geologist, U.S. Forest Service (1986 – 1998)

Educational:

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

Private Sector:

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

Senior Regulatory and Litigation Support Analyst:

With SWAPE, responsibilities have included:

- Lead analyst and testifying expert, for both plaintiffs and defendants, in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards.

- Recommending additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce exposure to hazards from toxins.
- Stormwater analysis, sampling and best management practice evaluation, for both government agencies and corporate clients, at more than 150 industrial facilities.
- Serving as expert witness for both plaintiffs and defendants in cases including contamination of groundwater, 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 regulatory requirements and rigorous deadlines.

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, an Orange County-based not-for-profit water-quality organization, led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, 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 personalwatercraft 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 ProtectionAgency, Region 9. Activities included the following:

- Advising the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinkingwater supplies.
- Shaping EPA's national response to these threats by serving on workgroups and by contributingto guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improving the technical training of EPA's scientific and engineering staff.
- Earning an EPA Bronze Medal for representing the region's 300 scientists and engineers innegotiations 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 fortimber harvest in the central Oregon Coast Range. Specific activities included:

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

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

Invited Testimony, Reports, Papers and Presentations:

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

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

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

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

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

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

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

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

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

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

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

Other Experience:

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

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

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment And Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on VOC filtration.

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

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

Professional Experience

Dr. Rosenfeld is the environmental chemist at Soil Water Air Protection Enterprise (SWAPE). His focus is the fate and transport of environmental contaminants, risk assessment, and ecological restoration. His project experience ranges from monitoring and modeling of pollution sources as they relate to human and ecological health. Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing, petroleum, MtBE and fuel oxygenates, chlorinated solvents, pesticides, radioactive waste, PCBs, PAHs, dioxins, furans, volatile organics, semi-volatile organics, perchlorate, heavy metals, asbestos, PFOA, unusual polymers, and odor. Significant projects performed by Dr. Rosenfeld include the following:

Litigation Support

Client: Nexsen Pruet, LLC (Charleston, South Carolina)
Serving as expert in chlorine exposure in railroad tank car accident where approximately 120,000 pounds of chlorine were released.

Client: Buzbee Law Firm (Houston, Texas)
Serving as expert in catalyst release and refinery emissions cases against BP Texas City. One case settled regarding worker exposure, but ongoing litigation remains involving ~21,500 plaintiffs who have health claims and are seeking remediation from chemicals released from BP facility.

Client: Girardi Keese (Los Angeles, California)

Serving as expert investigating hydrocarbon exposure and property damage for ~600 individuals and ~280 properties in Carson, California, where homes were constructed above a large tank farm formerly owned by Shell.

Client: Brent Coon Law Firm (Cleveland, Ohio)

Served as expert calculating an environmental exposure to benzene, PAHs, and VOCs from a Chevron Refinery in Hooven Ohio. Ran AERMOD to calculate cumulative dose.

Client: Girardi Keese (Los Angeles, California)

Served as expert testifying on hydrocarbon exposure to a woman who worked on a fuel barge operated by Chevron. Demonstrated that the plaintiff was exposed to excessive amounts of benzene.

Client: Lundy Davis (Lake Charles, Louisiana)

Served as consulting expert on an oil field case representing the lease holder of a contaminated oil field. Conducted field work evaluating oil field contamination in Sulfur, Louisiana. Property is owned by Conoco Phillips, but leased by Yellow Rock, a small oil firm.

Client: Cox Cox Filo (Lake Charles, Louisiana)

Serving as testifying expert on multimillion gallon oil spill in Lake Charles which occurred on June 19, 2006, resulting in hydrocarbon vapor exposure to hundreds of workers and residents. Prepared air model and calculated dose. Demonstrated that petroleum odor alone can result in significant health harms.

Client: Cotchett Pitre & McCarthy (San Francisco, California)

Served as testifying expert representing homeowners who unknowingly purchased homes built on an old oil field in Santa Maria, California. Properties have high concentrations of petroleum hydrocarbons in subsurface soils resulting in diminished property value.

Client: Baron & Budd (Dallas, Texas) & Weitz & Luxenberg (New York, NY)

Serving as consulting expert in MTBE Federal Multi District Litigation (MDL) in New York. Consolidated ground water data, created maps for test cases, constructed damage model, evaluated taste and odor threshold levels.

Client: Law Offices Of Anthony Liberatore P.C. (Los Angeles, California)

Served as testifying expert representing individuals who rented homes on the Inglewood Oil Field in California. Plaintiffs were exposed to hydrocarbon contaminated water and air, and experienced health harms associated with the petroleum exposure.

Client: Baron & Budd P.C. Dallas Texas and Korein Tillery (Madison, County)

Illinois, Private Wells Analysis: Coordinated data acquisition and GIS analysis evaluating private well proximity to leaking underground storage tanks to support litigation noting that private well owners should be compensated for MTBE testing.

Client: Orange County District Attorney (Orange County, California)

Coordinated a review of 143 ARCO gas stations in Orange County to assist the District Attorney's prosecution of CCR Title 23 and California Health and Safety Code violators.

Client: Environmental Litigation Group (Birmingham, Alabama)
Serving as testifying expert in a health effects case against ABC Coke/Drummond Co for polluting a community with PAHs, benzene, particulate matter, heavy metals, and coke oven emissions. Created air dispersions models and conducted attic dust sampling, exposure modeling, and risk assessment for plaintiffs.

Client: Masry Vitatoe (Westlake Village, CA), Engstrom Lipscomb Lack (Los Angeles, CA) & Baron & Budd (Dallas Texas).
Served as consulting expert in Proposition 65 lawsuit filed against the major oil companies for benzene and toluene releases from gas stations and refineries which contaminated groundwater. Settlement included over $110 million dollars in injunctive relief.

Client: Tommy Franks Law Firm (Austin, Texas)
Served as expert evaluating groundwater contamination which resulted from the hazardous waste injection program and negligent actions of Morton Thiokol and Rohm Hass. Interpreted drinking water contamination and community exposure.

Client: Baron & Budd (Dallas Texas) and Sher Leff (San Francisco, California)
Serving as consulting expert for several California cities which have filed defective product cases against Dow Chemical and Shell for 1,2,3-trichloropropane groundwater contamination. Generated maps showing capture zones of impacted wells for various municipalities.

Client: Baron & Budd (Dallas Texas) and Korein Tillery (Madison County, Illinois)
Serving as consulting expert for a Class Action defective product Atrazine claim filed in Madison County, Illinois against Syngenta and five other manufactures. The plaintiff class representative is Holiday Shores Water System which is evaluating health issues associated with atrazine, costing out treatment for filtration of public drinking water supplies.

Client: Weitz & Luxenberg (New York, NY)
Serving as expert on Property Damage and Nuisance claims resulting from emissions from the Countywide Landfill in Ohio. The landfill had an exothermic reaction or fire resulting from aluminum dross dumping, and the EPA fined the landfill $10,000,000 dollars.

Client: Baron & Budd (Dallas Texas)
Serving as consulting expert for a groundwater contamination case in Pensacola Florida where fluorinated compounds contaminated wells operated by Escambia County.

Client: Environmental Litigation Group (Birmingham, Alabama)

Serving as an expert on property damage, medical monitoring and toxic tort claims that have been filed on behalf of over 12,000 plaintiffs who were exposed to PCBs and dioxins/furans resulting from emissions from Monsanto and Cerro Copper's operations in East Sauget, Illinois.

Client: Environmental Litigation Group (Birmingham, Alabama)
Served as an expert on groundwater case when Exxon Mobil and Helena Chemical released ethylene dichloride into groundwater resulting in a large plume. Prepared report on the appropriate treatment technology and cost, and flaws with the proposed on site remedy.

Client: Environmental Litigation Group (Birmingham, Alabama)
Serving as an expert on air emissions released when a Bartlo Packaging Incorporated facility in West Helena Arkansas exploded resulting in community exposure to pesticides and smoke from combustion of pesticides.

Client: Omara & Padilla (San Diego, Califorinia)
Served as testifying expert on nuisance case against Nutro Dogfood Company that constructed a large dog food processing facility in the middle of a residential community in Victorville California with no odor control devices. The facility has undergone significant modifications including installation of a regenerative thermal oxidizer.

Client: Environmental Litigation Group (Birmingham, Alabama)
Serving as an expert on property damage and medical monitoring claims that have been filed against International Paper resulting from chemical emissions from facilities located in Bastrop Louisiana, Prattville, Alabama, and Georgetown South Carolina.

Client: Estep and Shafer (West Virginia)
Served as expert running various air models to calculate acid emissions dose to residents resulting from emissions from a coal fired power plant in West Virginia.

Client: Watts Law Firm (Austin, Texas), Woodfill Pressler (Houston, Texas), Woska & Ass. (Oklahoma)
Served as testifying expert on community and worker exposure to CCA, creosote, PAHs, and dioxins/furans from a BNSF and Kopper's Facility in Somerville, Texas. Conducted field sampling, risk assessment, dose assessment and air modelling to quantify exposure to workers and community members.

Client: Environmental Litigation Group (Birmingham, Alabama)
Served as expert regarding community exposure to CCA, creosote, PAHs, and dioxins/furans from a Louisiana Pacific wood treatment facility in Florala, Alabama. Conducted blood sampling and environmental sampling to determine environmental exposure to dioxins/furans and PAHs.

Client: Sanders Law (Colorado Springs, Co) and Vamvoras & Schwartzberg (Lake Charles, Louisiana)
Serving as expert calculating chemical exposure to over 500 workers from large ethylene dichloride spill in Lake Charles, Louisiana, at the Conoco Phillips Refinery.

Client: Baron & Budd P.C. (Dallas, Texas)

Served as consulting expert in a defective product lawsuit against Dow Agroscience focusing on Clopyralid, a recalcitrant herbicide that damaged numerous compost facilities across the United States.

Client: Sullivan Papain Block McGrath & Cannavo (NY, NY) and The Cochran Firm (Dothan, MS)
Served as expert regarding community exposure to metals, PAHs PCBs, and dioxins/furans from the burning of Ford Paint Sludge and municipal solid waste in Ringwood, New Jersey.

Client: Rose, Klein Marias (Los Angeles, CA)
Serving as expert in Proposition 65 cases, each one citing an individual facility in the Port of Oakland. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

Client: Rose, Klein Marias (Los Angeles, CA)
Serving as expert in 55 Proposition 65 cases, each one citing an individual facility in the Port of Los Angeles and Port of Long Beach as the defendant. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

Client: Graham & Associates (Calabasas, CA)
Served as expert in a case in which General Motors is the plaintiff and BP Arco is the defendant. Conducted air models to demonstrate that sulfur emissions from the BP Arco facility formed sulfuric acid, destroying paint on over 350 automobiles.

Client: Rose, Klien Marias (Los Angeles, CA) and Environmental Law Foundation (San Francisco, CA)
Served as expert in a Proposition 65 case against potato chip manufacturers. Conducted an analysis of several brands of potato chips for acrylamide concentration and found that all samples exceeded Proposition 65 No Significant Risk Levels.

Client: Gonzales & Robinson (Westlake Village, CA)
Served as testifying expert in a toxic tort case against Chevron (Ortho) for allowing a community to be contaminated with lead arsenate pesticide. Created air dispersion models, soil vadose zone transport models, and evaluated bioaccumulation of lead arsenate in food.

Client: Environment Now (Santa Monica, CA)
Served as expert for Environment Now to convince the State of California to file a nuisance claim against the automobile manufactures to recover MediCal damages from expenditures on asthma-related health care costs.

Client: Trutanich Michell (Long Beach, California)
Served as expert representing San Pedro Boat Works in the Port of Los Angeles. Prepared air dispersion, particulate air dispersion, and storm water discharge models to demonstrate that Kaiser Bulk Loading is responsible for copper concentrate accumulating in the bay sediment.

Client: Azurix of North America (Fort Myers, Florida)

Provided expert opinions, reports and research pertaining to a proposed County Ordinance requiring biosolids applicators to measure VOC and odor concentrations at application sites' boundaries.

Client: MCP Polyurethane (Pittsburg, Kansas)
Provided expert opinions and reports regarding metal-laden landfill runoff that damaged a running track by causing the reversion of the polyurethane due to its catalytic properties.

Risk Assessment And Modeling

Client: ABT-Haskell (San Bernardino, California)
Prepared air dispersion model for a proposed state-of-the-art enclosed compost facility. Developed odor detection limits to predict 1, 8, and 24-hour off-site concentrations of sulfur, ammonia, and amine as well as prepared a traffic analysis.

Client: Jefferson PRP Group (Los Angeles, California)
Evaluated exposure pathways for chlorinated solvents and hexavalent chromium for human health risk assessment of Los Angeles Academy (formerly Jefferson New Middle School) operated by Los Angeles Unified School District.

Client: Covanta (Susanville California)
Prepared human health risk assessment for Covanta Energy focusing on agricultural worker exposure to caustic fertilizer.

Client: CIWMB (Sacramento California)
Used dispersion models to estimate traveling distance and VOC concentrations downwind from a composting facility for the California Integrated Waste Management Board.

Client: Carboquimeca (Bogotá, Columbia)
Evaluated exposure pathways for human health risk assessment for a confidential client focusing on significant concentrations of arsenic and chlorinated solvents contaminating groundwater used for drinking water.

Client: Navy Base Realignment and Closure Team (Treasure Island, California)
Used Johnson-Ettinger model to estimate indoor air PCB concentrations and compared estimated values with empirical data collected in homes. Negotiated action levels with DTSC.

Client: San Diego State University (San Diego California)
Measured CO_2 flux from soils amended with different quantities of biosolids compost at Camp Pendleton to determine CO_2 credit values for coastal sage under fertilized and non-fertilized conditions.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)
Evaluated cumulative risk of a multiple pathway scenario with a child resident and a construction worker's exposure to air and soil via particulate and vapor inhalation, incidental soil ingestion, and dermal contact with soil.

Client: MCAS Miramar (San Diego, California)

Evaluated exposure pathways of metals in soil, comparing site data to background data. Risk assessment incorporated multiple pathway scenarios assuming child resident and construction worker exposure to particulate and vapor inhalation, soil ingestion, and dermal soil contact.

Client: Naval Weapons Station (Seal Beach, California)

Used a multiple pathway model to generate dust emission factors from automobiles driving on dirt roads. Calculated bioaccumulation of metals, PCBs, dioxin congeners and pesticides to estimate human and ecological risk.

Client: King County, Douglas County (Washington State)

Measured PM_{10} and $PM_{2.5}$ emissions from windblown soil treated with biosolids and a polyacrylamide polymer in Douglas County Washington. Used Pilat Mark V impactor for measurement and compared data to EPA particulate regulations.

Client: King County, Seattle, Washington.

Conducted emission inventory for several compost and wastewater facilities comparing VOC, particulate, and fungi concentrations to NIOSH values estimating risk to workers and individuals at neighboring facilities.

Air Pollution Investigation and Remediation

Client: Republic Landfill (Santa Clarita, CA)

Managed a field investigation of odor around a landfill during 30+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources and character and intensity.

Client: California Biomass (Victorville, CA)

Managed a field investigation of odor around landfill during 9+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources, character and intensity.

Client: ABT-Haskell (Redlands, California)

Assisted in permitting a compost facility that will be completely enclosed with a complex scrubbing system using acid scrubbers, base scrubbers, biofilters, heat exchangers and chlorine to reduce VOC emissions by 99 percent.

Client: Synagro (Corona, California)

Designed and monitored 30-foot by 20-foot by 6-foot biofilter for VOC control from an industrial composting facility in Corona, California, reducing VOC emissions by 99 percent.

Client: Jeff Gage, (Tacoma, Washington)

Conducted emission inventory at industrial compost facility using GC/MS analyses for VOCs. Evaluated effectiveness of VOC and odor control systems and estimated human health risk.

Client: Daishowa America (Port Angeles Mill, Washington)

Analyzed industrial paper sludge and ash for VOCs, heavy metals and nutrients to develop a land application program. Metals were compared to federal guidelines to determine maximum allowable land application rates.

Client: Jeff Gage (Puyallup Washington)

Measured effectiveness of biofilters at composting facility and ran EPA dispersion models to estimate traveling distance of odor and human health risk from exposure to volatile organics.

Surface Water, Groundwater, and Wastewater Investigation/Remediation

Client: Confidential (Downey, California)

Managed groundwater investigation to determine horizontal extent of 1,000 foot TCE plume associated with a metal finishing shop.

Client: Confidential (West Hollywood, California)

Designed soil vapor extraction system that is currently being installed for confidential client. Managed groundwater investigation to determine horizontal extent of TCE plume associated with dry cleaning.

Client: Synagro Technologies (Sacramento, California)

Managed groundwater investigation to determine if biosolids application impacted salinity and nutrient concentrations in groundwater.

Client: Navy Base Realignment and Closure Team (Treasure Island, California)

Assisted in the design and remediation of PCB, chlorinated solvent, hydrocarbon and lead contaminated groundwater and soil on Treasure Island. Negotiated screening levels with DTSC and Water Board. Assisted in the preparation of FSP/QAPP, RI/FS, and RAP documents and assisted in CEQA document preparation.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)

Assisted in the design of groundwater monitoring systems for chlorinated solvents at Tustin MCAS. Contributed to the preparation of FS for groundwater treatment.

Client: MCP (Walnut, California)

Conducted forensic surface water and sediment sampling. Designed and conducted bench scale laboratory experiments. Demonstrated that metal and organic contaminants in storm water and sediment from landfill flooded and chemically compromised a polyurethane track.

Client: Mission Cleaning Facility (Salinas California)

Prepared a RAP and cost estimate for using an oxygen releasing compound (ORC) and molasses to oxidize diesel fuel in soil and groundwater at Mission Cleaning in Salinas.

Client: King County, Washingon

Established and monitored experimental plots at a US EPA Superfund Site in wetland and upland mine tailings contaminated with zinc and lead in Smelterville, Idaho. Used organic matter and pH adjustment for wetland remediation and erosion control.

Client: City of Redmond (Richmond, Washington)

Collected storm water from compost-amended and fertilized turf to measure nutrients in urban runoff. Evaluated effectiveness of organic matter-lined detention ponds on reduction of peak flow during storm events. Drafted compost amended landscape installation guidelines to promote storm water detention and nutrient runoff reduction.

Client: City of Seattle (Seattle, Washington)

Measured VOC emissions from Renton wastewater treatment plant in Washington. Ran GC/MS, dispersion models, and sensory panels to characterize, quantify, control and estimate risk from VOCs.

Client: Plumas County (Quincy, California)

Installed wetland to treat contaminated water containing 1% copper in an EPA Superfund site. Revegetated 10 acres of acidic and metal laden sand dunes resulting from hydraulic mining. Installed and monitored piezometers in wetland estimating metal loading.

Client: Adams Egg Farm (St. Kitts, West Indies)

Designed, constructed, and maintained 3 anaerobic digesters at Springfield Egg Farm, St. Kitts. Digesters treated chicken excrement before effluent discharged into sea. Chicken waste was converted into methane cooking gas.

Client: BLM (Kremmling Colorado)

Collected water samples for monitoring program along upper stretch of the Colorado River. Rafted along river, protecting water quality by digging and repairing latrines.

Soil Science and Restoration Projects

Client: Kinder Morgan (San Diego County California)

Designed and monitored the restoration of a 110-acre project on Camp Pendleton along a 26-mile pipeline. Managed crew of 20, planting coastal sage, riparian, wetland, native grassland, and marsh ecosystems. Negotiated with the CDFW concerning species planting list and success standards.

Client: NAVY BRAC (Orote Landfill, Guam)

Designed and monitored pilot landfill cap mimicking limestone forest. Measured different species' root-penetration into landfill cap. Plants were used to evapotranspirate water, reducing water leaching through soil profile.

Client: LA Sanitation District Puente Hills Landfill (Whittier, California)

Monitored success of upland and wetland mitigation at Puente Hills Landfill operated by Sanitation Districts of Los Angeles. Negotiated with the Army Corps of Engineers and CDFG to obtain an early sign-off.

Client: City of Escondido (Escondido California)
Designed, managed, installed, and monitored a 20-acre coastal sage scrub restoration project at Kit Carson Park, Escondido, California.

Client: Home Depot (Encinitas, California)
Designed, managed, installed and monitored a 15-acre coastal sage scrub and wetland restoration project at Home Depot in Encinitas, California.

Client: Alvarado Water Filtration Plant (San Diego, California)
Planned, installed and monitored 2-acre riparian and coastal sage scrub mitigation in San Diego California.

Client: Monsanto and James River Corporation (Clatskanie Oregon)
Served as a soil scientist on a 50,000-acre hybrid poplar farm. Worked on genetically engineering study of Poplar trees to see if glyphosate resistant poplar clones were economically viable.

Client: World Wildlife Fund (St. Kitts, West Indies)
Managed 2-year biodiversity study, quantifying and qualifying the various flora and fauna in St. Kitts' expanding volcanic rainforest. Collaborated with skilled botanists, ornithologists and herpetologists.

Publications

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.** (2011). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences* 4(2011):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', in Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII:*

Proceedings of the Seventeenth International Conference on Modelling, Monitoring and Management of Air Pollution, Tallinn, Estonia. 20-22 July, 2009, Southampton, Boston. WIT Press.

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, Volume 70 (2008) page 002254.

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, Volume 70 (2008) page 000527.

Hensley, A.R. A. Scott, J. J. J. Clark, **P. E. Rosenfeld** (2007) "Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility" Environmental Research. 105, pp 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," Elsevier Publishing, Boston Massachusetts.

Rosenfeld P.E., and Suffet, I.H. (Mel) (2007) "Anatomy Of An Odor Wheel" Water Science and Technology, In Press.

Rosenfeld, P.E., Clark, J.J.J., Hensley A.R., Suffet, I.H. (Mel) (2007) "The use of an odor wheel classification for evaluation of human health risk criteria for compost facilities." Water Science And Technology, In Press.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (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, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

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Rosenfeld, P. E., Grey, M., (2003) Two stage biofilter for biosolids composting odor control. Seventh International In Situ And On Site Bioremediation Symposium. Batelle Conference Orlando Florida. June 2 and June 6, 2003.

Rosenfeld, P.E., Grey, M and Suffet, M. 2002. “Controlling Odors Using High Carbon Wood Ash.” Biocycle, March 2002, Page 42.

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. April 2002.

Rosenfeld, P.E., and C.L. Henry. 2001. Characterization of odor emissions from three different biosolids. Water Soil and Air pollution. Vol. 127 Nos. 1-4, pp. 173-191

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

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

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Rosenfeld, P.E., and Henry C. L., 2001. High carbon wood ash effect on biosolids microbial activity and odor. Water Environment Research. Volume 131 No. 1-4, pp. 247-262

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. Bellevue Washington.

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

P. Rosenfeld. 1992. The Mount Liamuiga Crater Trail. Heritage Magazine of St. Kitts, Vol. 3 No. 2.

P. Rosenfeld. 1993. High School Biogas Project to Prevent Deforestation On St. Kitts. Biomass Users Network, Vol. 7, No. 1, 1993.

P. Rosenfeld. 1992. British West Indies, St. Kitts. Surf Report, April issue.

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

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

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

England Environmental Agency, 2002. Landfill Gas Control Technologies. Publishing Organization Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury BRISTOL, BS32 4UD

Presentations

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.** "Atrazine: A Persistent Pesticide in Urban Drinking Water." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

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.** "Bringing Environmental Justice to East St. Louis, Illinois." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

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

Rosenfeld, P.E. (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" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

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

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

Rosenfeld, P. E. (2007) “Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions” Poster Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld P. E. “Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP)” – Platform Presentation at the Association for Environmental Health and Sciences (AEHS) Annual Meeting, San Diego, CA, 3/2007

Rosenfeld P. E. “Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama” – Platform Presentation at the AEHS Annual Meeting, San Diego, CA, 3/2007

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

Paul Rosenfeld Ph.D. “Fate, Transport and Persistence of PFOA and Related Chemicals.” Mealey’s C8/PFOA Science, Risk & Litigation Conference” October 24, 25. The Rittenhouse Hotel, Philadelphia.

Paul Rosenfeld Ph.D. “Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation PEMA Emerging Contaminant Conference. September 19. Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. “Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP.” PEMA Emerging Contaminant Conference. September 19. Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. “Fate, Transport and Persistence of PDBEs.” Mealey’s Groundwater Conference. September 26, 27. Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. “Fate, Transport and Persistence of PFOA and Related Chemicals.” International Society of Environmental Forensics: Focus On Emerging Contaminants. June 7,8. Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. “Rate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals”. 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

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

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

Paul Rosenfeld, Ph.D., 2004. Perchlorate Toxicology. Presentation to a meeting of the American Groundwater Trust. March 7th, 2004. Pheonix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse, 2004. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

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

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

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. California CUPA Forum. Marriott Hotel. Anaheim California. February 6-7, 2003.

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. EPA Underground Storage Tank Roundtable. Sacramento California. October 23, 2002

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

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

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

Rosenfeld, P.E. and Grey, M. A. 2002. Soil Science Society Annual Conference. Indianapolis, Maryland. November 11-14.

Rosenfeld. P.E. 2000. Two stage biofilter for biosolids composting odor control. Water Environment Federation. Anaheim California. September 16, 2000.

Rosenfeld. P. E. 2000. Wood ash and biofilter control of compost odor. Biofest. October 16, 2000.Ocean Shores, California

Rosenfeld, P. E. 2000. Bioremediation Using Organic Soil Amendments. California Resource Recovery Association. 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. 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. 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, Seattle Washington.

Rosenfeld, P.E., C.L. Henry. 1998. Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. Biofest Lake Chelan, 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, Anaheim California.

Professional History

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Founding And Managing Partner
UCLA School of Public Health; 2007 to present; Lecturer (Asst Res)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist
Bureau of Land Management, Kremmling Colorado 1990; Scientist

Teaching Experience

UCLA Department of Environmental Health (Summer 2003 through 2010) Teach Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focuses on the health effects of environmental contaminants.

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

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

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

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

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

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

Academic Grants Awarded

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

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

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

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

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

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

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

Cases that Dr. Rosenfeld Provided Deposition or Trial Testimony

In the Court of Common Pleas for the Second Judicial Circuit, State of South Carolina, County of Aiken
David Anderson, et al., *Plaintiffs*, vs. Norfolk Southern Corporation, et al., *Defendants*.
Case Number: 2007-CP-02-1584

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

In the Ninth Judicial District Court, Parish of Rapides, State of Louisiana
Roger Price, et al., *Plaintiffs*, vs. Roy O. Martin, L.P., et al., *Defendants*.
Civil Suit Number 224,041 Division G

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

In the United States District Court for the Southern District of Ohio
Carolyn Baker, et al., *Plaintiffs*, vs. Chevron Oil Company, et al., *Defendants*.
Case Number 1:05 CV 227

In the Fourth Judicial District Court, Parish of Calcasieu, State of Louisiana
Craig Steven Arabie, et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 07-2738 G

In the Fourteenth Judicial District Court, Parish of Calcasieu, State of Louisiana
Leon B. Brydels, *Plaintiffs*, vs. Conoco, Inc., et al., *Defendants*.
Case Number 2004-6941 Division A

In the District Court of Tarrant County, Texas, 153rd Judicial District
Linda Faust, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, Witco Chemical Corporation A/K/A Witco Corporation, Solvents and Chemicals, Inc. and Koppers Industries, Inc., *Defendants*.
Case Number 153-212928-05

In the Superior Court of the State of California in and for the County of San Bernardino
Leroy Allen, et al., *Plaintiffs*, vs. Nutro Products, Inc., a California Corporation and DOES 1 to 100, inclusive, *Defendants*.
John Loney, Plaintiff, vs. James H. Didion, Sr.; Nutro Products, Inc.; DOES 1 through 20, inclusive, *Defendants*.
Case Number VCVVS044671

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

In the Superior Court of the State of California in and for the County of Los Angeles
Leslie Hensley and Rick Hensley, *Plaintiffs*, vs. Peter T. Hoss, as trustee on behalf of the Cone Fee Trust; Plains Exploration & Production Company, a Delaware corporation; Rayne Water Conditioning, Inc., a

California corporation; and DOES 1 through 100, *Defendants.*
Case Number SC094173

In the Superior Court of the State of California in and for the County of Santa Barbara, Santa Maria Branch
Clifford and Shirley Adelhelm, et al., all individually, *Plaintiffs*, vs. Unocal Corporation, a Delaware Corporation; Union Oil Company of California, a California corporation; Chevron Corporation, a California corporation; ConocoPhillips, a Texas corporation; Kerr-McGee Corporation, an Oklahoma corporation; and DOES 1 though 100, *Defendants.*
Case Number 1229251 (Consolidated with case number 1231299)

In the United States District Court for Eastern District of Arkansas, Eastern District of Arkansas
Harry Stephens Farms, Inc, and Harry Stephens, individual and as managing partner of Stephens Partnership, *Plaintiffs*, vs. Helena Chemical Company, and Exxon Mobil Corp., successor to Mobil Chemical Co., *Defendants.*
Case Number 2:06-CV-00166 JMM (Consolidated with case number 4:07CV00278 JMM)

In the United States District Court for the Western District of Arkansas, Texarkana Division
Rhonda Brasel, et al., *Plaintiffs*, vs. Weyerhaeuser Company and DOES 1 through 100, *Defendants.*
Civil Action Number 07-4037

In The Superior Court of the State of California County of Santa Cruz
Constance Acevedo, et al. *Plaintiffs* Vs. California Spray Company, et al. *Defendants*
Case No CV 146344

In the District Court of Texas 21st Judicial District of Burleson County
Dennis Davis, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, *Defendant.*
Case Number 25,151