VOLUME II OF III

Responses to Comments

Sienna Solar and Storage Project

SCH No. 2022080518

San Bernardino County, California

September 2025

Prepared for

County of San Bernardino

385 North Arrowhead Avenue, 1st Floor

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Prepared by

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0.3 Responses to Comment Letters Received on the Recirculated Draft EIR

This chapter of the Final EIR contains the responses to comments on the Recirculated Draft EIR. As provided under CEQA Guidelines section 15088.5(f)(1), when an EIR is substantially revised and the entire document is recirculated, the lead agency may require reviewers to submit new comments and, in such cases, need not respond to those comments received during the earlier circulation period. Here, the County substantially revised and recirculated the entire EIR and, thus, is not required to respond to comments on the original Draft EIR. However, the County received only two comment letters on the original Draft EIR which, as discussed further below, have been fully addressed by the Recirculated Draft EIR and this Final EIR. The comments submitted on the original Draft ER are included as part of the administrative record.

Department of Fish and Wildlife (October 16, 2023)

The California Department of Fish and Wildlife's (CDFW) letter offered comments and recommendations to the County regarding potential impacts to wildlife resources, including requests for updated surveys and editorial suggestions to proposed mitigation measures. CDFW's comments were considered and addressed by the County in the Recirculated Draft EIR, particularly in Chapter 3.5, Biological Resources, as well this Final EIR. Additional surveys and delineations were conducted within the Project site, see, e.g., Appendices D3, E2, and P, and the County reviewed the proposed editorial suggestions to the mitigation measures and determined that no changes are required. The Recirculated Draft EIR analyzed in detail the existing biological resources within the Project area, the potential impacts of the proposed Project on biological resources, and recommended mitigation measures to avoid or reduce potential impacts of the proposed Project. The mitigation measures impose various measures that would reduce potential impacts to biological resources to less than significant, including pre-construction surveys for plant and wildlife species, avoidance and mitigation requirements, and ongoing monitoring. See also Response to Comment S1-6 and S1-8, which recognize that if listed or candidate species are document onsite and cannot be avoided, the Project Applicant/Proponent would be required to consult with appropriate federal and state agencies regarding the potential need for incidental take authorization prior to the start of ground disturbing project activities. Thus, the County has fully addressed CDFW's comments pursuant to the Recirculated Draft EIR and this Final EIR, and no further response is required.

Mitchell M. Tsai Law Firm (Southwest Mountain States Regional Council of Carpenters) (October 13, 2023)

The comment letter submitted by Mitchell Tsai on behalf of the Southwest Mountain States Regional Council of Carpenters is nearly identical to the letter submitted by Mitchell Tsai on the Recirculated Draft EIR. Please see Responses to Comments O1-1 through O1-8.

Following circulation of the Recirculated Draft EIR, the County received 18 comment letters from state and local agencies, organizations, and individuals as provided in Table 1-1. These comment letters are addressed below.

Table 1-1. Recirculated Draft EIR Comment Letters

Letter	Commenter	Date
State Agency		
S1	Department of Fish and Wildlife	September 27, 2024
S2	State Lands Commission	September 30, 2024
Local Agency		
L1	Mojave Desert Air Quality Management District	August 23, 2024
L2	Southern California Edison	September 30, 2024
Organization		
O1	Mitchell M. Tasi Law Firm (Western States Regional Council of Carpenters)	September 30, 2024
O2	Morongo Basin Conservation Association (MBCA)	September 30, 2024
O3	Lucerne Valley Economic Development Association (LVEDA)	September 30, 2024
O4	Ironworkers Local 433	October 4, 2024
Individuals		
I1	Raymond M. Gagne, Jr.	September 30, 2024
I2	Linda Gommel	October 1, 2024
I3	Kirsten ‘Ondine’ Hollander	September 30, 2024
I4	Todd Jones	September 29, 2024
I5	Bill Lembright	September 29, 2024
I6	Dennis Morrison	September 25, 2024
I7	Linda Morrison	September 26, 2024
I8	Bob O’Brien	September 29, 2024
I9	Bill Peterson	September 30, 2024
I10	Bryn Risler	September 30, 2024

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 27, 2024

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SIENNA SOLAR AND STORAGE PROJECT (PROJECT)
DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR)
SCH# 2022080518

Dear Mr. Morrissey:

The California Department of Fish and Wildlife (CDFW) received a Notice of Availability of a Recirculated DEIR from the County of San Bernardino for the Project pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1] CDFW previously submitted comments in response to the originally circulated DEIR for this Project and to the DEIR for the Stagecoach Solar Project (State Clearinghouse No. 2020100234), which contained information pertaining to the proposed Southern California Edison (SCE) Calcite Substation, a connected project for the purposes of CEQA review. CDFW was informed during the comment period for the recirculated DEIR that the SCE Calcite Substation would not have an additional DEIR or EIR released, and comments submitted on this recirculated DEIR for the Sienna Solar and Storage Project should reflect both projects. CDFW is providing comments in addition to the previously submitted comments for both Projects. S1-1

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. S1-2

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. S1-3

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code. S1-4

[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.

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 2 of 10

PROJECT DESCRIPTION SUMMARY

Proponent: 99 MT 8ME, LLC
Objective: The objective of the Project is to construct and operate a utility scale, solar photovoltaic (PV) electricity generation facility that would produce up to 525 megawatts (MV) of solar power and include up to 525 MW of energy storage capacity rate in a battery energy storage system (BESS) within an approximately 1,854-acre site. Primary Project activities include construction and operation of a PV solar facility, BESS, Project substation, operation and maintenance building(s), underground collection system, 230 kV on- and off-site generation-tie (gen-tie) line, and other associated facilities including access roads. The off-site gen-tie line would connect to the point of interconnection at the proposed SCE Calcite Substation. S1-5

Location: The Project is in the southwestern portion of the Mojave Desert and includes the Lucerne Dry Lake, in unincorporated San Bernardino County, and is predominately located east of State Route 247 (Barstow Road/SR 247), north of the unincorporated community of Lucerne Valley, with portions of the gen-tie alternative corridors that include possible connections along Haynes Road, Huff Road, and Northside Road to the east of Barstow Road.

Timeframe: 12 to 24 months of construction.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the County of San Bernardino in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document. Based on the Project's avoidance of significant impacts on biological resources with implementation of mitigation measures, including those CDFW recommends in Attachment A, CDFW concludes that an Environmental Impact Report is appropriate for the Project.

I. Mitigation Measure or Alternative and Related Impact Shortcoming

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS?

COMMENT 1:

Section 3.5, Page 3.5-29, CS-BIO-2 and CS-BIO-3 S1-6

Issue: In the recirculated DEIR, desert tortoise is stated as having a low potential to occur within the Calcite Substation area. However, in the original DEIR, desert tortoise was assessed as "present with suitable habitat throughout the Calcite Substation" (San Bernardino County, August 2023). Measures CS-BIO-2 and CS-BIO-3 are proposed to avoid impacts to desert tortoise, but these mitigation measures include requirements in which take of desert tortoise may occur without the issuance of a state CESA ITP.

Specific impact: No additional studies or analysis were completed between the release of the original DEIR and recirculated DEIR to clarify why potential presence of desert tortoise would be reduced to a low potential of occurrence on the Calcite Substation project site. The recirculated DEIR acknowledges that "suitable desert tortoise habitat is present throughout the site."

Desert tortoise is a CESA-listed species. Project activities have the potential to take desert tortoise. Handling and translocating desert tortoise without take authorization through a state issued ITP is take in the form of capture. Additionally, installation of desert tortoise exclusionary fencing then performance of a clearance survey (in which methodology assumes an ITP has been obtained) to determine if desert tortoise are located inside the fencing can result in take in the form of capture. Any desert tortoises

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 3 of 10

that may not be identified during pre-construction surveys could be entombed or crushed by equipment, resulting in take in the form of mortality.

Why impact would occur: The proposed mitigation measure as written suggests actions that may only be performed with authorization through an ITP, but the ITP is not a requirement within the mitigation measure. Therefore, should desert tortoise be found within the Project site, the proposed mitigation measures cannot be performed should they be contained in a final certified environmental document without an ITP.

Evidence impact would be significant: California Fish and Game Code Take (hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill) is prohibited unless authorized by state law (Fish and Game Code, §§ 2080 & 2085). S1-6 Contd.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Mitigation Measure or Alternative and Related Impact Shortcoming)

Mitigation Measure CS-BIO-2, CS-BIO-3, and Recommendation (REC)-1:

To reduce impacts to less than significant: CDFW agrees with performing a preconstruction protocol survey to verify desert tortoise has not entered the area between the time the last protocol level survey was conducted and the start of construction. CDFW recommends that the Project proponent seek appropriate authorization prior to Project implementation through an incidental take permit, should desert tortoise be found during these surveys. Also, CDFW recommends modifying measure CS-BIO-BIO-2 and CS-BIO-3, as shown in Attachment A, with additions in bold and deletions in strikethrough, to ensure take does not occur should the Project Proponent not obtain an incidental take permit.

Additionally, CDFW recommends REC-1 be required by the County of San Bernardino in which the Project will require a raven management plan to minimize attraction of ravens to the Project area and the Project proponent contribute to a region-wide raven control plan to help address raven predation on the desert tortoise.

COMMENT 2:

Section 3.5, Page 3.5-34, and CS-BIO-6

Issue: The recirculated DEIR does not evaluate or mitigate for the loss of foraging habitat for special-status passerines and raptors in the Calcite Substation project area. Measure CS-BIO-6 only addresses impacts for the active nests found during the pre-construction surveys, not the loss of actual habitat.

Specific impact: The recirculated DEIR only considers nesting habitat when evaluating Project impacts to special-status avian species, and dismisses the importance of other habitat needs, such as foraging habitat, feeding areas, and lookout perches. The recirculated DEIR states that suitable habitat for loggerhead shrike, Le Conte's Thrasher, Bendire's thrasher, golden eagle, and prairie falcon would be removed as a result of the Calcite Substation project but does not recognize that the direct and indirect impacts associated with the removal of such habitat can be significant without appropriate mitigation measures, which measure CS-BIO-6 does not provide. S1-7

In the recirculated DEIR, prairie falcon is listed as having a moderate potential to occur within the Calcite Substation area. However, in the original DEIR, prairie falcon was assessed as "high potential for occurring within the Calcite Substation due to foraging" (San Bernardino County, August 2023). No additional studies or analysis was done between the release of the original DEIR and recirculated DEIR to clarify why potential presence of prairie falcon would be reduced.

Why impact would occur: The recirculated DEIR acknowledges that suitable habitat for various special-status avian species exist in the Calcite Substation project area, but does not provide avoidance, minimization, or mitigation measures for the loss of this habitat. Measure CS-BIO-6 only avoids and minimizes construction impacts to active nests found during the pre-construction survey. CDFW does not consider CS-BIO-6 to be a mitigation measure, as it does not mitigate for the loss of suitable habitat for various species, as stated in the recirculated DEIR.

Evidence impact would be significant: Major threats to Le Conte's thrasher include the loss and degradation of habitat (Shuford et al., 2008). This species is also vulnerable to human disturbance, off-road vehicle activity, and vegetation removal for development. Threats to loggerhead shrike include habitat loss on wintering and breeding grounds (Shuford et al., 2008). Threats to Bendire's thrasher populations include the development in the West Mojave (including Lucerne Valley) and off-road vehicle disturbance during breeding season (Shuford et al., 2008). Golden eagles are a fully protected species in California, and threats to golden eagle include loss of foraging areas and loss of nesting habitat (CDFW, 2024). Adult golden eagles may also abandon their nests in early incubation if disturbed by humans (Thelander, 1974, cited by Zeiner et al., 1990). The Calcite Substation is within the yearlong range for prairie falcon (Zeiner et al., 1990). S1-7 Contd.

The Project proponent is responsible for complying with Fish and Game Code (FGC) sections (§) 3503, 3503.5, and 3513, which state the following: FGC § 3503 states that is it unlawful to take, possess, or needlessly destroy the nest or eggs or any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto; FGC § 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the Fish and Game Code or any regulation adopted pursuant thereto; FGC § 3513 states that it is unlawful to take or possess any 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 of 1918, as amended (16 United States Code § 703 et seq.).

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Mitigation Measure or Alternative and Related Impact Shortcoming)

Mitigation Measure CS-BIO-6:

To reduce impacts to less than significant: CDFW recommends a qualified biologist survey the Project area not only for breeding and nesting birds, but also for other bird activity, such as foraging, and for behavior possibly caused by Project activities, such as agitation, stress, and/or nest abandonment. CDFW provides editorial suggestions for CS-BIO-6 in Attachment A, with additions in bold and deletions in strikethrough.

II. Editorial Comments and/or Suggestions

A petition to list burrowing owls under the California Endangered Species Act (CESA) has been submitted to the California Fish and Game Commission. Since a determination has not yet been made on the petition, CDFW recommends that avoidance, minimization, and mitigation measures for burrowing owls consider both the potential for CESA listing and the retention of its current Species of Special Concern status. If the burrowing owl is listed as a candidate species under CESA, Project activities will need to either avoid impacts to the species or the Project proponent may obtain an incidental take permit from CDFW, and the DEIR define mitigation that will bring the impact to a CESA-listed species to less than significant with mitigation incorporated. S1-8

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 S1-9

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 5 of 10

during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be filled out and submitted online at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals. S1-9 Contd.

ENVIRONMENTAL DOCUMENT FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document 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 environmental document filing 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.) S1-10

CONCLUSION

CDFW appreciates the opportunity to comment on the Recirculated DEIR to assist County of San Bernardino in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Lily Mu, Senior Environmental Scientist (Specialist) at (909) 544-2521 or Lily.Mu@Wildlife.ca.gov. S1-11

Sincerely,

DocuSigned by:
Brandy Wood
4D7892534D8041E

Brandy Wood
Environmental Program Manager

Attachments
Attachment A. Draft Mitigation, Monitoring, and Reporting Program

ec: Office of Planning and Research, State Clearinghouse, Sacramento S1-12

REFERENCES

California Department of Fish and Wildlife. 2024. Golden Eagles in California. (https://wildlife.ca.gov/Conservation/Birds/Golden-Eagles)

County of San Bernardino. August 2023. Draft Environmental Impact Report. Sienna Solar and Storage Project.

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Thelander, C. G. 1974. Nesting territory utilization by golden eagles (*Aquila chrysaetos*) in California during 1974. Calif. Dept. Fish and Game, Sacramento. Wildl. Manage. Branch Admin. Rep. 74-7. 19pp.ican rough-legged hawk. Pages 269-284 in A. C. Bent. Life histories of North American birds of prey. Part 1. U.S. Natl. Mus. Bull. No. 167. 409pp.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. Prairie Falcon. California Depart. of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. Golden Eagle. California Depart. of Fish and Game, Sacramento, California.

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 7 of 10

Attachment A
Draft Mitigation, Monitoring, and Reporting Program and Draft Recommendations

Draft Mitigation, Monitoring, and Reporting Program (MMRP)
CDFW provides the following language to be incorporated into the MMRP for the Project, additions are in bold font and deletions are in strikethrough.

Biological Resources (BIO)		
Mitigation Measure (MM) Description	**Implementation Schedule**	**Responsible Party**
CS-BIO-2 Biological Monitoring Prior to **the issuance of** grading **or building permits**, SCE shall retain a Qualified Biologist, with experience and expertise in desert species, to oversee compliance with protection measures for all listed and other special-status species~~. If State or Federally listed species or other special status biological resources are identified on the Project area during protocol and/or preconstruction surveys, then the Qualified Biologist may need to be approved by USFWS and/or CDFW as an authorized biologist for handling listed species.~~ The Qualified Biologist or other Qualified Biological Monitors shall be on the Project area during initial grading, ground disturbance and vegetation removal activities in natural scrub vegetation communities to monitor construction activity where that activity could directly or indirectly impact ~~special-status~~ biological resources. The Qualified Biologist shall have the authority to halt all activities that are in violation of the special-status species protection measures. Work shall proceed only after potential hazards to special-status species are removed and the species is no longer at risk. The Qualified Biologist shall have in her/his possession a copy of all the compliance measures while work is being conducted on the Project area.	Prior and during the start of Project related activities	Project Proponent
CS-BIO-3 Desert Tortoise To avoid construction-level impacts to desert tortoise, not more than 45 days prior to ground-disturbing activities for the construction and/or decommissioning phase(s), qualified personnel shall perform a **100% coverage** pre-construction ~~clearance~~ **presence/absence protocol** survey for desert tortoise **in accordance with the U.S. Fish and Wildlife Service survey methodology**. If desert tortoise are not documented during **appropriate conditions and** seasonally timed protocol desert tortoise surveys, no additional measures related to desert tortoise avoidance ~~and minimization~~ are recommended. If desert tortoise are documented inhabiting any portion of the Calcite Substation area during presence/absence surveys, the following **avoidance, minimization, and mitigation** measures shall be implemented: • **Project proponent shall obtain appropriate federal and state incidental take authorization prior to the start of Project activities.** • Develop a plan for desert tortoise translocation and monitoring prior to construction. The plan shall provide the framework for implementing the following measures **and other conditions of approval per the incidental take permit**, ~~or similar measures deemed sufficient~~ and **be** approved ~~during~~ **by** agency **review** ~~consultation (Note:~~	Prior and during the start of Project related activities	Project Proponent

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 8 of 10

~~any desert tortoise translocation plan must be reviewed and approved by CDFW and USFWS)~~: ○ If a permanent tortoise-proof exclusion fence is practicable **or required by an obtained incidental take permit**, a fence shall be installed around all construction areas prior to the initiation of ground disturbing activities, in coordination with a Qualified Biologist. The fence shall be constructed **per U.S. Fish and Wildlife specifications (or as conditioned per the incidental take permit, if obtained)** of 0.5-inch mesh hardware cloth and extend 18-**24** inches above ground and **6**-12 inches below ground. Where burial of the fence is not possible, the lower ~~12~~ **14** inches shall be folded outward against the ground and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked **daily** ~~at least monthly~~ during construction and **until the end of the subsequent desert tortoise active season, then at least monthly during** operations, and maintained when necessary by the Project proponent to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Raven perching deterrents should be installed as part of the fence construction. ○ After fence installation, an authorized biologist shall conduct a **clearance** ~~pre-construction~~ survey **in accordance with the U.S. Fish and Wildlife Service survey methodology** for desert tortoise within the construction site. The authorized biologist shall have the appropriate education and experience to accomplish biological monitoring and mitigation tasks and is approved by the CDFW and the USFWS **through an incidental take permit**. Two surveys without finding any tortoises or new tortoise sign shall occur prior to declaring the site clear of tortoises. ○ All burrows that could provide shelter for a desert tortoise shall be hand-excavated prior to ground-disturbing activities. ○ An authorized biologist shall remain on-site until all vegetation is cleared and, at a minimum, conduct site and fence inspections **daily** ~~on a regular basis~~ throughout construction **and the subsequent desert tortoise active season**, in order to ensure Project compliance with mitigation measures. Should the biologist identify deteriorate fencing or fencing that needs to be improved in order to meet the intended purpose of the exclusionary fencing, SCE shall be responsible for fixing or maintaining the fence in accordance with the biologist's recommendations. ○ A biologist shall remain on-~~call~~ **site** throughout fencing and grading activities **to monitor Project activities** in the event a desert tortoise wanders onto the Project area. ○ Compensatory mitigation in the form of a conservation easement or purchase of mitigation bank credits to compensate for the loss of occupied desert tortoise habitat at a minimum ratio		

Jim Morrissey, Planner
County of San Bernardino
September 27, 2024
Page 9 of 10

of 1:1, with habitat of equal or greater value. If the compensation habitat is higher quality than the impacted habitat, then SCE shall mitigate at a 0.5:1 ratio.		
CS-BIO-6 Pre-Construction Bird Survey ~~Measures for Nesting Birds and Raptors:~~ ~~If construction is scheduled to commence during the non-breeding season (September 1 to January 31), no pre-construction surveys or additional measures with regard to nesting birds and other raptors are required~~. **Nesting bird nesting season generally extends from February 1 through September 15 in southern California and specifically, March 15 through August 31 for migratory passerine birds.** To avoid impacts to nesting birds **(common and special-status)** in the Project area **and adjacent habitat**, a qualified ~~wildlife~~ biologist shall conduct pre-construction surveys of all potential nesting habitats within **and around** the Project area **prior to Project-related disturbance** ~~for project activities that are initiated during the breeding season (February 1 to August 31)~~. ~~The raptor survey shall focus on potential nest sites (e.g., cliffs, large trees, windrows, and shrubs) within a 0.5-mile buffer around the Project area.~~ **Surveys shall encompass all suitable areas, including trees, shrubs, bare ground, burrows, cavities, structures, cliffs, and large trees. Surveys shall focus on both direct and indirect evidence of nesting, including nesting locations and nesting behavior (i.e., copulation, carrying food or nesting materials, nest building, removal of fecal sacks, flushing suddenly from atypically close range, agitation, aggressive interactions, feigning injury, or distraction displays, or other behaviors). Survey duration will take into consideration the size of the property; density and complexity of habitat; number of survey participants; survey techniques employed; and shall be sufficient to ensure that the data collected is complete and accurate.** These surveys shall be conducted no fewer than 14 days prior to ground-disturbing activities ~~without prior agency approval~~. Surveys need not be conducted for the entire Project area at one time. They may be conducted in phases so that surveys occur shortly before a portion of the site is disturbed. The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance. If active nests are found, a suitable **no-work** buffer as determined by the Qualified Biologist (e.g., 200-300 feet for common raptors, 30-50 feet for passerines, 0.5 mile for golden eagle) shall be established around active nests, **based upon the biologists best professional judgement, the displayed behavior (looking for indicators of stress or agitation), the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance.** ~~and n~~**No work** ~~construction~~ within the buffer shall be allowed until a Qualified Biologist has determined that the nest is no longer active (i.e., the nestlings have fledged and are no longer reliant on the nest). ~~Encroachment into the buffer may occur at the discretion of a Qualified Biologist. However, f~~**For** State-listed species, consultation with the CDFW shall occur prior to encroachment into the aforementioned buffers, **which may include development of a Nesting Bird Plan**.	Prior to the start of Project related activities	Project Proponent

REC-1 Raven Management. The Project Proponent shall prepare a Raven Management Plan to minimize the potential to attract common ravens to the site and submit it to CDFW for review and approval. In addition, the Project Proponent shall provide funds to the Renewable Energy Action Team (REAT) account established with the National Fish and Wildlife Foundation (NFWF) to contribute to a region-wide raven control plan to help address raven predation on the desert tortoise. This contribution shall be used to address raven predation on a regional basis and shall be calculated as a one-time payment of $105 per acre **(or most up to date cost)** of project disturbance. Based on this calculation the Project Proponent shall provide a one-time payment to the REAT account established with NFWF's Raven Management Plan fund. A minimum of 30 days prior to the start of Project activities these funds shall be provided to NFWF using appropriate deposit document provided by CDFW and proof of paying this fee shall be provided to CDFW within 24 hours after the funds have been provided to NFWF.	Prior to the start of Project activities	Permittee

Letter S1

Department of Fish and Wildlife

September 27, 2024

S1-1

Comment noted. As explained in the Recirculated Draft EIR, Chapter 1 Introduction (page 1-1), "The proposed Sienna Solar and Storage Project (herein referred to as "Sienna Project" or "solar and energy storage Project") and the Calcite Substation together represent the proposed Project for environmental evaluation purposes under the California Environmental Quality Act (CEQA) (CEQA Guidelines Section 15378). The Sienna Project will interconnect at the proposed Southern California Edison (SCE) Calcite Substation via a proposed overhead and/or underground 220-kV gen-tie line in addition to other ancillary facilities utilizing private and potentially public Rights of Way (ROWs)."

Further, as indicated on EIR page 1-2, "After the close of the public review period for the Recirculated Draft EIR, the County will prepare a Final EIR. The County will respond to the comments received on the original Draft EIR (circulated from August 30, 2023, to October 16, 2023) and this Recirculated Draft EIR."

The CDFW's previous comments on the Stagecoach Solar Project would be considered by the State Lands Commission (CEQA Lead Agency) as part of the environmental review process for that project, should that project advance through planning, entitlement and environmental review.

S1-2

Comment noted.

S1-3

The County acknowledges CDFW's role as a Trustee Agency pursuant to CEQA Guidelines §15386.

S1-4

The County acknowledges CDFW's potential role as a Responsible Agency pursuant to CEQA Guideline §15381 with respect to potential "take" authorization and/or impacts to CDFW jurisdictional streambeds if protected species or CDFW jurisdictional streambeds are impacted by the proposed project.

S1-5

This comment provides a summary of the proposed project as provided in Section 2 Project Description of the EIR. This comment does not address the adequacy of the EIR; therefore, no further response is required.

S1-6

EIR Figure 3.5-4 Special-Status Species Habitat (page 3.5-16), depicts the entire 75-acre Calcite parcel as special status species habitat for the desert tortoise. As described on EIR page 3.5-18, surveys were conducted by Dudek at the Calcite Substation site in May 2016 and 2017 and based on the survey results of the desert tortoise surveys, this species has been determined to have a low potential to occur within the Calcite Substation site. The prior evaluation of habitat and potential presence of desert tortoise as provided in the original Draft EIR was based on older information presented in the previously circulated *Stagecoach Solar Project Draft EIR* (SCH No. 2020100235). The Dudek surveys summarized in the Recirculated Draft EIR are more current, and effectively update the previous surveys referenced in the *Stagecoach Solar Project Draft EIR.* Updated biological survey information is provided in the Final EIR Appendix D3 – 2024 Special Status Plant and Western Burrowing Owl Protocol Survey Results, and Appendix P Gen-Tie Alternative and SCE Calcite Substation 2nd Addendum to Technical Reports.

The County agrees that if desert tortoise is documented as inhabiting any portion of the Calcite substation site, then the project Applicant/Proponent for the construction and operation of the Calcite substation (i.e., Southern California Edison) would be required to consult with appropriate federal and state agencies regarding the potential need for incidental take authorization prior to the start of ground disturbing project activities. As such, Mitigation Measures CS-BIO-2 has been revised and Mitigation Measure REC-1 has been added as recommended by CDFW in this comment. Mitigation Measure CS-BIO-3 has been revised in part, as recommended by CDFW in this comment, with the exception of the first bullet point that stipulates "Project proponent shall obtain appropriate federal and state incidental take authorization prior to the start of Project activities." Should desert tortoise be identified as potentially impacted, it would be at the discretion of the proponent to move forward with project activities and pursue an incidental take permit (ITP), or alternatively not proceed with project activities that would impact the tortoise. As such, CDFW proposed language is replaced with "the Project proponent shall consult with the appropriate state and federal agencies regarding the potential for project activities to result in incidental take and shall comply with any incidental take permit(s) issued for the project." Please refer to Final EIR pages 3.5-35 and 3.5-36for the modified and additional Mitigation Measures.

S1-7

The EIR addresses impacts to loss of suitable habitat for special-status passerines and raptors specifically in the Calcite Substation project area. EIR Figure 3.5-1 Vegetation Communities and Land Cover Types depicts the entire 75-acre SCE parcel as Natural Spinescale Scrub. This habitat type is generally recognized as potential foraging habitat and EIR pages 3.5-33 through 3.5-34 address the potential for suitable habitat for burrowing owl, loggerhead shrike, le conte's thrasher, and bendire's thrasher, golden eagle and prairie falcon. Further, the Project area is surrounded by undeveloped land and open space providing substantial foraging habitat for these species. Therefore, Project activities would not significantly impact the amount of foraging habitat available for passerines and raptors.

The County acknowledges the editorial comments to proposed Mitigation Measure CS-BIO-6 as suggested in this comment. Mitigation Measure CS-BIO-6 has been revised to extend the breeding season end date to September 15 as recommended in this comment. However, no further revision to CS-BIO-6 is proposed as the mitigation measure is otherwise considered adequate to address this potential impact. Please refer to Final EIR pages 3.5-38 and 3.5-39for the modified Mitigation Measure.

S1-8

On October 10, 2024, the California Fish and Game Commission (the Commission) unanimously found that a petition to list the western burrowing owl as an endangered or threatened species in California provides sufficient scientific information to indicate that the petitioned action may be warranted, thereby officially granting the burrowing owl "candidate" species status under the California Endangered Species Act (CESA). The candidacy designation temporarily affords the burrowing owl broad CESA protections (including prohibitions against "take" without permit authorization) throughout California over the next 12-18 months while the California Department of Fish and Wildlife conducts a species status review to confirm whether (and where) listing is warranted and to recommend management and recovery actions.

EIR Mitigation Measures S-BIO-6 and CS-BIO-5 address potential impacts to burrowing owl.

S1-9

Special status species and natural communities detected during biological surveys conducted for the proposed project will be reported to the CNDDB.

S1-10

Applicable CDFW filing fees noted in this comment are acknowledged.

S1-11

Comment noted. The County appreciates CDFW review and comments regarding the EIR.

S1-12

CDFW recommended edits provided in the Attachment A of the CDFW comment letter as responded to above in preceding responses, have been incorporated into the proposed Mitigation Monitoring and Reporting Program (MMRP) for the project. Please refer to responses to comments S1-6 through S1-8, Section 3.5 Biological Resources of the Final EIR, and the MMRP.

STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

Established in 1938

JENNIFER LUCCHESI, *Executive Officer*
916.574.1800
TTY CA Relay Service: **711** *or Phone* **800.735.2922**
from Voice Phone **800.735.2929**
or for Spanish **800.855.3000**

Contact Phone: 916.574.1900

September 30, 2024

File Ref: SCH #2022080518

Aron Liang
San Bernardino County
Land Use Services Department, Planning Division
385 N. Arrowhead Ave 1st Floor
San Bernardino, CA 92415-0187

Subject: Revised Environmental Impact Report for Sienna Solar Recirculated DEIR - PROJ-2022-00013

Dear Aron Liang:

The California State Lands Commission (Commission) staff has reviewed the subject Revised Environmental Impact Report (REIR) for the Sienna Solar Recirculated DEIR - PROJ-2022-00013 (Project), which is being prepared by San Bernardino County. San Bernardino County is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Commission will act as a potential responsible agency because of its duty as the trustee of school lands to monitor projects that could directly or indirectly impact these lands. S2-1

Project Description

The proposed Sienna Solar and Storage Project and the proposed Calcite Substation together represent the proposed Project under CEQA. 99MT 8ME, LLC proposes to construct and operate a utility scale, solar photovoltaic electricity generation facility and energy storage within an approximately 1,854-acre site. Southern California Edison (SCE) proposes to construct and operate the Calcite Substation at a separate 75-acre site. The Sienna Project will interconnect at the SCE Calcite Substation via a proposed overhead and/or underground 220-kV gen-tie line, in addition to other ancillary facilities utilizing private and potentially S2-2

Aron Liang Page 2 September 30, 2024

public Rights of Way (ROWs). The Project would provide energy to the electric grid to meet increasing demand for in-state generation and interconnect directly to the SCE electrical transmission system. S2-2 Contd.

Commission Jurisdiction

In 1853, the United States Congress granted to California nearly 5.5 million acres of land for the specific purpose of supporting public schools. In 1984, the State Legislature passed the School Land Bank Act (Act), which established the School Land Bank Fund (SLBF) and appointed the Commission as its trustee (Pub. Resources Code, § 8700 et seq.). The Act directed the Commission to develop school lands into a permanent and productive resource base for revenue generating purposes. The Commission manages approximately 462,830± acres of school lands still held in fee ownership by the State and the reserved mineral interests on an additional 790,000± acres where the surfaces estates have been sold. Revenue from school lands is deposited in the State Treasury for the benefit of the Teachers' Retirement Fund (Pub. Resources Code, § 6217.5). S2-3

It is staff's understanding that an alternative Gen-Tie route could occupy a School Lands parcel under the jurisdiction of the Commission (Assessor Parcel Number 0452-011-34). If any portion of the proposed project will occupy State-owned School Lands, then the project proponent will be required to obtain a lease. The lease application can be submitted through the Commission's Online System for Customer Applications and Records. S2-4

Thank you for the opportunity to comment on the Project. As a potential responsible and trustee agency, the Commission will need to rely on the Final REIR for the issuance of any potential new lease as specified above and, therefore, staff requests that you consider these comments prior to certification of the REIR. S2-5

If the County approves the alternative Gen-Tie route affecting APN 0452-011-34, then please send electronic copies of the Final REIR, Mitigation Monitoring Program, Notice of Determination, approving resolution, CEQA Findings, and, if applicable, Statement of Overriding Considerations when they are final. Please note that federal and state laws require all government entities to improve accessibility of information technology and content by complying with established accessibility requirements. (29 U.S.C. § 794d; 36 C.F.R. § 1194.1 et seq.; Gov. Code, § 7405.) California State law prohibits State agencies from publishing on their websites content that does not comply with accessibility requirements. (Gov. Code, § 115467.) Therefore, any documents submitted to Commission staff during the processing of a lease or permit that will be posted online, including relevant CEQA documentation, must meet accessibility S2-6 requirements for Commission staff to place the application on the Commission agenda. S2-6 Contd.

Refer questions concerning environmental review to Sarah Mongano, Senior Environmental Scientist, at sarah.mongano@slc.ca.gov or (916) 574-1889. For questions concerning Commission leasing jurisdiction, please contact Drew Simpkin, Public Land Management Specialist, at drew.simpkin@slc.ca.gov or (916) 574-2275. S2-7

Sincerely,

Nicole Dobroski

Nicole Dobroski, Chief
Division of Environmental Science,
Planning, and Management

cc: Office of Planning and Research
Andrew Kershen, LEGAL, Commission
Drew Simpkin, LMD, Commission
Sarah Mongano, DESPM, Commission

Letter S2

State Lands Commission

September 30, 2024

S2-1

The comment is acknowledged that the State Lands Commission will potentially act as a Responsible Agency pursuant to CEQA Guideline §15381, should one of the gen-tie routes, which involves state lands, be selected.

S2-2

This comment provides a summary of the proposed project and does not address the adequacy of the EIR; therefore, no further response is required.

S2-3

This comment summarizes the State Lands Commission's roles and responsibilities pursuant to Public Resources Code, §8700 et seq.) and does not address the adequacy of the EIR; therefore, no further response is necessary.

S2-4

It is acknowledged that one of the gen-tie routes under consideration would traverse APN #0452-011-34. As indicated in this comment, the Applicant would be required to obtain a lease from the State Lands Commission, for any use of this parcel. The project Applicant would ultimately be responsible for submittal of application materials through the Commission's Online System for Customer Applications and Records, should the gen-tie route that affects this parcel be selected.

S2-5

The Commission's comments are acknowledged and will be considered by the County Planning Commission and Board of Supervisors as contained in the Final EIR as part of their consideration of approval of the proposed project and in conjunction with certification of the Final EIR.

S2-6

In accordance with this comment, if the alternative gen-tie route that traverses APN #0452-011-34 is selected, then the Applicant will be responsible for providing the documentation referenced in this comment to the State Lands Commission in compliance with accessibility requirements specified in this comment.

S2-7

Comment noted. The County acknowledges and appreciates the contact information provided in this comment.

Mojave Desert Air Quality Management District
Brad Poiriez, *Executive Director*
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • Fax 760.245.2022
www.MDAQMD.ca.gov • @MDAQMD

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LAND USE SERVICES
ADMINISTRATION

Mojave Desert Air Quality Management District
Clean air is everybody's business.

August 23, 2024

County of San Bernardino, Land Use Services Dept.
Jim Morrissey, Contract Planner
385 North Arrowhead Avenue
San Bernardino, CA 92415

Subject: Sienna Solar and Storage Project (PROJ-2022-00013)

Dear Mr. Morrissey:

The Mojave Desert Air Quality Management District (District) has received the initial study for the proposed Sienna Solar and Storage Project in Lucerne Valley, CA. 99MT 8ME, LLC (Applicant) plans to construct and operate the Sienna Solar and Storage Project (Project), a utility scale, solar photovoltaic (PV) electricity generation facility that would produce up to 525 megawatts (MW) of solar power and include up to 525 MW of energy storage capacity rate in a battery energy storage system (BESS) within an approximately 1,854-acre Project site. The Project is predominately located east of SR 247 (Barstow Road), north of the unincorporated community of Lucerne Valley, with portions of the gen-tie alternative corridors that include possible connections along Haynes Road, Huff Road, and Northside Road to the east of Barstow Road. The site is generally located approximately 35 miles south of Barstow, 45 miles northwest of the town of Yucca Valley, 15 miles southeast of the town of Apple Valley, and 20 miles north of the City of Big Bear Lake. L1-1

We have reviewed the project as proposed and based on the information available to us at this time, the District requires that the owner/operator obtain Solar Permits as listed in District Rule 302 and a Dust Control Plan (DCP) for the planned solar facility. Any person required to submit or resubmit a Solar DCP on an annual basis shall be assessed a fee based on the actual acreage of the Solar Project as set forth in Table 1 of District 302. The most current Dust Control Plan Requirements and Dust Control Plan Submission Form are available at https://www.mdaqmd.ca.gov/permitting/compliance-forms. L1-2

Other District requirements include:

- Signage compliant with Rule 403 Attachment B shall be erected at each project site entrance not later than the commencement of construction.
- Use a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes to minimize visible fugitive dust emissions. For projects with exposed sand or fines deposits (and for projects that expose such soils through earthmoving), chemical stabilization or covering with a stabilizing layer of gravel will be required to eliminate visible dust/sand from sand/fines deposits. L1-3

- All perimeter fencing shall be wind fencing or the equivalent, to a minimum of four feet of height or the top of all perimeter fencing. The owner/operator shall maintain the wind fencing as needed to keep it intact and remove windblown dropout. This wind fencing requirement may be superseded by local ordinance, rule or project-specific biological mitigation prohibiting wind fencing.

- All maintenance and access vehicular roads and parking areas shall be stabilized with chemical, gravel or asphaltic pavement sufficient to eliminate visible fugitive dust from vehicular travel and wind erosion. Take actions to prevent project-related trackout onto paved surfaces, and clean any project-related trackout within 24 hours. All other earthen surfaces within the project area shall be stabilized by natural or irrigated vegetation, compaction, chemical or other means sufficient to prohibit visible fugitive dust from wind erosion.

- Obtain District permits for any miscellaneous process equipment that may not be exempt under District Rule 219 including, but not limited to: Internal Combustion Engines with a manufacture's maximum continuous rating greater than or equal to 50 brake horsepower.

- Comply with all applicable provisions listed in Rule 403 – *Fugitive Dust Control*.

L1-2 Contd.

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (760) 245-1661, extension 1846, or Bertrand Gaschot at extension 4020.

L1-3

Sincerely,

Chris Anderson
Planning and Air Monitoring Supervisor

CA/bg SBC Sienna Solar and Storage 2024 22 Aug

Letter L1

Mojave Desert Air Quality Management District

August 23, 2024

L1-1

This comment provides a summary of the proposed project as provided in Section 2 Project Description of the EIR. This comment does not address the adequacy of the EIR; therefore, no further response is required.

L1-2

The County acknowledges that the owner/operator will be required to obtain Solar Permits referenced in this comment and as listed in District Rule 302, including preparation and implementation of a Dust Control Plan (DCP). Responsibility of the Applicant to obtain necessary federal, state, and local permits for construction and operation of the project is required as a general condition of approval of the Conditional Use Permit for the project. The conditions of approval will include a specific condition that the Applicant (owner/operator) obtain and adhere to the requirements of the Solar Permits as listed in District Rule 302 and the requirement for preparation, approval, and implementation of a Dust Control Plan (DCP) in accordance with Mojave Desert Air Quality Management District requirements.

L1-3

The requirements listed in this comment are acknowledged, and will be included as conditions of approval of the project. The EIR acknowledges the District's regulations as indicated on EIR page 3.4-10:

> To minimize potential impacts from Project emissions, MDAQMD implements rules and regulations for emissions that may be generated by various uses and activities. The rules and regulations detail pollution-reduction measures that must be implemented during construction and operation of projects. Rules and regulations relevant to the project include the following:
>
> - **Rule 401 (Visible Emissions).** This rule addresses discharge of visible emissions from any single source into the atmosphere (see Appendix C1 of this EIR for details).
> - **Rule 402 (Nuisance).** This rule prohibits the discharge from any source quantities for air containments or other materials which could cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public.
> - **Rule 403 (Fugitive Dust).** This rule pertains to any project or facility with a disturbance surface area of at least twenty acres; residential construction/demolition activity with a disturbed surface area of at least 10 acres; non-residential construction/demolition activity with a disturbed surface area of at least five acres; moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three consecutive days; solar projects; healthily-traveled unpaved roads; and any other project or facility where fugitive dust is visible.

The Sienna Project would adhere to the MDAQMD Rule 403 (Fugitive Dust Control), in addition to complying with any applicable proposed control measures from the *Mojave Desert Planning Area Federal Particulate Matter (PM_{10}) Attainment Plan* (1995) and the MDAQMD *70 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area)* (2023). (EIR page 3.4-14).

Further, it is acknowledged that the Applicant would be required to obtain APCD permits for any miscellaneous process equipment that may be exempt under District Rule 219.

L1-4

Comment noted.

SOUTHERN CALIFORNIA EDISON

September 30, 2024

VIA E-MAIL

Harris & Associates (c/o David Mack and Delanie Garlick)
County of San Bernardino
Land Use Services Department, Planning Division
385 N. Arrowhead Ave 1st Floor
San Bernardino, CA 92415-0187
David.Mack@WeAreHarris.com
Delanie.Garlick@WeAreHarris.com

Re: Sienna Solar and Storage Project Draft Environmental Impact Report; SCH No. 2022080518

Dear Mr. Mack and Ms. Garlick:

On behalf of Southern California Edison Company ("SCE"), we wish to thank San Bernardino County Land Use Services Department (the "County") for its work in preparing and publishing the *Sienna Solar and Storage Project Draft Environmental Impact Report* (State Clearinghouse No. 2022080518, the "Sienna DEIR"). As you know, SCE would be the developer of the Calcite Substation that would connect the Sienna Solar and Storage Project to the broader grid, as described and analyzed in the Sienna DEIR. This letter, the accompanying comment table enclosed as Attachment A (which is expressly incorporated by this reference), and the updated demonstrative graphic enclosed as Attachment B (which is expressly incorporated by this reference) collectively contain SCE's comments on the Sienna DEIR. Pursuant to the California Environmental Quality Act (Pub. Resources Code § 21000 *et seq.*) and its implementing guidelines (14 Cal. Code Regs. § 15000 *et seq.*), SCE respectfully requests that its comments be included and addressed in any Final Environmental Impact Report prepared by the County.

As shown in Attachment A, SCE's suggested deletions from the Sienna DEIR are shown in ~~strikeout~~ format, and SCE's suggested additions to the Sienna DEIR are shown in underline format, all in red font with accompanying comments, rationales, and suggested clarifications. Capitalized terms not defined herein have the same meaning as prescribed in the Sienna DEIR.

SCE appreciates and agrees with the Sienna DEIR's conclusions specifying that the Calcite Substation and associated work components of the broader Sienna Solar and Storage Project ("Project") will not cause any significant environmental impacts. SCE offers the following suggested minor edits designed to further clarify and refine the Sienna DEIR, along with the comments and suggestions articulated within Attachments A and B.

L2-Intro

1. ***Suggested Revisions to Further Clarify That the Calcite Substation Contribution to Any Cumulative Impacts Would Not Be Cumulatively Considerable***

As noted within the Sienna DEIR, the Calcite Substation component of this Project will not contribute to a cumulatively considerable aesthetic impact due to its relatively small scale and area of disturbance, its topography and distance from other planned solar projects, and the fact that it will not involve large expanses of solar arrays. (See Sienna DEIR, at p. 5-5). While SCE is pleased that the County has determined that the Calcite Substation component of this project will not be cumulatively considerable, we suggest minor revisions to further clarify this determination. (See Attachment A, Comments 4, 5, 9, 11, 12, 13, 22, 34, 36, 38, 54). L2-1

2. ***Suggested Revisions to Certain Mitigation Measure Language***

SCE appreciates the time and effort required to develop effective and impactful mitigation measures designed to reduce or avoid potentially significant adverse Project impacts. SCE has thoroughly reviewed the proposed mitigation measures articulated within the Sienna DEIR and, on the whole, finds the proposed measures to be reasonable. As articulated within Attachment A, we suggest certain minor revisions to the mitigation measure language. (See Attachment A, Comments 1, 2, 3, 6, 7, 8, 10, 14, 15, 17, 18, 19, 20, 21, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 35, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 55). L2-2

3. ***Suggested Revisions to Confirm and Clarify Certain Language Regarding the Preemptive Position of the CPUC Over Utility Regulatory Matters Relating to Local Land Use Regulations***

California Public Utilities Commission ("CPUC") General Order 131-D ("GO 131-D") sets forth the CPUC's overarching regulation governing the siting and development of utility electric infrastructure, including substations. GO 131-D also confirms that local jurisdictions are preempted from "regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities" which are subject to CPUC jurisdiction (GO 131-D, Section XIV.B), although utilities are required under GO 131-D to consult "with local agencies regarding land use matters" (GO 131-D, Section XIV.B) and "obtain any non-discretionary local permits." (GO 131-D, Section III.C). As articulated within Attachment A, SCE suggests some minor revisions to confirm and clarify the preemptive position of the CPUC concerning utility infrastructure development and local land use regulations. (See Attachment A, Comments 20, 21, 23, 25, 26, 30, 33, 46, 48). L2-3

4. ***Suggested Revisions to Confirm and Clarify That the Calcite Substation May Still Be Constructed Whether or Not the Project is Constructed, If Needed as An Interconnection Point for Other Generation Projects***

Currently, the Sienna DEIR states that "The No Project Alternative assumes that the proposed Project, as proposed, would not be implemented and the Project site would not be further developed with a solar energy project and the proposed Calcite Substation." (See Sienna DIER, at L2-4

p. 7-3). However, the No Project Alternative should discuss what is reasonably foreseeable to occur even if the proposed project is not implemented. (See 14 CCR § 15126.6(e)). In this case—because (1) certain other solar projects have been proposed and may at some point be developed in the area (e.g., the Stagecoach Solar Project), and (2) said projects, if and when developed, would require an interconnection substation—the Calcite Substation could be pursued whether or not the Sienna Solar Project is ever approved and constructed. Therefore, the No Project Alternative should explain that the Calcite Substation could still be developed even if the Sienna Solar Project is not constructed. (See Attachment A, Comments 16, 37). L2-4 Contd.

5. Clarification Regarding Figure 2-21 and Figure SCE-1

SCE would like to point out that figures 2-21 (at p. 2-41 of the Sienna DEIR) and Figure SCE-1 (Appendix O of the Sienna DEIR)—each of which depict the exact same demonstrative graphic—do not accurately reflect minor telecom route specifics. However, the correct telecom route details and specifications were accurately denoted and described within Chapter 2 of the Sienna DEIR (Project Description). For the sake of clarity, SCE is providing an updated demonstrative graphic which (1) correctly depicts currently projected telecom routes and (2) accurately correspond to the project description text. This demonstrative graphic is current as of 9/30/2024, and attached hereto as Attachment B. L2-5

Thank you for your attention to this matter. SCE looks forward to the County's preparation of a Final EIR that includes responses and modifications to the Sienna DEIR which address each of the comments articulated both herein and within Attachments A and B.

Sincerely,

Jon R. Parker
Southern California Edison
Director and Managing Attorney
Land Use & Licensing

ATTACHMENT A

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
1.	ES-38 (48)	Table ES-2 Aesthetics	**CS-AES-1: Surface Treatment and Design of Project Structures and Buildings**. To the extent commercially and technically feasible, SCE shall treat the surfaces of all non-temporary large Project structures and buildings visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; and (b) their colors and finishes do not create excessive glare. SCE shall implement the following requirements where commercially and technically feasible: • Carefully consider the selection of color(s) and finishes based on the characteristic landscape and would consult with the County of San Bernardino regarding color choice. • Color treatment shall be applied to all major Project structures and buildings; and walls or fencing (excludes chain-link fence). • Minimize the number of structures and combine different activities in one structure, where practicable. Use natural, self-weathering materials or chemical treatments such as dulling and galvanizing on surfaces to reduce color contrast. Reduce the line contrast created by straight edges	**CS-AES-1: Surface Treatment and Design of Project Structures and Buildings.** To the extent commercially and technically feasible in accordance with SCE standards, SCE shall treat the surfaces of all non-temporary large Project structures and buildings visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; and (b) their colors and finishes do not create excessive glare. SCE shall implement the following requirements where commercially and technically feasible: • Carefully consider the selection of color(s) and finishes based on the characteristic landscape and would consult with the County of San Bernardino regarding color choice. • Color treatment shall be applied to all major Project structures and buildings; and walls or fencing (excludes chain-link fence). • Minimize the number of structures and combine different activities in one structure, where practicable in accordance with SCE standards. Use natural, self-weathering materials or chemical treatments such as dulling and galvanizing on surfaces to reduce color contrast. Reduce the line contrast created by straight edge.	1. While treatment may be commercially & technically feasible, SCE could end up treating "all non-temporary large Project structures and buildings visible to the public." Using non-standard structures and buildings could jeopardize the project's reliability. 2. minimizing structures may result in non-standard configurations
2.	ES-53	Table ES-2 (Cultural Resources, Impact 3.6-1)	**CS-CR-6: Monitoring Report.** Within 6 months of completing construction, a Cultural Resources Monitoring Report shall be submitted to SCE. The report shall include evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting and evidence that any artifacts have been treated in accordance with procedures stipulated in the Cultural Resources Management Plan.	**CS-CR-6: Monitoring Report.** Within 6 months of completing construction, a Cultural Resources Monitoring Report shall be submitted to ~~SCE~~the County. The report shall include evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting and evidence that any artifacts have been treated in accordance with procedures stipulated in the Cultural Resources Management Plan.	GLOBAL COMMENT County (not SCE) needs to receive the report to oversee mitigation, including CS-CR-1 through CS-CR-6.
3.	ES-57 (67)	Table ES-2 Hazards and Hazardous Materials	**CS-HAZ-2: Soil and Groundwater Management Plan.** • … SCE shall immediately notify the Hazardous Materials Division of the San Bernardino County Fire Department in the event of encountering contaminated soil or groundwater. A weekly report listing encounters with contaminated soils and describing actions taken shall be submitted to the County Fire Department.	**CS-HAZ-2: Soil and Groundwater Management Plan.** • … SCE shall immediately notify the Hazardous Materials Division of the San Bernardino County Fire Department in the event of encountering contaminated soil or groundwater. A weekly report listing encounters with contaminated soils and describing actions taken shall be submitted to the County Fire Department within 1 week following any week during which construction on the Calcite Substation Project has occurred.	It would be inefficient of County resources and costly if SCE were required to submit a report during a construction hold, and revisions are proposed to

Page 1 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					establish report timing
4.	133	2.7.2.3	SCE will construct up to three structures and four spans, starting at the generator's closest structure to the Calcite Substation property to connect to the new position within the switchyard.	SCE will construct ~~up to~~ approximately three structures, ~~and~~ four spans and the generator will construct approximately six structures including the point of change of ownership (POCO) structure within the proposed Calcite Substation property boundary~~starting at the generator's closest structure to the Calcite Substation property to connect to the new position within the switchyard~~.	Exact number of structures and party responsible for each to be determined in final engineering
5.	1690	Appendix O – Project Overview	Generation Tie Line Connection: Connect the Sienna Solar-built generation tie line ("gentie") into the SCE-owned Calcite Substation. SCE will construct up to three structures and four spans, starting at the generator's closest structure to the Calcite Substation property to connect to the new position within the switchyard.	Generation Tie Line Connection: Connect the Sienna Solar-built generation tie line ("gentie") into the SCE-owned Calcite Substation. SCE will construct ~~up to~~ approximately three structures and four spans, starting at the generator's closest structure to the Calcite Substation property to connect to the new position within the switchyard.	Exact number of structures and party responsible for each to be determined in final engineering
6.	ES-52 (62)	Table ES-2 Cultural Resources	CS-CR-4: Archaeological Monitoring. Due to the heightened cultural sensitivity of the proposed project area, one or more qualified archaeological monitors with at least 3 years of regional experience in archaeology, shall be present for all ground-disturbing activities that occur within the approved Project area (including, but not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work)	CS-CR-4: Archaeological Monitoring. Due to the heightened cultural sensitivity of the proposed project area, one or more qualified archaeological monitors with at least 3 years of regional experience in archaeology, shall be present for all ground-disturbing activities at the start of construction and reduced if no resources are encountered ~~that occur~~ within the approved Project area (including, but not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work) Archaeological monitoring by CRS and Tribal Monitors will occur in areas where archaeological and/or tribal resources have been identified rather than for all ground disturbing work.	Archaeological and tribal monitoring is required in areas where cultural resources have been identified by an archaeologist, and where Tribal resources have been identified by a Tribe through the consultation process. To ensure impacts to cultural and tribal resources are avoided SCE

Page 2 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					proposes full-time monitoring by archaeologists and tribal monitors at the start of construction and would be reduced if no resources are encountered through grading or ground disturbing activities. Additionally, per Mitigation Measure S-CR-2 a CRMMP will be prepared with procedures to be followed in the event of discovery of archaeological or tribal resources.
7.	ES-62		Coordinate with the Cities of Victorville, Apple Valley, and Barstow to identify locations for park-and-ride carpooling lots within their communities and establish project-supported buses or vanpools from these locations. The purpose of this measure is to increase safety and maintain traffic flow by decreasing the number of trips on rural roadway segments that have low baseline traffic volumes.	~~Coordinate with the Cities of Victorville, Apple Valley, and Barstow to identify locations for park-and-ride carpooling lots within their communities and establish project-supported buses or vanpools from these locations. The purpose of this measure is to increase safety and maintain traffic flow by decreasing the number of trips on rural roadway segments that have low baseline traffic volumes.~~ SCE shall prepare a construction traffic management plan for review and approval by the County of San Bernardino prior to the commencement of construction at the Calcite Substation.	Carpooling can reduce trips on rural roads but may not always be safe or practical. Workers might drive further to carpool locations, increasing traffic. Coordinating schedules can be challenging, causing delays if one member is late. Carpooling may not suit workers with varying shifts or those needing to leave unexpectedly. Encouraging carpooling where safe and

Page 3 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					practical is beneficial, but it shouldn't be required. This approach allows flexibility, by ensuring workers can choose the most efficient transportation method while still reducing traffic and improving safety
8.	ES-63	Transportation	Use flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., at key locations according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices (FHWA 2021), the Standard Specifications for Public Works Construction (SFPUC 2021), and/or the California Manual on Uniform Traffic Control (Caltrans 2021) to ensure safe site ingress/egress and use of public roadways.	Use flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., at key locations according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices (FHWA 2021), the Standard Specifications for Public Works Construction (SFPUC 2021), ~~and/or~~ the California Manual on Uniform Traffic Control (Caltrans 2021), and SCE construction standards to ensure safe site ingress/egress and use of public roadways.	
9.	ES-71	Statement of Overriding Considerations.	However, as described in Chapter 5.0, Cumulative Impacts, although cumulative projects located within private lands and/or under the jurisdiction of the County of San Bernardino would be designed in accordance with the County's Policy Plan, which includes policies to protect visual resources in the County, and San Bernardino County Development Code, for many travelers along SR 247, the scenic experience would be substantially degraded due to the perceived addition of new man-made features to the landscape. The utility-scale size of the Sienna Project would contribute to this cumulatively considerable aesthetic impact. This contribution is considered significant due to the large area (1,854 acres) proposed for solar development and associated gen-tie lines in the context of the valley. This is considered a cumulatively considerable impact and would result in a significant and unavoidable impact.	However, as described in Chapter 5.0, Cumulative Impacts, although cumulative projects located within private lands and/or under the jurisdiction of the County of San Bernardino would be designed in accordance with the County's Policy Plan, which includes policies to protect visual resources in the County, and San Bernardino County Development Code, for many travelers along SR 247, the scenic experience would be substantially degraded due to the perceived addition of new man-made features to the landscape. The utility-scale size of the Sienna Project would contribute to this cumulatively considerable aesthetic impact. The Sienna Project ~~This contribution~~ is considered significant due to the large area (1,854 acres) proposed for solar development and associated gen-tie lines in the context of the valley. This is considered a cumulatively considerable impact and would result in a significant and unavoidable impact.	See DEIR text at page 5-5 Reference to Sienna project is added to confirm that the sienna project is responsible for any cumulatively considerable aesthetic impact. As noted, at DEIR page 5-5, the calcite substation component would not contribute to a cumulatively considerable aesthetic impact for

Page 4 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					the reasons listed on that page.
10.	2-31	2.7.1.6 Gen-Tie Line	Microwave communication tower(s) would be installed within the Sienna Project substation or within the proposed Calcite Substation when possible. If required, a microwave communication tower may be installed within a fenced enclosure within the gen-tie right-of way. Microwave communication towers typically consist of a steel mono-pole with an approximate five-foot diameter microwave antenna located at the top of the mono-pole. Microwave towers are typically less than 150 feet above surrounding grade, depending on the terrain between the transmitter and the receiver antennas.	Microwave communication tower(s) would be installed within the Sienna Project substation ~~or within the proposed Calcite Substation~~ when possible. If required, a microwave communication tower may be installed within a fenced enclosure within the gen-tie right-of way. Microwave communication towers typically consist of a steel mono-pole with an approximate five-foot diameter microwave antenna located at the top of the mono-pole. Microwave towers are typically less than 150 feet above surrounding grade, depending on the terrain between the transmitter and the receiver antennas.	SCE is not proposing any Microwave communication tower(s) within the proposed Calcite substation property.
11.	2-45	2.8.2 Calcite Substation	Construction of the proposed Calcite Substation would require approximately 16 months, from February 2026 to June 2027. Construction of the substation and access road would occur from February 2026 to June 2027 and includes phases for survey, grading, fencing, civil, MEER Install (Drop In), electrical, wiring, maintenance crew, testing, and asphalt. Construction of the transmission line loop-in and gen-tie would occur from April 2026 to November 2026 and includes phases for survey, road work and structure pads, guard structure installation, conductor and ground wire removal, lattice steel tower (LST) removal, LST foundation removal, steel pole structure foundation installation, haul, assembly, and erection, 220kV conductor and ground wire installation, underground ground wire installation, guard structure removal, and restoration.	Construction of the proposed Calcite Substation would require approximately 16 months, from ~~February 2026~~January 2027 to ~~June 2027~~April 2028. Construction of the substation and access road would occur from ~~February 2026~~January 2027 to ~~June 2027~~ April 2028 and includes phases for survey, grading, fencing, civil, MEER Install (Drop In), electrical, wiring, maintenance crew, testing, and asphalt. Construction of the transmission line loop-in and gen-tie would occur from April 2026 to November 2026 and includes phases for survey, road work and structure pads, guard structure installation, conductor and ground wire removal, lattice steel tower (LST) removal, LST foundation removal, steel pole structure foundation installation, haul, assembly and erection, 220kV conductor and ground wire installation, underground ground wire installation, guard structure removal, and restoration.	Construction schedule updated based on the Sienna Solar DEIR recirculation date.

Page 5 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
12.	ES-2	ES-2	The proposed Calcite Substation is located northwest of the Sienna Project area, within a 75-acre parcel (APN 0453-041-07) that occupies areas land both east and west of SR 247 (Barstow Road), directly north of Haynes Road, in San Bernardino County.	The proposed Calcite Substation is located northwest of the Sienna Project area, within a 75-acre parcel (APN 0453-041-07) that occupies areas land both east and west of SR 247 (Barstow Road), directly north of Haynes Road, in San Bernardino County. The actual footprint of the proposed Calcite Substation encompasses 7 acres with an additional 4 acres for other required improvements, including site drainage for a total of 11 acres of the 75-acre parcel. SCE proposes to construct additional infrastructure (transmission lines and telecom facilities) and access roads associated with the Calcite Substation and necessary to operate the Calcite Substation to the south of the 75-acre parcel.	To depict the actual size of the proposed Calcite Substation. Calcite Substation should be shown on all related figures along with the transmission, telecom, and access roads to the south
13.	2-2	2 Project Description	Energy generated by the proposed Project will be transmitted to SCE's electric grid via an interconnection with the proposed Calcite Substation. SCE proposes to construct and operate the Calcite Substation on approximately 7 acres, with an additional 4 acres for drainage, grading and access road, located on a portion of a 75-acre parcel of land on the west and east sides of State Route (SR) 247, directly north of Haynes Road, in San Bernardino County. The Calcite Substation is a necessary infrastructure improvement to allow the proposed Sienna Solar and Energy Storage Project to connect to the grid. Because CEQA requires analysis of the environmental impacts of the full project, the proposed Calcite Substation is considered in the scope of this document and Project. Approval of the proposed Calcite Substation would fall under the discretionary permitting jurisdiction of the California Public Utilities Commission (CPUC).	Energy generated by the proposed Project will be transmitted to SCE's electric grid via an interconnection with the proposed Calcite Substation. SCE proposes to construct and operate the Calcite Substation on approximately 7 acres, with an additional 4 acres for drainage, grading and access road, located on a portion of a 75-acre parcel of land on the west and east sides of State Route (SR) 247, directly north of Haynes Road, in San Bernardino County. SCE proposes to construct additional infrastructure (transmission lines and telecom facilities) and access roads associated with the Calcite Substation and necessary to operate the Calcite Substation to the south of the 75-acre parcel. The Calcite Substation is a necessary infrastructure improvement to allow the proposed Sienna Solar and Energy Storage Project to connect to the grid. Because CEQA requires analysis of the environmental impacts of the full project, the proposed Calcite Substation is considered in the scope of this document and Project. Approval of the proposed Calcite Substation would fall under the discretionary permitting jurisdiction of the California Public Utilities Commission (CPUC).	There are transmission and telecom infrastructure and access roads to the south of the Calcite Substation that are not shown on some of the figures or described in the text. This needs to be carried throughout the document as described in Section 2.7.2 and shown in Figure 2-21 (SCE-1) and Appendix O. In addition, the 7-acre Calcite Substation should be shown.

Page 6 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
14	ES-60	Noise and Vibration Impact 3.12-1	Heavy equipment operation relating to any Project features shall be restricted to the hours between 7:00 a.m. and 7:00 p.m. on Monday through Saturday, and not allowed on Sundays or federal holidays, unless a special approval has been granted by the County of San Bernardino.	Heavy equipment operation relating to any Project features shall be restricted to the hours between ~~7~~6:00 a.m. and 7:00 p.m. on Monday through Saturday, and not allowed on Sundays or federal holidays, unless a special approval has been granted by the County of San Bernardino.	While restricting heavy equipment operation to between 7:00 a.m. and 7:00 p.m. on Monday through Saturday is a good measure to minimize noise and disruption, starting at 6:00 a.m. instead of 7:00 a.m. could be more beneficial. An earlier start time would allow the crew to avoid working during the hotter parts of the day, especially in the summertime, thereby reducing the risk of heat-related safety issues. This adjustment would also help in maintaining productivity and ensuring the well-being of the workers.
15	ES-62	Noise and Vibration Impact 3.13-1	Stagger shifts for construction workers to spread associated traffic over longer times in the morning and evening to improve traffic flow and safety challenges resulting from all workers having the same starting and ending times.	When practicable, ~~S~~stagger shifts for construction workers to spread associated traffic over longer times in the morning and evening to improve traffic flow and safety challenges resulting from all workers having the same starting and ending times.	Staggering shifts to improve traffic flow and safety is largely impractical for this project. Construction work is highly structured, with each

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					crew member playing a critical role in the workflow. Tasks such as concrete pouring or heavy lifting require all workers to be present simultaneously to ensure efficiency and coordination. Implementing staggered shifts could disrupt the workflow, compromise safety, and reduce overall productivity. While the idea has merit, it should be optional and only considered when it is feasible and does not impact the project's efficiency and safety
16	ES-73	Alternatives Carried Forward	The No Project Alternative assumes that the proposed Project, as proposed, would not be implemented and the Project site would not be further developed with a solar energy project and the proposed Calcite Substation.	The No Project Alternative assumes that the proposed Project, as proposed, would not be implemented and the Project site would not be further developed with a solar energy project, ~~and t~~ The proposed Calcite Substation may still be developed if other solar generation projects, such as the Stagecoach Solar project which was previously analyzed by the California State Lands Commission, are developed.	The No Project Alternative should discuss what is reasonably foreseeable to occur even if the proposed project is not implemented. (14 CCR 15126.6(e).) In this case, because other solar projects

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					(namely Stagecoach) are still being planned for development in the area and those project(s) would also need an interconnection substation, the Calcite Substation is likely to still be pursued even if the Sienna Solar project were not developed. Therefore, even the No Project Alternative should still include Calcite Substation.
17	2-8	2.5.2 Calcite Substation	The 75-acre parcel where the proposed Calcite Substation would be located is currently vacant land that is designated RLM in the San Bernardino Countywide Plan. The parcel is zoned LV/AG (40-acre minimum). Pursuant to Section 82.03.040 of the San Bernardino County Development Code, the County allows for the development of electrical power generation on AG land, subject to County approval of a CUP. However, pursuant to Section 85.05.050(b)(5) of the San Bernardino County Development Code, the proposed substation is allowed without a CUP because it would be approved by the CPUC (a state agency); and therefore, the Development Code would be pre-empted by State law.		It is unclear if the online version of the SB County Code is the most current, but this citation perhaps should be to section 81.01.050(j): (" (j) Uses or Activities Exempt under State or Federal Law. The provisions of this Development Code shall not apply to any uses or activities that are exempt from local regulation

Page 9 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					under or preempted by State or Federal law.") There does not appear to be a section 85.05.050(b)(5).
18	2-48	2.11 Decommissioning and Reclamation	Similarly, the proposed Calcite Substation would be decommissioned in compliance with applicable State, SCE, and County standards.	Similarly, although decommissioning of the substation is unlikely, the proposed Calcite Substation would be decommissioned in compliance with applicable State, SCE, and County standards.	
19	3.2-13	3.2 Aesthetics	Consideration was then given to the existing visual setting within the Sienna Project viewshed, which is defined as the geographical area in which the Sienna Project can be seen.	Consideration was then given to the existing visual setting within the Sienna Project and Calcite Substation viewsheds, which is defined as the geographical area in which the Sienna Project and Calcite Substation can be seen.	EIR should confirm that existing setting and impacts for Calcite Substation were considered.
20	3.5-27	3.5 Biological Resources	The proposed Project would be subject to the following regulations outlined in the San Bernardino County Development Code:	The proposed Project would be subject to the following regulations outlined in the San Bernardino County Development Code, to the extent applicable:	The California Public Utilities Commission (CPUC) issued General Order 131-D (GO 131-D) preempting local jurisdictions from "from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities" which are subject to CPUC jurisdiction. (Section XIV.B). SCE is required under GO 131-D to consult

Page 10 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					"with local agencies regarding land use matters" and "obtain any non-discretionary local permits required."
21	3.6-10	3.6 Cultural Resources	The *San Bernardino Countywide Plan/Policy Plan* serves as a set of plans and tools for the County's unincorporated communities and complements the Countywide vision. The Policy Plan is a component of the Countywide Plan that is an update and expansion of the County's previous General Plan for the unincorporated areas. The proposed Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. Relevant policies and goals pertaining to cultural resources and applicable to the proposed Project are summarized below.	The *San Bernardino Countywide Plan/Policy Plan* serves as a set of plans and tools for the County's unincorporated communities and complements the Countywide vision. The Policy Plan is a component of the Countywide Plan that is an update and expansion of the County's previous General Plan for the unincorporated areas. The proposed Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. Relevant policies and goals pertaining to cultural resources and applicable or relevant to the proposed Project are summarized below.	GLOBAL COMMENT: Local regulations, including land use and planning policies and goals, could be relevant to the analysis of potential impacts but are not *applicable* to the Calcite Substation. The CPUC in issuing General Order 131-D (GO 131-D) preempted local jurisdictions from "from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities" which are subject to CPUC jurisdiction. (Section XIV.B). SCE is required under GO 131-D to consult "with local agencies regarding land use

Page 11 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					matters" and "obtain any non-discretionary local permits required."
22	3.7-3	3.7 Geology and Soils	As previously mentioned above, Lucerne Valley has experienced subsidence due to groundwater withdrawal (Appendix G of this EIR). The proposed Calcite Substation site is located approximately 1 mile north of active subsidence at Lucerne Lake.	As previously mentioned above, Lucerne Valley has experienced subsidence due to groundwater withdrawal (Appendix G of this EIR). The proposed Calcite Substation site is located approximately 1 mile north of active subsidence at Lucerne Lake. No evidence of surficial subsidence was identified during the 2017 geotechnical investigation (Ninyo and Moore Report 2017) (see Appendix O). An addendum geotechnical investigation report currently in progress and being prepared for final design will address the groundwater withdrawal subsidence hazard.	
23	3.7-12	3.7 Geology and Soils	The proposed Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. The following policies from the Land Use Element, the Cultural Resources Element, and the Hazards Element are applicable to the Project:	The proposed Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. The following policies from the Land Use Element, the Cultural Resources Element, and the Hazards Element are applicable or relevant to the Project:	GLOBAL COMMENT: Local regulations, including land use and planning policies and goals, could be relevant to the analysis of potential impacts but are not *applicable* to the Calcite Substation. The CPUC in issuing General Order 131-D (GO 131-D) preempted local jurisdictions from "from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public

Page 12 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					utilities" which are subject to CPUC jurisdiction. (Section XIV.B). SCE is required under GO 131-D to consult "with local agencies regarding land use matters" and "obtain any non-discretionary local permits required."
24	3.7-19	3.7 Geology and Soils	However, all construction activities related to the proposed Calcite Substation would be subject to compliance with the with the requirements set forth in the NPDES Storm Water General Construction Permit (Order No. 99-08-DWQ) for construction activities.	However, all construction activities related to the proposed Calcite Substation would be subject to compliance with the ~~with the~~ requirements set forth in the NPDES Storm Water General Construction Permit (Order No. 2022-0057-DWQ~~99-08-DWQ~~) for construction activities.	Typographical/phrasing correction. This order number should also be updated to reflect the latest and current order.
25	3.9.-9	Hazards and Hazardous Materials	This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the project.	This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable or relevant to the project.	GLOBAL COMMENT Local regulations, including land use and planning policies and goals, could be relevant to the analysis of potential impacts but are not applicable to the Calcite Substation. The CPUC in issuing General Order 131-D (GO 131-D) preempted local jurisdictions from

Page 13 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					"from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities" which are subject to CPUC jurisdiction. (Section XIV.B). SCE is required under GO 131-D to consult "with local agencies regarding land use matters" and "obtain any non-discretionary local permits required."
26	3.9-30	Hazards and Hazardous Materials	**Operation - Less than Significant Impact.** The Calcite Substation would be subject to CPUC oversight and under the jurisdiction of the Federal Energy Regulatory Commission. Regular maintenance of the Calcite Substation would ensure all components work properly. Because operation and maintenance activities must occur in compliance with federal and state-mandated safety standards and these protocols are designed to reduce the likelihood of wildland fires, the likelihood of fire hazards associated with electrical failure would be extremely low. The operation and maintenance of the Calcite Substation would have a less than significant impact on exposing people or structures to wildland fire hazards.	**Operation - Less than Significant Impact.** The Calcite Substation would be subject to CPUC oversight. ~~and under the jurisdiction of the Federal Energy Regulatory Commission.~~ Regular maintenance of the Calcite Substation would ensure all components work properly. Because operation and maintenance activities must occur in compliance with federal and state- mandated safety standards and these protocols are designed to reduce the likelihood of wildland fires, the likelihood of fire hazards associated with electrical failure would be extremely low. The operation and maintenance of the Calcite Substation would have a less than significant impact on exposing people or structures to wildland fire hazards.	It is unclear what is meant by the phrase "and under the jurisdiction of the Federal Energy Regulatory Commission." Suggest deletion.
27	3.10-1	Hydrology/ Water Quality	The Sienna Project site is located within the central portion of the Lucerne Lake watershed, Hydrologic Unit Code (HUC) 181001000404. This drainage basin covers approximately 106,329 acres (430.30 square miles) and is a closed basin which requires that all water entering the basin does not exit the basin	The ~~Sienna P~~project site is located within the central portion of the Lucerne Lake watershed, Hydrologic Unit Code (HUC) 181001000404. This drainage basin covers approximately 106,329 acres (430.30 square miles) and is a closed basin which requires	Location description should also include the Calcite Substation site.

Page 14 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			by surface flows (California Regional Water Quality Control Board 2022).	that all water entering the basin does not exit the basin by surface flows (California Regional Water Quality Control Board 2022).	
28	3.10-2	Hydrology/ Water Quality	The Sienna Project overlies the Lucerne Valley Subbasin of the Este (East) Subarea within the Mojave Basin Area, which is managed by the Mojave Water Agency (MWA). Figure 3.10-1 shows the boundaries of the Mojave River Drainage Basin; this area refers to the surface drainage area associated with the Mojave River, which is interrelated with the underlying groundwater resources.	The ~~Sienna P~~project overlies the Lucerne Valley Subbasin of the Este (East) Subarea within the Mojave Basin Area, which is managed by the Mojave Water Agency (MWA). Figure 3.10-1 shows the boundaries of the Mojave River Drainage Basin; this area refers to the surface drainage area associated with the Mojave River, which is interrelated with the underlying groundwater resources.	Location description should also include the Calcite Substation site.
29	3.10-5	Hydrology/ Water Quality	The majority of the Sienna Project site is mostly level and slope gradients across the site are extremely low. Thirty-nine (39) small, shallow, ephemeral streams drain generally to the west and southwest in the direction of the Lucerne Dry Lake. The streams convey water flows only during and immediately after high precipitation events. Hydromodification, primarily from roads, has fragmented stream flow in areas north and west of the dry lakebed. Road maintenance activities include clearing and blading, which create large soil berms on each side of the roads, blocking flow in most of the drainages at the road edge. Additionally, OHV tracks interrupt the flow of small shallow channels (Appendix E of this EIR).	The majority of the ~~Sienna P~~project site is mostly level and slope gradients across the site are extremely low. Thirty-nine (39) small, shallow, ephemeral streams drain generally to the west and southwest in the direction of the Lucerne Dry Lake. The streams convey water flows only during and immediately after high precipitation events. Hydromodification, primarily from roads, has fragmented stream flow in areas north and west of the dry lakebed. Road maintenance activities include clearing and blading, which create large soil berms on each side of the roads, blocking flow in most of the drainages at the road edge. Additionally, OHV tracks interrupt the flow of small shallow channels (Appendix E of this EIR).	Location description should also include the Calcite Substation site.
30	3.10-9	Hydrology/ Water Quality	The San Bernardino Countywide Plan/Policy Plan serves as a set of plans and tools for the County's unincorporated communities and complements the Countywide vision. The Policy Plan is a component of the Countywide Plan that is an update and expansion of the County's previous General Plan for the unincorporated areas. The Sienna Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. Relevant policies applicable to the Project are as follows:	The San Bernardino Countywide Plan/Policy Plan serves as a set of plans and tools for the County's unincorporated communities and complements the Countywide vision. The Policy Plan is a component of the Countywide Plan that is an update and expansion of the County's previous General Plan for the unincorporated areas. The Sienna Project's consistency with applicable policies under each element is summarized in Table 3.11-1 in Section 3.11, Land Use and Planning. Relevant policies applicable or relevant to the Project are as follows:	GLOBAL COMMENT: Local regulations, including land use and planning policies and goals, could be relevant to the analysis of potential impacts but are not applicable to the Calcite Substation. The CPUC in issuing

Page 15 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					General Order 131-D (GO 131-D) preempted local jurisdictions from "from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities" which are subject to CPUC jurisdiction. (Section XIV.B). SCE is required under GO 131-D to consult "with local agencies regarding land use matters" and "obtain any non-discretionary local permits required."
31	3.10-11	Hydrology/ Water Quality	The Sienna Project site is covered under the Water Quality Control Plan for the Colorado River Basin Region (Basin Plan).	The ~~Sienna P~~project site is covered under the Water Quality Control Plan for the Colorado River Basin Region (Basin Plan).	Location description should also include the Calcite Substation site.
32	3.10-19	Hydrology/ Water Quality	Less than Significant Impact. As described in Impact 3.10-1, development of the proposed Calcite Substation would require a SWPPP in compliance with the California General Construction Permit to ensure minimal degradation of water quality resulting from ground-disturbing activities. In addition, hazardous materials would be handled in compliance with relevant laws, ordinances, regulations and standards for the use, storage, and disposal. Therefore, impacts would be less than significant.	Less than Significant Impact. As described in Impact 3.10-1, development of the proposed Calcite Substation would require a SWPPP in compliance with the California General Construction Permit to ensure minimal degradation of water quality resulting from ground-disturbing activities. In addition, hazardous materials would be handled in compliance with relevant laws, ordinances, regulations and standards for the use, storage, and disposal. Construction and operation of the Calcite Substation would not	Suggest additional sentence to tie to CEQA criterion language.

Page 16 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
				create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, impacts would be less than significant.	
33	3.11-3 – 3.11-4	Land Use and Planning	The 75-acre parcel where the proposed Calcite Substation would be located is currently vacant land that is designated RLM in the San Bernardino Countywide Plan. The parcel is zoned LV/AG (40-acre minimum). Pursuant to Section 82.03.040 of the San Bernardino County Development Code, the County allows for the development of electrical power generation on AG land, subject to County approval of a CUP. However, pursuant to Section 85.05.050(b)(5) of the San Bernardino County Development Code, the proposed substation is allowed without a CUP because it would be approved by the CPUC (a state agency); and therefore, the Development Code would be pre-empted by State law.		It is unclear if the online version of the SB County Code is the most current, but this citation perhaps should be to section 81.01.050(j): (" (j) Uses or Activities Exempt under State or Federal Law. The provisions of this Development Code shall not apply to any uses or activities that are exempt from local regulation under or preempted by State or Federal law.") There does not appear to be a section 85.05.050(b)(5).
34	4-3	Other CEQA Considerations	The presence of the Calcite Substation would unlikely lead to construction of additional infrastructure or housing that would encourage population growth in the region.	The presence of the Calcite Substation would be unlikely to lead to construction of additional infrastructure or housing that would encourage population growth in the region.	Typographical/grammatical edits.

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
35	4-5	Other CEQA Considerations	Non-renewable resources, such as petrochemical construction materials, steel, copper, lead and other metals, gravel, concrete, and other materials, are typically considered finite and would not be replenished over the lifetime of the Calcite Substation. Thus, the Calcite Substation would irretrievably commit resources over its lifetime.	Non-renewable resources, such as petrochemical construction materials, steel, copper, lead and other metals, gravel, concrete, and other materials, are typically considered finite and would not be replenished over the lifetime of the Calcite Substation. Thus, the Calcite Substation would irretrievably commit resources over its lifetime. However, given the relative size of the Calcite Substation and the low intensity of its future operation, this commitment of resources is considered less than significant.	Conclusion should clarify that the commitment of resources, while irretrievable, would still be very small and not significant given the small size of the Calcite Substation.
36	5-3	Table 5-1 Cumulative Projects within 10 Miles of Sienna Project	SCE Eldorado- Pisgah-Lugo Project: Segment 1 and 2 ...Initial planning phase; Construction anticipated in May 2025	SCE Eldorado- Pisgah-Lugo Project: Segment 1 and 2 ...Initial planning phase; Construction anticipated in ~~May 2025~~ December 2027	Updated anticipated construction of SCE Eldorado- Pisgah-Lugo Project: Segment 1 and 2
37	7-3	Alternatives	The No Project Alternative assumes that the proposed Project, as proposed, would not be implemented and the Project site would not be further developed with a solar energy project and the proposed Calcite Substation.	The No Project Alternative assumes that the proposed Project, as proposed, would not be implemented and the Project site would not be further developed with a solar energy project. ~~and t~~ The proposed Calcite Substation may still be developed if other solar generation projects, such as the Stagecoach Solar project which was previously analyzed by the California State Lands Commission, are developed.	The No Project Alternative should discuss what is reasonably foreseeable to occur even if the proposed project is not implemented. (14 CCR 15126.6(e).) In this case, because other solar projects (namely Stagecoach) are still being planned for development in the area and those project(s) would also need an interconnection

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					substation, the Calcite Substation is likely to still be pursued even if the Sienna Solar project were not developed. Therefore, even the No Project Alternative should still include Calcite Substation.
38	ES-42 to ES-43 3.5-40 to 3.5-41	Table ES-2 Summary of Calcite Substation Impacts and Proposed Mitigation Measures Biological Resources Impact 3.5-1	CS-BIO-3: Desert Tortoise. To avoid construction-level impacts to desert tortoise, not more than 45 days prior to ground-disturbing activities for the construction and/or decommissioning phase(s), qualified personnel shall perform a pre-construction clearance survey for desert tortoise. If desert tortoise are not documented during seasonally time protocol desert tortoise surveys, no additional measures related to desert tortoise avoidance and minimization are recommended. If desert tortoise are documented inhabiting any portion of the Calcite Substation area during presence/absence surveys, the following measures shall be implemented: • Develop a plan for desert tortoise translocation and monitoring prior to construction. The plan shall provide the framework for implementing the following measures, or similar measures deemed sufficient and approved during agency consultation (Note: any desert tortoise translocation plan must be reviewed and approved by CDFW and USFWS): o If a permanent tortoise-proof exclusion fence is practicable, a fence shall be installed around all construction areas prior to the initiation of ground disturbing activities, in coordination with a Qualified Biologist. The fence shall be constructed of 0.5- inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground	CS-BIO-3: Desert Tortoise. To avoid construction-level impacts to desert tortoise, not more than 45 days prior to ground-disturbing activities for the construction~~and/or decommissioning~~ phase~~(s)~~, qualified personnel shall perform a pre-construction clearance survey for desert tortoise. If desert tortoise are not documented during seasonally time protocol desert tortoise surveys, no additional measures related to desert tortoise avoidance and minimization are recommended. If desert tortoise are documented inhabiting any portion of the Calcite Substation area during presence/absence surveys, the following measures shall be implemented: • Develop a plan for desert tortoise translocation and monitoring prior to construction. The plan shall provide the framework for implementing the following measures, or similar measures deemed sufficient and approved during agency consultation (Note: any desert tortoise translocation plan must be reviewed and approved by CDFW and USFWS): o If a permanent tortoise-proof exclusion fence is practicable, a fence shall be installed around all construction areas prior to the initiation of ground disturbing activities, in coordination with a Qualified Biologist. The fence shall be constructed of 0.5- inch mesh hardware cloth and extend 18 inches above ground and 12 inches below ground. Where burial of the fence is not possible, the lower 12 inches shall be folded outward against the ground and	Since the decommissioning of Calcite Substation is speculative, mitigation measures related to decommissioning should be removed. In addition, the proposed Calcite Substation would be enclosed by a perimeter wall and gates. The measure should be clarified to indicate the requirements in such case, as well as the requirements for temporary exclusion fence if needed during construction. In addition, SCE has no knowledge of

Page 19 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			and fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by the Project proponent to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. Raven perching deterrents should be installed as part of the fence construction.	fastened to the ground so as to prevent desert tortoise entry. The fence shall be supported sufficiently to maintain its integrity, be checked at least monthly during construction and operations, and maintained when necessary by the Project proponent to ensure its integrity. Provisions shall be made for closing off the fence at the point of vehicle entry. ~~Raven perching deterrents should be installed as part of the fence construction.~~	installing raven perching deterrents on fences.
39	E-44 to ES-45 3.5-41	Table ES-2 Summary of Calcite Substation Impacts and Proposed Mitigation Measures Biological Resources Impact 3.5-1	CS-BIO-4: Construction Worker Environmental Awareness Training and Education Program. Prior to any activity on site and for the duration of construction activities, all personnel at the Project area (including laydown areas and/or transmission routes) shall attend a Worker Environmental Awareness Program (WEAP) developed and presented by the Qualified Biologist. New personnel shall receive WEAP training on the first day of work and prior to commencing work on the site. Any employee responsible for the operation and maintenance (O&M) or decommissioning of the Project facilities shall also attend WEAP training. …	CS-BIO-4: Construction Worker Environmental Awareness Training and Education Program. Prior to any activity on site and for the duration of construction activities, all personnel at the Project area (including laydown areas and/or transmission routes) shall attend a Worker Environmental Awareness Program (WEAP) developed and presented by the Qualified Biologist. New personnel shall receive WEAP training on the first day of work and prior to commencing work on the site. ~~Any employee responsible for the operation and maintenance (O&M) or decommissioning of the Project facilities shall also attend WEAP training.~~ …	Employees responsible during O&M and decommissioning activities would receive separate environmental training commensurate with the level of activity occurring at that time as part of SCE standard practice.
40	ES-49 to ES-50 3.5-47 to 3.5-48	Table ES-2 Summary of Calcite Substation Impacts and Proposed Mitigation Measures Biological Resources Impact 3.5-3	CS-BIO-7: Avoidance and Minimization. … • Compensatory mitigation to offset permanent impacts to waters of the State. Mitigation shall occur at a minimum ratio of 1:1 through the establishment of a conservation easement, restoration of existing habitat and/or payment of in-leu fees. A Compensatory Mitigation and Restoration Plan is recommended for inclusion with agency permit applications that are proposing on-site restoration and shall include the following components: … If off-site mitigation is proposed, the following measure would apply:		Since in-lieu fees and mitigation bank credits are typically related to off-site mitigation, this measure should clarify which mechanisms apply to on-site and off-site mitigation.

Page 20 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			• Identification of an appropriate mitigation bank and the purchase of credits commensurate with the type of impacts associated with the Project.		
41	ES-56 3.9-23	Table ES-2 Summary of Calcite Substation Impacts and Proposed Mitigation Measures Hazards and Hazardous Materials Impact 3.9-2	CS-HAZ-1: Aerially Deposited Lead Testing Program. Prior to Project construction, an aerially deposited lead (ADL) soil testing program will be prepared and conducted to determine the presence and extent of ADL contaminated soils along and adjacent to Lucerne Valley Cutoff and SR 247 in areas where Project-related ground disturbance would occur. The ADL Testing Program shall be submitted to the Hazardous Materials Division of the San Bernardino County Fire Department 60 days prior to the start of construction for review, comment, and approval. If ADL contaminated soil is identified, SCE shall coordinate with DTSC to determine appropriate handling, treatment, and disposal of any ADL contaminated soil.	CS-HAZ-1: Aerially Deposited Lead Testing Program. Prior to Project construction, an aerially deposited lead (ADL) soil testing program will be prepared and conducted to determine the presence and extent of ADL contaminated soils along and adjacent to Lucerne Valley Cutoff and SR 247 in areas where Project-related ground disturbance would occur. The ADL Testing Program shall be submitted to the Hazardous Materials Division of the San Bernardino County Fire Department 60 days prior to the start of construction for review, comment, and approval. If ADL contaminated soil is identified, SCE shall manage and dispose of contaminated soil in accordance with DTSC guidelines~~shall coordinate with DTSC to determine appropriate handling, treatment, and disposal of any ADL contaminated soil~~.	DTSC oversight is not required under all circumstances. The measure should be revised to clarify management of ADL contaminated soil would occur in accordance with DTSC guidelines.
42	ES-66 3.14-8 to 3.14-9	Table ES-2 Summary of Calcite Substation Impacts and Proposed Mitigation Measures Tribal Cultural Resources Impact 3.14-1	CS-TCR-1: Tribal Cultural Resources. … Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an American Association of Museums (AAM)-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriately qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and SCE's obligation to pay for those fees. …	CS-TCR-1: Tribal Cultural Resources. … Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner will be asked to~~shall~~ relinquish all ownership and rights to this material and confer with YSMN to identify an American Association of Museums (AAM)-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriately qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and SCE's obligation to pay for those fees. …	The EIR cannot compel a landowner to relinquish all ownership rights to cultural material found on private land, unless it is human remains or burial-associated materials in accordance with applicable California public health and safety code and public resource codes.

Page 21 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
43	ES-67 3.14-8	Table ES-2. Summary of Calcite Substation Impacts and Proposed Mitigation Measures Tribal Cultural Resources Impact 3.14-1	CS-TCR-2: Archaeological/Cultural Documentation. Any and all archaeological/cultural documents created as a part of the Calcite Substation (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to SCE for dissemination to the YSMN. SCE shall, in good faith, consult with YSMN throughout the life of the Calcite Substation.	CS-TCR-2: Archaeological/Cultural Documentation. Any and all archaeological/cultural documents created as a part of the Calcite Substation (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the County~~SCE~~ for dissemination to the YSMN. The County~~SCE~~ shall, in good faith, consult with YSMN throughout construction~~the life~~ of the Calcite Substation as needed.	As the CEQA lead agency, the County is responsible for consultation with the YSMN under AB 52. Consultation should occur as needed during construction of Calcite Substation, which is the activity requiring approval and agency oversight.
44	2-47	Project Description 2.10.5 Dust Control	Dust generated during construction would be controlled by watering and, as necessary, the use of other dust suppression methods and materials accepted by the San Bernardino County Air Pollution Control District or California Air Resources Board. During grading, actively disturbed on-site areas and unpaved roads would be watered at least three times a day as necessary to reduce fugitive dust emissions. In addition, speeds would be limited to 15-mile per hour (mph) speed during construction.	Dust generated during construction would be controlled by watering and, as necessary, the use of other dust suppression methods and materials accepted by the Mojave Desert Air Quality Management District~~San Bernardino County Air Pollution Control District or California Air Resources Board~~. During grading, actively disturbed on-site areas and unpaved roads would be watered at least three times a day as necessary to reduce fugitive dust emissions. In addition, speeds would be limited to 15-mile per hour (mph) speed during construction.	The name of the applicable air district should be corrected.
45	2-49	Project Description Table 2-2. Matrix of Potential Approvals Required	Air Quality Construction Management Plan	~~Air Quality Construction Management Plan~~ Dust Plan	This table likely means Dust Plan when referencing the Air Quality Construction Management Plan.
46	3.4-11	Air Quality	San Bernardino County Development Code	San Bernardino County Development Code	Pursuant to San Bernardino County

Page 22 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
		3.4.2 Regulatory Setting	The Project would conform to the following San Bernardino County Development Code Sections: • Section 83.01.040(c) requires construction of commercial solar energy facilities to apply applicable air quality measures to mitigate against diesel exhaust. Emission control measures that apply to all discretionary land use projects include on-road diesel vehicle regulations established by CARB and off-road diesel vehicle/equipment operation measures. • Section 84.29.035 requires commercial solar energy facilities to apply relevant air quality measures for controlling fugitive dust emissions. Measures may include but is not limited to: On-site vehicle speed limitations, utilizing construction methods that minimize ground disturbance, using sufficient watering to prevent excessive dust (minimum of three times daily on disturbed soil areas with active operations), utilizing wind barriers, and/or adhering to paving requirements for unpaved road pursuant to Chapter 83.09 of the Development Code. • Section 84.29.070 establishes decommissioning requirements related to air quality for closure plans and compliance with other plans, permits, and mitigation measures. Following the operational life of the Project, the Project owner shall perform site closure activities to meet federal, state, and local requirements for the rehabilitation and revegetation of the project site after decommissioning. Project decommissioning shall also be performed in accordance with plans and other reports (i.e., Water Quality Management Plan, Erosion and Sediment Control Plan, Drainage Report, etc.) that would assure the Project would avoid significant adverse impacts.	The Sienna Project would conform to the following San Bernardino County Development Code Sections: • Section 83.01.040(c) requires construction of commercial solar energy facilities to apply applicable air quality measures to mitigate against diesel exhaust. Emission control measures that apply to all discretionary land use projects include on-road diesel vehicle regulations established by CARB and off-road diesel vehicle/equipment operation measures. • Section 84.29.035 requires commercial solar energy facilities to apply relevant air quality measures for controlling fugitive dust emissions. Measures may include but is not limited to: On-site vehicle speed limitations, utilizing construction methods that minimize ground disturbance, using sufficient watering to prevent excessive dust (minimum of three times daily on disturbed soil areas with active operations), utilizing wind barriers, and/or adhering to paving requirements for unpaved road pursuant to Chapter 83.09 of the Development Code. • Section 84.29.070 establishes decommissioning requirements related to air quality for closure plans and compliance with other plans, permits, and mitigation measures. Following the operational life of the Project, the Project owner shall perform site closure activities to meet federal, state, and local requirements for the rehabilitation and revegetation of the project site after decommissioning. Project decommissioning shall also be performed in accordance with plans and other reports (i.e., Water Quality Management Plan, Erosion and Sediment Control Plan, Drainage Report, etc.) that would assure the Project would avoid significant adverse impacts.	Code section 81.01.050(j), the provisions of the County's Development Code shall not apply to any uses or activities that are exempt from local regulation under or preempted by State or Federal law. Since the construction of Calcite Substation is exempt from local regulation, these referenced sections would not apply to Calcite Substation.
47	3.4-16	Air Quality Impact 3.4-1	Construction and operation of the proposed Calcite Substation would result in emissions of criteria pollutants including ozone precursors, such as ROG and NOX as well as particulate matter. MDAQMD has prepared AQMPs to achieve federal ozone standards, the most recent of which is the MDAQMD 70 ppb Ozone Attainment Plan (Western Mojave Desert Non-	Construction and operation of the proposed Calcite Substation would result in emissions of criteria pollutants including ozone precursors, such as ROG and NOX as well as particulate matter. MDAQMD has prepared AQMPs to achieve federal ozone standards, the most recent of which is the MDAQMD 70 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment	Control measures are typically enforced through MDAQMD rules, which are promulgated based on MDAQMD

Page 23 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			Attainment Area) (2023). In addition, the MDAQMD prepared the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (1995) since San Bernardino County is designated nonattainment for the federal PM10 standards. To be consistent with the MDAQMD air quality plans, projects must conform to all applicable MDAQMD rules, comply with proposed control measures that are not yet adopted from the applicable plans, and be consistent with the growth forecast from the applicable plans. The proposed Calcite Substation would adhere to the MDAQMD Rule 403 (Fugitive Dust Control), in addition to complying with any applicable proposed control measures from the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (1995) and the MDAQMD 70 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area) (2023).	Area) (2023). In addition, the MDAQMD prepared the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (1995) since San Bernardino County is designated nonattainment for the federal PM10 standards. To be consistent with the MDAQMD air quality plans, projects must conform to all applicable MDAQMD rules, which are promulgated to comply with ~~proposed control measures that are not yet adopted from the~~ applicable plans~~,~~ and be consistent with the growth forecast from the applicable plans. The proposed Calcite Substation would adhere to the MDAQMD Rule 403 (Fugitive Dust Control), which was made~~in addition~~ to comply~~complying~~ with ~~any applicable proposed control measures from~~ the Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan (1995) and the MDAQMD 70 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area) (2023).	attainment plans. SCE would implement applicable control measures from applicable MDAQMD rules, which are consistent with the attainment plans.
48	3.4-20 to 3.4-21	Air Quality Impact 3.4-2	Construction – Less than Significant Impact. Construction of the proposed Calcite Substation would involve construction of the substation and access road, transmission line loop-in and gen-tie, and distribution line. Construction emissions would occur from off-road equipment, on-road worker, vendor, and haul vehicles, and dust. As shown in Table 3.4-9, all construction emissions without control measures would be below the MDAQMD annual thresholds. No mitigation measures would be required. Even though the schedule could extend beyond 12 months, emissions were totaled and compared to the annual threshold for a conservative analysis. Construction of the proposed Calcite substation, access road, transmission line loop-in and gen-tie, and distribution line would comply with MDAQMD Rule 403 and San Bernardino County Development Code Section 84.29.035 to control fugitive dust and San Bernardino County Development Code Section 83.01.040 to reduce exhaust emissions during construction by regulation. Based on the evaluation above, construction of the proposed	Construction – Less than Significant Impact. Construction of the proposed Calcite Substation would involve construction of the substation and access road, transmission line loop-in and gen-tie, and distribution line. Construction emissions would occur from off-road equipment, on-road worker, vendor, and haul vehicles, and dust. As shown in Table 3.4-9, all construction emissions without control measures would be below the MDAQMD annual thresholds. No mitigation measures would be required. Even though the schedule could extend beyond 12 months, emissions were totaled and compared to the annual threshold for a conservative analysis. Construction of the proposed Calcite substation, access road, transmission line loop-in and gen-tie, and distribution line would comply with applicable CARB and MDAQMD regulations, including MDAQMD Rule 403, ~~and San Bernardino County Development Code Section 84.29.035 to control fugitive dust and San Bernardino County Development Code Section 83.01.040~~ to reduce ~~exhaust~~ emissions during construction by regulation. Based on the evaluation above,	Pursuant to San Bernardino County Code section 81.01.050(j), the provisions of the County's Development Code shall not apply to any uses or activities that are exempt from local regulation under or preempted by State or Federal law. Since the construction of Calcite Substation is exempt from local

Page 24 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			Calcite Substation would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. Impacts are considered less than significant.	construction of the proposed Calcite Substation would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. Impacts are considered less than significant.	regulation, these referenced sections would not apply to Calcite Substation. However, SCE would comply with applicable state and local air district regulations, and impacts would remain less than significant. This comment should carry over to Impact 3.4-3.
49	3.7-23	Geology and Soils Impact 3.7-5	CALCITE SUBSTATION No Impact. The proposed Calcite Substation would be primarily an unmanned substation and would not need restroom facilities, other than portable toilets, and would not require a wastewater disposal system. Therefore, no impact would occur.		SCE proposes to install a pre-fabricated restroom with a waste vault and 1,000 gallon water tank within Calcite Substation. Waste would be periodically collected as the waste vault fills. The pre-fabricated restroom would be completely contained and would operate similarly to a portable restroom. As a result, no impact would occur.

Page 25 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
50	3.9-20		CALCITE SUBSTATION … Construction … Finally, in the event of a substantial accidental spill or release of a hazardous material at the Calcite Substation site that requires agency notification, a coordinated response with federal, State, and local levels would occur. Construction staff are directed in how to handle such a situation, including containment and who to contact if such a situation occurs. A hazardous materials business plan (HMBP) will be implemented, which would include a complete list of all materials used on site and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During construction, Material Safety Data Sheets would be posted on the Calcite Substation site to provide workers and emergency responders with procedures for handling hazardous materials safely, including information for fire suppression, toxicity/ first aid, storage/ disposal, and spill handling.		Typically, HMBPs are prepared and implemented if required by CA Health and Safety Code Chapter 6.95. This section should be clarified to indicate whether the HMBP is an additional requirement to existing CA Health and Safety Code requirements or if the HMBP will be implemented if required.
51	3.9-30	Hazards and Hazardous Materials Impact 3.9-7	CALCITE SUBSTATION Construction … The risk of construction activities creating exposure of people or structures to wildland fires would be low, given the lack of substantial vegetation and relatively flat topography. Furthermore, the proposed Calcite Substation would be subject to compliance with the CBC and most current version of the California Fire Code, which would aid in reducing the demand on fire protection services by requiring fire protection detection systems, proper fire flow, and use of appropriate construction materials. Construction of the proposed Calcite Substation would have a less than significant impact on exposing people or structures to wildland fire hazards.	CALCITE SUBSTATION Construction … The risk of construction activities creating exposure of people or structures to wildland fires would be low, given the lack of substantial vegetation and relatively flat topography. Furthermore, the proposed Calcite Substation would be subject to compliance with the CBC and most current version of the California Fire Code, which would aid in reducing the demand on fire protection services ~~by requiring fire protection detection systems, proper fire flow, and use of appropriate construction materials~~. Construction of the proposed Calcite Substation would have a less than significant impact on exposing people or structures to wildland fire hazards.	The detailed requirements listed may not apply to construction activities. For clarity, reference should be made to the applicable provisions of the CBC and California Fire Code.

Page 26 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
52	3.10-17	Hydrology/ Water Quality Impact 3.10-3	CALCITE SUBSTATION … During operation of the proposed Calcite Substation, the site would be surrounded by a prefabricated wall, so flood flows would not enter the substation site itself. However, the proposed Calcite Substation includes structures, access roads, communication equipment, and electric distribution lines that would increase the site's impervious surfaces and potentially result in an increase in discharge frequency and magnitude that would accelerate downstream erosion. This could result in concentration of flows that could induce local erosion. To minimize erosion and siltation impacts associated with O&M activities, Mitigation Measure CS-HWQ-1 would ensure that site drainage would be controlled. Therefore, impacts from construction and O&M activities associated with the proposed Calcite Substation would be reduced to a level less than significant.	CALCITE SUBSTATION … During operation of the proposed Calcite Substation, the site would be surrounded by a prefabricated wall and drainage conveyances, so flood flows would not enter the substation site itself. However, the proposed Calcite Substation includes structures, access roads, communication equipment, and electric distribution lines that would increase the site's impervious surfaces and potentially result in an increase in discharge frequency and magnitude that would accelerate downstream erosion. This could result in concentration of flows that could induce local erosion. To minimize erosion and siltation impacts associated with O&M activities, Mitigation Measure CS-HWQ-1 would ensure that site drainage would be controlled. Therefore, impacts from construction and O&M activities associated with the proposed Calcite Substation would be reduced to a level less than significant.	The Calcite Substation project description includes the following description: "To protect the substation from flooding, and to keep the existing drainage patterns, drainage conveyances would be constructed around the substation." The proposed revision should be incorporated through the impact analysis sections where applicable.
53	3.15-14	Utilities and Service Systems Impact 3.15-1	CALCITE SUBSTATION … Wastewater The proposed Calcite Substation would not require sanitary facilities, as the site would be visited only for routine inspection and maintenance. No full-time employees would be necessary. Therefore, impacts on wastewater facilities would be less than significant.		As mentioned above, SCE proposes to install a pre-fabricated restroom with a waste vault and 1,000 gallon water tank within Calcite Substation. Waste would be periodically collected as the waste vault fills. Because the pre-fabricated restroom would not be

Page 27 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
					connected to the or implicate a broader sanitary sewer system, any use of or impacts related to wastewater would be de minimis, and therefore, any conclusions regarding impacts related to Calcite Substation would be the same. This comment also applies to Impact 3.15-3.
54	5-5	Cumulative Impacts 5.3.1 Aesthetics	The utility-scale size of the Sienna Project would contribute to this cumulatively considerable aesthetic impact. This contribution is considered significant due to the large area (1,854 acres) proposed for solar development and associated gen-tie lines in the context of the valley. While the proposed Calcite Substation would be located on an approximately 75-acre parcel, only a 7-acre portion would be developed. This project component in and of itself, would not contribute to a cumulatively considerable aesthetic impact due to its relatively small scale and area of disturbance, topography and distance from other planned solar projects, and that it would not involve large expanses of solar arrays.	The utility-scale size of the Sienna Project would contribute to this cumulatively considerable aesthetic impact. This contribution is considered significant due to the large area (1,854 acres) proposed for solar development and associated gen-tie lines in the context of the valley. While the proposed Calcite Substation would be located on an approximately 75-acre parcel, only a 7-acre portion would be developed. The Calcite Substation and associated components~~This project component in and of itself,~~ would not contribute to a cumulatively considerable aesthetic impact due to its relatively small scale and area of disturbance, topography, and distance from other planned solar projects, and that it would not involve large expanses of solar arrays.	The section should be clarified to indicate Calcite Substation includes other project components.
55	3.16-12 to 3.6-13	56. Cultural Resources Impact 3.6-1	The second historical resource that could be affected by the proposed Calcite Substation is the SCE Lugo-Pisgah No. 1 220 kV transmission line, which is directly associated with the history of the boulder Dam and Hoover Dam construction and hydroelectric generation project and serves as one of the first lines to transmit high voltage electricity to the Los Angeles		Two transmission structures will be removed from the SCE Lugo-Pisgah No. 1 transmission line as part of the loop-in.

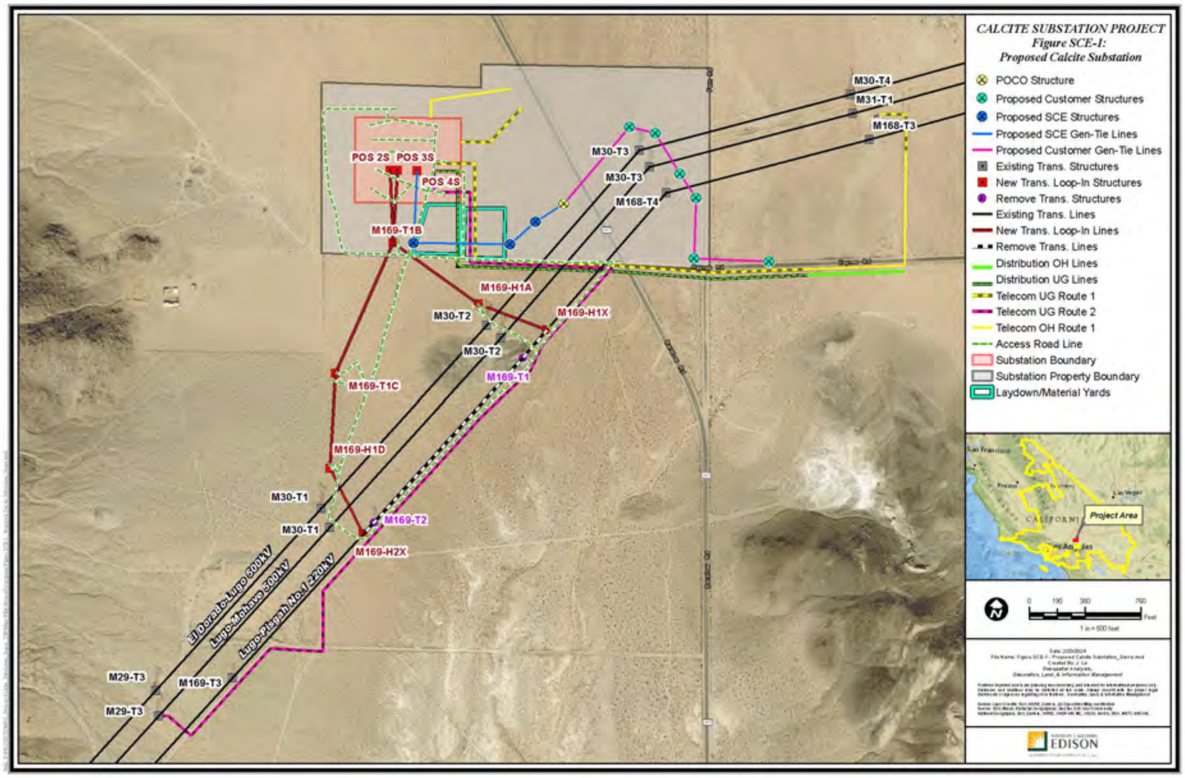
Page 28 of 29

SCE Comment Table – Attachment A

	Page	Section	Current Draft EIR Language: Here is the DEIR Link – Sienna Solar Recirculated Draft EIR	Proposed Revision & Comments:	Justification
			region by SCE. By looping in the existing Lugo-Pisgah No. 1 220 kV transmission line to the proposed Calcite Substation, two new 220 kV transmission lines would be created. These new transmission lines would depart from the existing SCE Lugo-Pisgah No. 1 line approximately 2,500 feet south of the Calcite Substation, and cross under two other SCE lines before entering the Calcite Substation from the north. The addition of two new transmission line segments directly north of the SCE Lugo-Pisgah No. 1 transmission line would not disrupt the larger important historical connections associated with the conveyance of power between the Hoover Dam and Los Angeles. Therefore, potential impacts to this historical resource would be considered less than significant, and no mitigation is required.		This section should address the removal of these structures as part of the impact analysis and determination.

Page 29 of 29

ATTACHMENT B


CALCITE SUBSTATION PROJECT
Figure SCE-1:
Proposed Calcite Substation
POCO Structure
Proposed Customer Structures
Proposed SCE Structures
Proposed SCE Gen-Tie Lines
Proposed Customer Gen-Tie Lines
Existing Trans. Structures
New Trans. Loop-In Structures
Remove Trans. Structures
Existing Trans. Lines
New Trans. Loop-In Lines
Remove Trans. Lines
Distribution OH Lines
Distribution UG Lines
Telecom UG Route 1
Telecom UG Route 2
Telecom OH Route 1
Access Road Line
Substation Boundary
Substation Property Boundary
Laydown/Material Yards
Project Area
M30-T4
M31-T1
M168-T3
M30-T3
M30-T3
M168-T4
POS 2S
POS 3S
POS 4S
M169-T1B
M169-H1A
M169-H1X
M30-T2
M30-T2
M169-T1
M169-T1C
M169-H1D
M30-T1
M30-T1
M169-T2
M169-H2X
El Dorado-Lugo 500kV
Lugo-Mohave 500kV
Lugo-Pisgah No.1 220kV
M29-T3
M169-T3
M29-T3
EDISON

Letter L2

Southern California Edison

September 30, 2024

L2-Intro

The County acknowledges and appreciates SCE's comments regarding the Calcite substation component of the project as evaluated in the EIR. Further, the County acknowledges SCE's role as the developer to the Calcite substation and related improvements.

Comments and edits as provided in Attachments A and B are responded to in response to comments L2-1 through L2-5 and contained within this Final EIR for the Sienna Solar project.

L2-1

The County appreciates the clarifying text provided in Attachment A, Comments 4, 5, 9, 11, 12, 13, 22, 34, 36, 38 and 54, which further clarify and support the EIR's conclusion that development of the Calcite substation would not contribute to a significant cumulative impact related to aesthetics. The County otherwise acknowledges and accepts the editorial comments that are recommended in this comment. Please refer to the Final EIR for the modified text.

L2-2

The County appreciates the clarifying text provided in Attachment A, Comments 1,2,3,6,7,8,10,14,15,17,18,19,20,21,23,24,25,27,28,29,30,31,32,33,35,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53 and 55 which clarify roles and responsibilities for implementation of proposed mitigation measures as they relate specifically to the Calcite substation. The County acknowledges and accepts the editorial comments recommended in this comment. Please refer to the Final EIR for the modified text.

L2-3

The County appreciates the clarifying text provided in Attachment A, Comments 20, 21, 23, 25, 26, 30, 33, 46 and 48 which confirm and clarify certain language regarding preemptive position of the CPUC over utility regulatory matters related to local land use regulations. County acknowledges and accepts the editorial comments recommended in this comment. Please refer to the Final EIR for the modified text.

L2-4

The County appreciates the clarifying text provided in Attachment A, Comments 16 and 37 that confirm and clarify that the Calcite substation may still be constructed and operated regardless if the proposed Sienna project is constructed/operated. The County acknowledges and accepts the editorial comments suggested in this comment. Please refer to Final EIR for the modified text.

L2-5

The County appreciated SCE's submittal of the updated demonstrative graphic. Updated figures as they relate to the Calcite substation have been included as a replacement graphic for Figure 2-21 as provided in the Final EIR.

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VIA E-MAIL

September 30, 2024

Harris & Associates (c/o David Mack and Delanie Garlick)
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RE: County of San Bernardino's Sienna Solar and Storage Project Revised Draft Environmental Impact Report (SCH No. 2022080518).

Dear David Mack and Delanie Garlick,

On behalf of the Western States Regional Council of Carpenters ("**Western Carpenters**" or "**WSRCC**"), my Office is submitting these comments for the County of San Bernardino's ("**County**") Revised Draft Environmental Impact Report ("**Revised DEIR**" or "**RDEIR**") for the Sienna Solar and Storage Project ("**Project**").

According to the Notice of Availability of the RDEIR, the Project Applicant proposes:

> plans to construct and operate a utility-scale, solar photovoltaic (PV) electricity generation facility that would produce up to 525 megawatts (MV) of solar power and include up to 525 MW of energy storage capacity rate in a battery energy storage system (BESS) within an approximately 1,854-acre Project site. A Recirculated Draft EIR for the proposed Project has been prepared to inform the public of changes to the original Draft EIR. The major additions or changes include the following: 1) The environmental impacts associated with the proposed Calcite Substation will no longer incorporate by reference the information from the Stagecoach Solar Project Draft EIR (SCH # 2020100234). The Stagecoach Solar Project Draft EIR was released for public review from

O1-Intro

County of San Bernardino – Sienna Solar and Storage Project
September 30, 2024
Page 2 of 29

> October 22, 2021, to December 22, 2021. Since the end of the public review period for the Stagecoach Solar Project Draft EIR, the California State Lands Commission has not certified a Final EIR or made a decision to approve/reject the project. The County of San Bernardino will be the lead agency under CEQA for the proposed Calcite Substation. As such, the County will exercise its independent judgment and analysis of the potential impacts associated with the construction and operations of the proposed Calcite Substation. 2) The Project applicant has included an additional 12.3 miles of gen-tie alternatives to be analyzed, which were not previously analyzed in the original Draft EIR. (NOA, p. 1.)

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

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

The Western Carpenters incorporates by reference all comments raising issues regarding the Environmental Impact Report (EIR) submitted prior to certification of the EIR for the Project. See *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, the Western Carpenters requests that the County provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act (**CEQA**) (Pub. Res. Code, § 21000 *et seq.*), and the California Planning and Zoning Law ("**Planning and Zoning Law**") (Gov. Code, §§ 65000–65010). California Public Resources Code Sections 21092.2, and 21167(f) and California 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.

O1-Intro Contd.

I. THE COUNTY SHOULD REQUIRE THE USE OF A LOCAL WORKFORCE TO BENEFIT THE COMMUNITY'S ECONOMIC DEVELOPMENT AND ENVIRONMENT

The County should require the Project to be built using a local workers who have graduated from a Joint Labor-Management Apprenticeship Program approved by the State of California, 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 a state-approved apprenticeship training program.

Community benefits such as local hire 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 provide localized economic benefits. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note: O1-1

> [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.

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

> [L]abor 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]

Furthermore, workforce policies have significant environmental benefits given that they improve an area's jobs-housing balance, decreasing the amount and length of job commutes and the associated greenhouse gas (GHG) emissions. In fact, on May 7, 2021, the South Coast Air Quality Management District found that that the "[u]se of a local state-certified apprenticeship program" can result in air pollutant reductions.[2]

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.[3]

Moreover, local hire mandates and skill-training are critical facets of a strategy to reduce vehicle miles traveled (VMT). As planning experts Robert Cervero and Michael Duncan have noted, simply placing jobs near housing stock is insufficient to achieve VMT reductions given that the skill requirements of available local jobs must match those held by local residents.[4] Some municipalities have even tied local hire and other workforce policies to local development permits to address transportation issues. Cervero and Duncan note that:

O1-1 Contd.

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

[4] 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.

> 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 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.

O1-1 Contd.

Recently, the State of California verified its commitment towards workforce development through the Affordable Housing and High Road Jobs Act of 2022, otherwise known as Assembly Bill No. 2011 ("**AB2011**"). AB2011 amended the Planning and Zoning Law to allow ministerial, by-right approval for projects being built alongside commercial corridors that meet affordability and labor requirements.

The County should consider utilizing local workforce policies and requirements to benefit the local area economically and to mitigate greenhouse gas, improve air quality, and reduce transportation impacts.

II. THE COUNTY SHOULD IMPOSE TRAINING REQUIREMENTS FOR THE PROJECT'S CONSTRUCTION ACTIVITIES TO PREVENT COMMUNITY SPREAD OF COVID-19 AND OTHER INFECTIOUS DISEASES

O1-2

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.[5]

Western Carpenters recommend that the Lead Agency adopt additional requirements to mitigate public health risks from the Project's construction activities. WSRCC 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.

[5] 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.

In particular, based upon Western Carpenters' experience with safe construction site work practices, WSRCC 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.
- 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.

O1-2 Contd.

- 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.

O1-2 Contd.

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.[6]

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.

Western Carpenters 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.[7]

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

O1-2 Contd.

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

A. Background Concerning the California Environmental Quality Act

The California Environmental Quality Act is a California statute designed to inform decision-makers and the public about the potential significant environmental effects of a project. 14 California Code of Regulations ("**CEQA Guidelines**"), § 15002, subd.

O1-3

[6] *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.

[7] For details concerning Western Carpenters's ICRA training program, *see* https://www.swmsctf.org/courses/icra-best-practices-in-health-care-construction/

(a)(1).[8] At its core, its purpose is to "inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made." *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.

1. Background Concerning Environmental Impact Reports

CEQA directs public agencies to avoid or reduce environmental damage, when possible, by requiring alternatives or mitigation measures. CEQA Guidelines, § 15002, subds. (a)(2)-(3); see also *Berkeley Keep Jets Over the Bay Committee v. Board of Port Comes* (2001) 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; *Laurel Heights Improvement Assn.*, 47 Cal.3d at p. 400. The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced." CEQA Guidelines, § 15002, subd. (a)(2). If the project has a significant effect on the environment, the agency may approve the project only upon finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in Public Resources Code section 21081. See CEQA Guidelines, § 15092, subds. (b)(2)(A)-(B).

O1-3 Contd.

While the courts review an EIR using an 'abuse of discretion' standard, the reviewing court is not to *uncritically* rely on every study or analysis presented by a project proponent in support of its position. *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (quoting *Laurel Heights Improvement Assn.*, 47 Cal.3d at pp. 391, 409 fn. 12) (internal quotations omitted). A clearly inadequate or unsupported study is entitled to no judicial deference. *Id.* Drawing this line and determining whether the EIR complies with CEQA's information disclosure requirements presents a question of law subject to independent review by the courts. *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 515; *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 102, 131. As the court stated in *Berkeley Jets*, prejudicial abuse of discretion occurs if the failure to include relevant information precludes informed decision-making and

[8] The CEQA Guidelines, codified in Title 14 of the California Code of Regulations, section 15000 et seq., are regulatory guidelines promulgated by the state Natural Resources Agency for the implementation of CEQA. Cal. Pub. Res. Code, § 21083. The CEQA Guidelines are given "great weight in interpreting CEQA except when . . . clearly unauthorized or erroneous." *Center for Biological Diversity v. Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 217.

informed public participation, thereby thwarting the statutory goals of the EIR process. 91 Cal.App.4th at p. 1355 (internal quotations omitted).

The preparation and circulation of an EIR is more than a set of technical hurdles for agencies and developers to overcome. *Communities for a Better Environment v. Richmond* (2010) 184 Cal.App.4th 70, 80 (quoting *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-450). The EIR's function is to ensure that government officials who decide to build or approve a project do so with a full understanding of the environmental consequences and, equally important, that the public is assured those consequences have been considered. *Id.* For the EIR to serve these goals it must present information so that the foreseeable impacts of pursuing the project can be understood and weighed, and the public must be given an adequate opportunity to comment on that presentation before the decision to go forward is made. *Id.*

A strong presumption in favor of requiring preparation of an EIR is built into CEQA. This presumption is reflected in what is known as the "fair argument" standard under which an EIR must be prepared 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 Cal.App.4th 1597, 1602; *Friends of "B" St.* v. *City of Hayward* (1980) 106 Cal.3d 988, 1002. O1-3 Contd.

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; see *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.App.3d 68, 75; accord *Jensen v. City of Santa Rosa* (2018) 23 Cal.App.5th 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; 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 Cal.App.4th 768, 785. In such a situation, the agency must adopt a negative declaration. PRC, § 21080, subd. (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.*, 13 Cal.3d at p. 83 fn. 16; see *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 Irrigation 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*, 202 Cal.App.3d at p. 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,* 23 Cal.App.5th at p. 886; *Clews Land & Livestock v. City of San Diego* (2017) 19 Cal.App.5th 161, 183; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal.App.3d 491; *Friends of "B" St.*, 106 Cal.App.3d 988; CEQA Guidelines, § 15064(f)(1). O1-3 Contd.

IV. AN ENVIRONMENTAL SITE ASSESSMENT PHASE I, PHASE II, AND PHASE III MUST BE PROVIDED TO ENSURE THAT THE SITE HAS NO SOIL CONTAMINATION OR HEALTH HAZARDS

The circulated Phase I Environmental Site Assessment ("**ESA**") in Appendix I of the EIR prepared by SWCA Environmental Consultants is manifestly incomplete; its conclusions are unsupported and inaccurate. WSRCC raised the issue during the original DEIR comment period. However, the RDEIR does not include any updated ESA. As such, a new Phase I ESA is required, and, in view of the limited disclosures in the Phase I ESA, the County must require Phase II and Phase III ESAs to be prepared and discuss those in the EIR. O1-4a

A. The Phase I ESA Improperly Relies on ASTM 1527-13 While the EPA Recently Adopted and Validated ASTM 1527-21

The Phase I ESA is incomplete and inaccurate for purposes of CEQA because relies on the obsolete ASTM Standard Practice E1527-13 ("**E1527-13**") (*see,* RDEIR

Appendix I, p. 43 of 186) , while the nonprofit organization ASTM International, founded as the American Society for Testing and Materials,[9] has long adopted its more stringent ASTM Standard Practice E1527-21 ("**E1527-21**") and, as such, the Phase I ESA should utilize E1527-21 in its analysis. This is further supported by the fact that the Environmental Protection Agency ("**EPA**") adopted a new rule in March of 2022[10] and then reaffirmed its resolve and mandated other agencies and persons to follow E1527-21 by imposing a clear sunset for the ASTM E1527-13 rule, as of on December 15, 2022, which is after the Project's Phase I ESA date of publication on September 19, 2022. *See*, **Exhibit D**. O1-4a Contd.

Thus, the EPA *validated* ASTM E1527-21, and as such, a new Phase I ESA should be prepared that follows the newly adopted ASTM E1527-21 standards.

B. The ESA Erroenously Concludes No Recognized Environmental Conditions Were Identified

In improperly applying ASTM E1527-13 to define a recognized environmental condition ("**REC**"), the Phase I ESA critically missed and failed to disclose various hazardous conditions on site, which are essential for purposes of CEQA. It concludes that no evidence of RECs were identified during the assessment.[11] However, as noted above, the ASTM has long revised its standards and the EPA adopted ASTM's new and more expansive definition of REC. This was not done to relax the standard, but rather, to make it more stringent. The Phase I ESA fails this standard as it relaxes the requirements and, as a result, curtails the needed disclosures. O1-4b

Thus,

- "Under **ASTM E1527-13**, a REC is defined as the **presence** or **likely presence** of **any hazardous substances** or petroleum products in, on, or at a property: (1) due to **release** to the environment; (2) under **conditions indicative** of a release to the environment; or (3) under conditions that **pose** a **material threat** of a future release to the environment.

[9] See, https://webstore.ansi.org/sdo/astm?gclid=Cj0KCQjwu-KiBhCsARIsAPztUF1QqmEleuiGuHo2Fy83ZSBkxv0K8HsLZyfGCzlAb3IaboYUDzVM7skaAvXXEALw_wcB
[10] See, 2022-05259.pdf (govinfo.gov)
[11] RDEIR Appendix I, pp. vi, 1.

- Under **ASTM E1527-21**, a REC means (1) the **presence** of hazardous substances or petroleum due to a release to the environment; (2) the ***likely* presence** of hazardous substances or petroleum products due to a ***likely* release** to the environment; or (3) the presence of hazardous substances or petroleum products under conditions that pose a material threat of a future release to the environment. Further, the new standard provides clarifying discussion notes and examples to assist the environmental professional in applying the definition. Together, the new definition and interpretations direct a consultant to rely on the environmental professional's experience regarding the ***likelihood*** of certain conditions resulting in releases, such as the long term operation of a dry cleaner, instead of discounting that professional experience based on the lack of current "indications of a release."[12] (ital. original, bold emphasis added.) O1-4b Contd.

Accordingly, as shown above in the E1527-21 definition of a REC, the use of the phrases, "likely presence," or "likely release," are more stringent than the REC definition in E1527-13, which leaves out the potential impact for purposes of CEQA. The newer E1527-21, on the other hand, encompasses those concerns.

The Project would clearly have not passed the test under E1527-21, since its ESA would have to disclose numerous RECs on site and would, as a result require further testing and studies in the form of Phase II and III ESAs. Such RECs would include the Project Site's prior historic agricultural and vehicle junkyard uses and aboveground storage tanks, as well as the leaded gasoline tanks, underground storage tank, Hazardous Waste Tracking System listing, leaded tank, and petroleum AST at the neighboring properties, as discussed in further detail below.

Of further note, All Appropriate Inquiries ("**AAI**") compliance, which is the focus of the ESA or EPA, is different from CEQA compliance. According to the Environmental Protection Agency, the AAI standard's objective "is to conduct inquiries into past uses and ownerships of a property and visually inspect the property to identify conditions indicative of releases and threatened releases of hazardous

[12] https://www.quarles.com/publications/epa-approves-astm-e1527-21-phase-i-esa-standard-for-all-appropriate-inquiry/

substances on, at, in, or to the subject property."[13] Accordingly, AAI can be performed in compliance with either ASTM E1527-21 or E2247-16 in order to protect innocent landowners, contiguous property owners, or bona fide prospective purchasers from potential liability under the Comprehensive Environmental Response, Compensation, and Liability Act ("**CERCLA**").[14]

CEQA, on the other hand, is intended "to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259. Accordingly, 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*, 23 Cal.App.5th at p. 886; *Clews Land & Livestock v. City of San Diego* (2017) 19 Cal.App.5th 161, 183; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 150; *Brentwood Assn. for No Drilling, Inc. v. City of Los Angeles* (1982) 134 Cal.App.3d 491; *Friends of "B" St.*, 106 Cal.App.3d 988; CEQA Guidelines, § 15064(f)(1).

For this reason, too, the fact that the EPA provides for sunset of February 2024 for the use of the older ASTM standard and allows its use at the time for purposes of CERCLA liability does not yet mean that the Project, with the manifestly potential RECs under the more updated standard, may not have impacts for purposes of CEQA that require good faith disclosures, remedial activity, and mitigation. O1-4b Contd.

C. The ESA Site Contains Potential Recognized Environmental Conditions

The Phase I ESA expressly states that the Project Site itself was used historically for agricultural uses in the 1940s or earlier, a former junkyard that contained vehicles and scraps, contained two (2) aboveground storage tanks ("**AST**") that are still present (RDEIR, p. 3.9-1; Appendix I, p. 24), as well as the 280-gallon leaded gasoline tanks and 550-gallon leaded gasoline tank located at the Howard Pettigrew property at the southwestern quadrant of the subject property that Statewide Environmental Evaluation and Planning System underground storage tank ("**SWEEPS UST**") listed, the NB Nursery property located on the southern portion of the Project Site that was O1-4c

[13] EPA, *Brownfields All Appropriate Inquiries* (last updated Jan. 17, 2023), *available at* https://www.epa.gov/brownfields/brownfields-all-appropriate-inquiries#:~:text=The%20final%20AAI%20rule%20is,or%20to%20the%20subject%20property (accessed on May 5, 2023).

[14] *Id.*

identified as having been in the state's Hazardous Waste Tracking System, the 550-gallon leaded tank that was installed in 1988 at the Dan Pettigrew property that adjoins the south of the Project Site, and the petroleum AST identified as adjoining the south of the Project Site. (RDEIR, p. 3.9-3; Appendix I, pp. 25-26.) Altogether, this suggests that that the Project Site may have soil contamination on-site.

Furthermore, in light of the Project Site's prior historic agricultural and vehicle junkyard uses and aboveground storage tanks, as well as the leaded gasoline tanks, underground storage tank, Hazardous Waste Tracking System listing, leaded tank, and petroleum AST at the neighboring properties, there is a *likely release* and therefore a *likely presence* of hazardous substances at the Project Site.

Accordingly, a soil evaluation should have been conducted in the Phase I ESA to check for any potential contamination from the Project Site's prior historic agricultural and vehicle junkyard uses and aboveground storage tanks, as well as the leaded gasoline tanks, underground storage tank, Hazardous Waste Tracking System listing, leaded tank, and petroleum AST at the neighboring properties. As such, a new Phase I ESA should be prepared that includes a soil evaluation.

O1-4c Contd.

Moreover, the Phase I ESA states that it "did not include activities such as inspections or sampling for the presence of asbestos-containing materials, radon, other radioactive substances, vapor intrusion, lead-based paint, non-hazardous wastes and materials, mold, or biological and medical wastes. No soil, air, or water samples were collected for this Phase I ESA." (RDEIR Appendix I, p. 1.) Accordingly, a new Phase I ESA should be conducted that includes the aforementioned activities and that samples for hazardous substances such as asbestos-containing materials, radon, other radioactive substances, vapor intrusion, lead-based pain, non-hazardous wastes and materials, mold, and biological and medical wastes.

Altogether, given the Project Site's prior historic agricultural and vehicle junkyard uses and aboveground storage tanks, as well as the leaded gasoline tanks, underground storage tank, Hazardous Waste Tracking System listing, leaded tank, and petroleum AST at the neighboring properties, there is a *likely presence* of hazardous substances or petroleum products due to a *likely release* to the environment, per the ASTM E1527-21 standard. For the same reasons, there is also the potential that the site contains VECs. Therefore, potential RECs and VECs may indeed be present at the Project Site and require a new Phase I ESA, along with a Phase II and even Phase III ESA, to conduct the required testing at the Project Site and to provide adequate good faith disclosures about the hazards impacts and their mitigation, including for purposes of CEQA. O1-4c Contd.

D. The ESA Improperly Relies on Interviews with Individuals Who Likely Lack Sufficient Knowledge of the Site's Potentially Hazardous Conditions

According to the Phase I ESA, the following individuals completed Phase I ESA User Questionnaires pertaining to "topics including past property use, stored chemicals and petroleum products, storage tanks, and known issues related to potential contamination"[15] to obtain information in connection with the Project Site:

1. Director of Development, Venai Shenoy of 99MT 8me, LLC; and
2. Permitting Lead, Jennifer Jackson, of 8minute Solar Energy.[16]

However, the User Questionnaires completed for the Phase I ESA are deficient for a number of reasons.

First, the Phase I ESA states that the User Questionnaire was

> completed by landowners that covers topics pertaining to the property use, stored chemicals and petroleum products, storage tanks, and known issues related to potential contamination. None of the respondents indicated knowledge of stored hazardous substances or petroleum products, 55-gallon drums, or of any hazardous wastes generated on-site. None of the respondents indicated knowledge of stained soil; ASTs or USTs; dumped, buried, or burned materials; or environmental liens or environmental [activity and use limitations ("**AULs**")]. None of the responses indicated conditions that SWCA would consider to be RECs.

O1-4d

Phase I ESA, p. 34 of 186. [Emphasis added.]

Even further, regarding the User Questionnaire completed by the representatives of the Project Applicant, the ESA concludes that "[t]he respondents were not aware of any significant spills, releases, or environmental cleanups that have occurred on the subject property and were not aware of any obvious indicators that point to the presence or likely presence of releases at the subject property." *Id.*

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[15] Phase I ESA, p. 6 of 186.
[16] *Id.* at pp. 50-61 of 186.

However, the Phase I ESA's reliance on these User Questionnaires to make these conclusions is erroneous for a few reasons. First, many of the responses provided in the User Questionnaires are extremely vague and incomplete.

For example, question five (5) of the User Questionnaire completed by Venai Shenoy asks, "Are any considerations beyond the requirements of Practice E1527 to be considered? (i.e. lien search, asbestos & lead based paint, radon)", to which Venai Shenoy merely responded, "unknown". Phase I ESA, p. 50 of 186. Additionally, question six (6) of the User Questionnaire, for example, asks the respondent to "[i]dentify all parties who will rely on the Phase I report" and the answer merely states "multiple parties associated with the development of a utility scale solar farm." *Id.* at p. 51. Lastly, and most importantly, question nine (9) asks the respondent whether they "have copies of any available prior environmental site assessment reports, documents, correspondence, etc., concerning any other knowledge or experience with the property that may be pertinent to the environmental professional (i.e. lien search, title report, previous Ph I and II ESAs, Environmental Impact Studies)?" and the respondent answers, "no." *Id.* Not only are these answers vague and hardly responsive, but the respondent directly admits that they did not have any copies of prior environmental documentation available upon which they could even base their responses or become knowledgeable about the Project Site. *Id.*

O1-4d Contd.

Even further, Venai Shenoy's responses to the Subject Property Information portion of the User Questionnaire indicates that this individual: (1) did not review any records of a recorded land title pertaining to any liens filed or recorded against the property and did not know if there were any filed or recorded environmental liens; (2) had not reviewed any recorded land title records and did not know if there were any filed or recorded AULs or any AULs in place at the Project Site; (3) did not review the Title Report to determine whether it contained any information pertaining to environmental cleanup liens or AULs for the Project Site; (4) did not have any specialized knowledge or experience that related to the Project Site or nearby properties; (5) did not have any information about a reduction in the Project Site's property value relative to environmental issues; (6) did not know of the past property uses; (7) did not know whether specific chemicals were present or once were present at the Project Site; (8) did not know whether any spills or chemical releases took place at the Project Site; and (9) did not know whether any environmental cleanups took place at the Project Site, among other things. *Id.* at pp. 52-54 of 186. Therefore, clearly the questionnaire respondent, Venai Shenoy, lacked sufficient knowledge about the Project Site and its environmental conditions to competently complete the User Questionnaire.

Similarly, the second User Questionnaire, which was completed by Permitting Lead Jennifer Jackson, a representative of 8minute Solar Energy, leaves very similar vague and ambiguous responses to the User Questionnaire. For example, in response to question number 5a, "Do you know the past uses of the property?", Ms. Jackson merely responds "Agriculture," without providing any additional details or specifications. Appendix I Phase I ESA, p. 61 of 186. Or for question number 6, regarding the question, "as the user of this ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?", Ms. Jackson merely responds, "Unknown." Again, this is a completely vague response and does not answer the question in the affirmative or in the negative. Furthermore, the Phase I ESA fails to provide any information regarding Ms. Jackson's qualifications or whether she has any relevant expertise in this area. O1-4d Contd.

For each of the foregoing reasons, the Phase I ESA is deficient because it relies on completely insufficient User Questionnaires that were completed by individuals that likely lack sufficient knowledge about the Project Site and its environmental conditions and cannot properly provide information about the Project Site's *current* conditions and any potential RECs present at the Project Site. In addition, it is unclear how knowledgeable the interviewees actually are about the Project Site's previous and current conditions and potential RECs or whether the interviewees have the expertise to accurately form an opinion about the Project Site's environmental conditions.

For the foregoing reasons, the Phase I ESA's User Questionnaires are insufficient and a new Phase I ESA, along with a Phase II and Phase III ESA, should be prepared pursuant to the E1527-21 standards and the site must be tested.

E. Phase II and Phase III Environmental Site Assessments Should be Conducted

The Revised DEIR is manifestly deficient in completely leaving out Phase II ESA sampling for contamination based on the various investigations at the Project Site. As a general matter, the Phase I is improper in this case with Phase I ESA's likely hazards, detailed above, and both Phase II and Phase III ESAs are required in this case. O1-4e

As explained by experts in the field of ESA:

The primary difference between Phase I and Phase II site assessment lies in the scopes of work of the assessment. A Phase I primarily assesses the likelihood that a site is contaminated through visual observations, historical use reviews and regulatory records, while a Phase II assesses whether contamination is in fact present. Here are the components of each.

Phase I Environmental Site Assessment

Review of records, to discover whether the site has been used for potentially hazardous purposes in the past.

Visual inspection of the property's current condition, with comparison to site plans.

Visual inspection of adjoining properties.

Interviews with current property owners, operators, occupants, and local government officials.
Goal: Assess likelihood that property has been contaminated.

Phase II Environmental Site Assessment

Soil and water sampling for signs of contamination.

Comparison of lab results with local, state, and federal regulatory guidelines. O1-4e Contd.

May include inspection of interior spaces for mold, radon, or lead paint.

May include identification of wetlands, ecological resources, or endangered species that may prevent certain land uses.

Goal: Assess actual presence of environmental contaminants.

Phase III Site Assessment

A Phase III Site Assessment is called for only when contamination has been identified. A Phase III Assessment determines the extent of the contamination, both horizontally and vertically, and forms the basis for preparing a remediation plan, and estimation of the cost for remediation. Buyers and lenders use the Phase III

> Assessment as a negotiating tool with the sellers to ensure the property they purchase yields the benefit they expect.[17]

For all the reasons set forth above, the Phase I ESA is grossly inadequate. Therefore, a new Phase I ESA should be prepared, along with both Phase II and Phase III ESAs, before any environmental determination can be made about the Project and before the Project may be approved. O1-4e Contd.

V. THE PROJECT MAY HAVE A SIGNIFICANT IMPACT ON HISTORICAL AND CULTURAL RESOURCES

CEQA Guidelines Section 15064.5(a)(3) provides that a resource may be treated as historical and further mandates:

> "Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resources meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852) including the following:
>
> (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> (B) Is associated with the lives of persons important in our past;
>
> (C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or O1-5a
>
> (D) Has yielded, or may be likely to yield, information important in prehistory or history."

A. <u>The Project Site Contains Historical Resources Protected Under CEQA</u>

Public Resources Code Section 21084.1 states:

> "A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. For purposes of this section, an historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources .... The fact that a resource is not listed in, or determined to be eligible for listing in, the California Register of Historical Resources, not

[17] https://www.gleassociates.com/phase-i-versus-phase-ii-environmental-site-assessments/.

> included in a local register of historical resources, or not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1 shall not preclude a lead agency from determining whether the resources may be an historical resources for purposes of this section."

CEQA Guidelines Section 15064.5(a)(4) further echoes that:

> "The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1."

As such, pursuant to both PRC Section 21084.1 and CEQA Guidelines Section 15064.5, the fact that a project is not listed, determined to be, or registered as a historical resource does not preclude an agency's determination that the project is a historical resource.

O1-5a Contd.

Here, the Draft EIR states that forty (40) "previously-recorded cultural resources" were identified within one-half of a mile of the Sienna Project Site, and that eleven (11) of those resources are located within the Sienna Project Site area. (RDEIR, p. 3.6-1.) The RDEIR further provides a table summarizing these eleven (11) known cultural resources within the Sienna Project and notes that four (4) of those resources have been found eligible for listing in the National Register of Historic Places ("**NRHP**") or California Register of Historical Resources ("**CRHR**"), identifying them as P-36-014876, P-36-027410 (Barstow Road), P-36-027752, and P-36-027757 and Sienna S-7. *Id.* at pp. 3.6-1 – 3.6-2; 3.6-12. Accordingly, Table 3.6-1 of the Revised DEIR summarizes all eleven (11) identified known cultural resources located within the Sienna Project area, as shown in the table below:

Table 3.6-1. Known Cultural Resources within the Sienna Project Site

Primary Number	Resource Type	Description	NRHP/CRHR Status
P-36-014876	Historical Site	SCE Lugo-Pisgah No. 1 220 kV Transmission Line	Recommended Eligible
P-36-021200	Historical Site	Prospecting pit and refuse scatter	Not Eligible
P-36-024157	Historical Site	Fern Road	Unevaluated
P-36-024224	Historical Site	Chuckwalla Road	Not Eligible
P-36-027410	Historical Site	Barstow Road/SR 247	Recommended Eligible
P-36-027752	Historical Site	Eldorado-Lugo 500kV Transmission Line	Recommended Eligible
P-36-027757	Historical Site	Lugo-Mojave 500kV Transmission Line	Recommended Eligible
P-36-028357	Historical Site	Huff Road	Unevaluated
P-36-028365	Historical Site	Meridian Road	Unevaluated
P-36-029899	Prehistoric Isolate	One obsidian flake	Unevaluated
P-36-032694	Historical Site	Historic refuse scatter	Not Eligible

Source: Appendix F of this EIR

As shown in Table 3.6-1, above, the aforementioned four (4) cultural resources within the Sienna Project have been recommended eligible for listing in the NRHP and CRHR. Furthermore, the RDEIR states that a transmission line, SCE Lugo-Pisgah No. 2 220 KV transmission line, was evaluated for historical resources eligibility and was found eligible for listing in the NRHP and CRHR. (RDEIR, p. 3.6-4.) Accordingly, the RDEIR identifies a total of **five (5) resources** that were eligible for listing in the NRHP and/or CRHR and therefore are considered historical resources per CEQA Guidelines Section 15064.5(a).

Therefore, the Project Site contains historical resources for purposes of CEQA. O1-5a Contd.

B. The Project May Cause Substantial Adverse Changes in the Significance of Historical Resources

A "substantial adverse change" to the significance of an historical resource is defined as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." (Cal. Code Regs., tit. 14, § 15064.5(b)(1).) O1-5b

Further, CEQA Guidelines section 15064.5(b)(2) states:

> [t]he significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

O1-5b Contd.

Here, the Project may demolish or materially alter in an adverse manner the physical characteristics of the five (5) listed resources within the Sienna Project that are eligible in the NRHP and/or CRHR. The RDEIR asserts that for resource P-36-027410, "the Sienna Project does not propose any direct modifications to the road and would not introduce any major visual changes to its setting which would impair its ability to convey its significance," and that the Project's construction and operation "would not entail the demolition or substantial alteration of any utility towers associated with the four historic lines which traverse the Sienna Project area," (i.e., P-36-014876, P-36-027752, P-36-027757, and Sienna S-7) (RDEIR, p. 3.6-12), ultimately concluding that the Project would have a less than significant impact under the Impact 3.6-1 significance threshold, "Would the Project cause a substantial adverse change in the significance of historical resources pursuant to § 15064.5?" However, this conclusion is erroneous.

Here, the Sienna Project calls for the following construction activities: (1) site preparation, (2) grading and earthwork, (3) concrete foundations, (4) structural steel work, (5) electrical/instrumentation work, and (6) collector line installation. RDEIR, p. 2-43. Per the RDEIR, it is expected that "heavy construction" will happen from 6:00 a.m. to 5:00 p.m. six (6) days a week, with the possibility for additional hours, that materials and supplies will be transported to the Sienna Project Site by truck, that "[e]arthmoving activities associated with the solar facility are expected to be limited to the construction of the access roads, O&M building, substation, BESS, and any required storm water protection or storage (detention) facilities." (*Id.* at 2-44.) Accordingly, given that these historical resources are located within a one-half-mile radius from the Project Site, the Sienna Project's construction activities very well may have a significant impact on the five (5) identified historical resources within the Sienna Project Site area given that there will be earthmoving activities and heavy construction taking place within a half-mile radius of these resources, and therefore, that the Project may cause a physical demolition, destruction, relocation, or alteration of these resources or their immediate surroundings such that their significance would be materially impaired.

Next, with regards to the Calcite Substation's Impact Analysis for Impact 3.6-1, "Would the Project cause a substantial adverse change in the significance of historical resources pursuant to § 15064.5?", the RDEIR's analysis of the Calcite Substation finds that the Project will have a less than significant impact with mitigation incorporated. RDEIR, p. 3.6-12. Accordingly, the RDEIR proposes to incorporate mitigation measures MM CS-CR-1 through MM CS-CR-7, CS-TCR-1, and CS-TCR-1. These mitigations are nearly identical to those found in the *Stagecoach Solar Project Draft EIR*, which has not been certified by the California State Lands Commission. Despite County revising the original DEIR to remove the incorporated reference to the *Stagecoach Solar Project Draft EIR*, the mitigations remain substantially the same. The mitigations are flawed due to the various deficiencies with the proposed mitigation measures as explained below. O1-5b Contd.

For example, MM CS-CR-1 requires that:

> **Prior to the start of construction, SCE shall propose a Cultural Resources Specialist (CRS)** to manage and direct implementation of all cultural resources requirements during construction. The CRS shall have training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). The CRS shall be retained by SCE to supervise monitoring of construction excavations and to prepare the project's Cultural Resources Management Plan (see Mitigation Measure CS-CR-2) for the approved project. The CRS shall be an archaeologist with demonstrated prior experience in the southern California desert and previous experience working with southern California Tribal Nations. **A copy of the CRS' qualifications shall be provided to the County of San Bernardino Planning Division for review and approval** at least 60 days before the start of construction.

RDEIR, p. 3.6-13. [Emphasis added.]

However, this Mitigation Measure improperly defers mitigation, as can be evidenced from the above-quoted and emphasized RDEIR statement, "Prior to the start of construction," which indicates that this would take place *after* the Project has already been approved. CEQA forbids deferred mitigation. Guidelines § 15126.4(a)(1)(B). CEQA allows deferral of details of MMs only "when it is impractical or infeasible to include those details during the project's environmental review." (*Id.*) CEQA further requires: "that the agency (1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, and (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard…" Guidelines § 15126.4(a)(1)(B).

The County failed all of these preconditions and requirements, as its RDEIR failed to show ***why*** proposing a Cultural Resources Specialist cannot be done before the certification of the EIR, what impacts they will have individually or cumulatively, or the specific performance criteria that the Applicant will have to meet. Accordingly, the proposed mitigation measure improperly deferred and vague as it defers the formulation of mitigation measures to a later time and does not explain how the proposed measure will clearly reduce the historical or cultural resources impact to a level of insignificance. O1-5b Contd.

Second, and similarly, Mitigation Measure MM CS-CR-2 suffers from the same flaws. MM CS-CR-2 states:

> **Prior to start of construction, SCE shall develop a Cultural Resource Monitoring Plan (CRMP)** that addresses the details of all activities and **provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant** as well as **address potential impacts to undiscovered buried archaeological resources and Tribal cultural resources** associated with the approved Project. Specifics requirements of the CRMP are:
>
> - The CRMP shall be **provided to SCE** and the **Yuhaaviatam of San Manuel Nation Cultural Resources Department** representative for review and approval at least 60 days before the start of construction.
> - The CRMP shall incorporate the results of preconstruction geoarchaeological testing, including any project-related design or route

changes that would successfully result in resource avoidance. Based on the geoarchaeological test results, the CRMP shall define the level of archaeological monitoring that is recommended.

- The CRMP shall specify the level of tribal participation in monitoring, the qualifications for archaeological monitors, the handling of discoveries, and the process for evaluating unanticipated resources (as defined in Mitigation Measure CS-CR-5)
- The CRMP shall include provisions for treatment of cultural resources that are Native American in nature consistent with CS-TCR-2 (Treatment of Cultural Resources; see Section 3.14, Tribal Cultural Resources of this EIR)

RDEIR, p. 3.6-13 – 14. [Emphasis added.]

Again, this measure improperly defers mitigation to some unspecified date after the Project has already been approved.

CEQA forbids deferred mitigation. Guidelines § 15126.4(a)(1)(B). CEQA allows deferral of details of mitigation measures only "when it is impractical or infeasible to include those details during the project's environmental review." (*Id.*) CEQA further requires: "that the agency (1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, and (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard…" Guidelines § 15126.4(a)(1)(B). O1-5b Contd.

Here, yet again, the County failed all of these preconditions and requirements, as its ***RDEIR failed to show why the development of the Cultural Resource Monitoring Plan cannot be developed before the certification of the EIR***, what impacts they will have individually or cumulatively, if those would indeed be feasible, and the specific performance criteria the Applicant will have to meet. Moreover, the County clearly did not commit to mitigation, since, per the mitigation measure, the CRMP would be provided to the SCE and the Yuhaaviatam of San Manuel Nation Cultural Resources Department for review and approval. Finally, the mitigation measure does not explain how the proposed plan will clearly reduce the cultural and tribal resources impact to a level of insignificance.

For each of the foregoing reasons, the mitigation measures proposed for the Project do not adequately mitigate the project's historical or cultural resources impacts. Therefore, they cannot be relied upon to conclude that the project will not cause a substantial adverse change in the significance of historical resources pursuant to § 15064.5.

For the foregoing reasons, the Project may indeed have a significant impact on historical and cultural resources. Accordingly, the RDEIR should be revised and recirculated to adequately mitigate the Project's impacts.

O1-5b Contd.

VI. THE PROJECT MAY HAVE A SIGNIFICANT TRAFFIC AND TRANSPORTATION IMPACT

The very nature of the Project, with its proposed construction of solar energy generation equipment and associated facilities including a substation and access roads, a BESS, and an on- and -off-site gen-tie line to connect the proposed on-site substation to the point of interconnection at the proposed SCE Calcite Substation (RDEIR, p. 2-1) indicates that the Project may have significant traffic impacts. This is further supported by the fact that the project will generate an estimated 3,030 Average Daily Trips ("**ADT**") for the Project as a whole, per the RDEIR's Vehicle Trip Generation. (RDEIR, p. 3.13-13 – 14, Table 3.13-3.)

Furthermore, there are multiple deficiencies with the RDEIR and its traffic and transportation analysis, which will be analyzed further below.

First, according to the RDEIR, the construction phase of the Calcite Substation will no longer cause a significant and unavoidable traffic impact. (RDEIR, p. 3.13-17.) However, this conclusion is unsupported by available data. The DEIR noted that, with the same mitigation measure, the traffic impacts would be significant and unavoidable during the construction period. (DEIR, p. 3.13-21.) While the RDEIR has removed reference to the Stagecoach Solar Project, the mitigation measure proposed, MM CS-TRA-1***, is the same mitigation measure*** that was originally proposed in the uncertified Stagecoach DEIR. Further, ***the Revised DEIR does not explain why the previously significant impact over the 18-month construction period would no longer be significant***. Indeed, ***no updated traffic impact study was prepared*** for the RDEIR, so the City has failed to support its finding of no significant impact with substantial evidence. O1-6

The Project and its proposed Calcite Substation will cause a significant impact on traffic and transportation. As such, the RDEIR must be revised and recirculated to adequately analyze and mitigate the Project's traffic impacts or to provide updated analytical support of the finding for no significant traffic impacts.

VII. THE PROJECT MAY HAVE SIGNIFICANT AIR QUALITY, GREENHOUSE GAS EMISSION, WATER, NOISE, HAZARDS, HUMAN HEALTH, AND WILDLIFE/BIOLOGICAL IMPACTS AND CUMULATIVE IMPACTS, REQUIRING MANDATORY FINDINGS OF SIGNIFICANCE AND REVISION AND RECIRCULATION OF THE EIR

Since the Project may have significant traffic impacts that are not accurately disclosed in the RDEIR, then its traffic-related impacts are also derivatively understated and may be significant, requiring revision and recirculation of the RDEIR.

There is an acknowledged direct correlation between the increase in traffic impacts and an increase in their associated air quality, greenhouse gas emission ("**GHG**"), and noise impacts. See e.g., *City of Redlands v. County of San Bernardino* (2002) 96 Cal.App.4th 398, 413, "it is reasonable to assume" that a project enabling physical residential development would have reasonably foreseeable indirect air and other impacts.

As stated in the Office of Planning Research's ("OPR") technical advisory in 2018: O1-7

> "VMT and Greenhouse Gas Emissions Reduction. Senate Bill 32 (Pavley, 2016) requires California to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030, and Executive Order B-16-12 provides a target of 80 percent below 1990 emissions levels for the transportation sector by 2050. The transportation sector has three major means of reducing GHG emissions: increasing vehicle efficiency, reducing fuel carbon content, and reducing the amount of vehicle travel."

Similarly, there is an acknowledged nexus between the increase of traffic and an increase in related air quality, GHG impacts, noise, water/flooding impacts and impacts on human health and natural environment, including wildlife and waterways. As described in the 2018 OPR Technical advisory:

> "VMT and Other Impacts to Health and Environment. VMT mitigation also creates substantial benefits (sometimes characterized as "co-benefits" to GHG reduction) in both in the near-term and the long-term. Beyond **GHG emissions**, **increases** in **VMT** also impact **human health** and the **natural environment**. Human health is impacted as increases in **vehicle travel** lead to **more vehicle crashes**, **poorer air quality**, increases in chronic diseases associated with reduced physical activity, and worse mental health. Increases in vehicle travel also negatively affect other road users, including pedestrians, cyclists, other motorists, and many transit

> users. The **natural environment** is **impacted** as **higher VMT** leads to more collisions with wildlife and fragments habitat. Additionally, development that leads to more vehicle travel also tends to consume **more energy**, **water**, and **open space** (including farmland and sensitive habitat). This increase in impermeable surfaces **raises** the **flood risk** and **pollutant transport** into **waterways**."

As such, the Project here may have significant traffic, air, GHG, energy, water, noise and other impacts, including impacts on human beings and natural environment. O1-7 Contd.

VIII. CONCLUSION

Based on the foregoing, the County should require that the RDEIR be further revised and recirculated pursuant to CEQA, consistent with the comments and issues identified in this comment letter. O1-8

Sincerely,

Grace Holbrook
Attorneys for Western States
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);

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

December 15, 2022 Federal Register (Exhibit D).

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.

1

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):

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

Where:

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

VMT = vehicle miles traveled

$EF_{\text{running,pollutant}}$ = 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.

5

Attachment A

Location Type	Location Name	Rural H-W (miles)	Urban H-W (miles)
Air Basin	Great Basin	16.8	10.8
Air Basin	Lake County	16.8	10.8
Air Basin	Lake Tahoe	16.8	10.8
Air Basin	Mojave Desert	16.8	10.8
Air Basin	Mountain	16.8	10.8
Air Basin	North Central	17.1	12.3
Air Basin	North Coast	16.8	10.8
Air Basin	Northeast	16.8	10.8
Air Basin	Sacramento	16.8	10.8
Air Basin	Salton Sea	14.6	11
Air Basin	San Diego	16.8	10.8
Air Basin	San Francisco	10.8	10.8
Air Basin	San Joaquin	16.8	10.8
Air Basin	South Central	16.8	10.8
Air Basin	South Coast	19.8	14.7
Air District	Amador County	16.8	10.8
Air District	Antelope Valley	16.8	10.8
Air District	Bay Area AQMD	10.8	10.8
Air District	Butte County	12.54	12.54
Air District	Calaveras	16.8	10.8
Air District	Colusa County	16.8	10.8
Air District	El Dorado	16.8	10.8
Air District	Feather River	16.8	10.8
Air District	Glenn County	16.8	10.8
Air District	Great Basin	16.8	10.8
Air District	Imperial County	10.2	7.3
Air District	Kern County	16.8	10.8
Air District	Lake County	16.8	10.8
Air District	Lassen County	16.8	10.8
Air District	Mariposa	16.8	10.8
Air District	Mendocino	16.8	10.8
Air District	Modoc County	16.8	10.8
Air District	Mojave Desert	16.8	10.8
Air District	Monterey Bay	16.8	10.8
Air District	North Coast	16.8	10.8
Air District	Northern Sierra	16.8	10.8
Air District	Northern	16.8	10.8
Air District	Placer County	16.8	10.8
Air District	Sacramento	15	10

Air District	San Diego	16.8	10.8
Air District	San Joaquin	16.8	10.8
Air District	San Luis Obispo	13	13
Air District	Santa Barbara	8.3	8.3
Air District	Shasta County	16.8	10.8
Air District	Siskiyou County	16.8	10.8
Air District	South Coast	19.8	14.7
Air District	Tehama County	16.8	10.8
Air District	Tuolumne	16.8	10.8
Air District	Ventura County	16.8	10.8
Air District	Yolo/Solano	15	10
County	Alameda	10.8	10.8
County	Alpine	16.8	10.8
County	Amador	16.8	10.8
County	Butte	12.54	12.54
County	Calaveras	16.8	10.8
County	Colusa	16.8	10.8
County	Contra Costa	10.8	10.8
County	Del Norte	16.8	10.8
County	El Dorado-Lake	16.8	10.8
County	El Dorado-	16.8	10.8
County	Fresno	16.8	10.8
County	Glenn	16.8	10.8
County	Humboldt	16.8	10.8
County	Imperial	10.2	7.3
County	Inyo	16.8	10.8
County	Kern-Mojave	16.8	10.8
County	Kern-San	16.8	10.8
County	Kings	16.8	10.8
County	Lake	16.8	10.8
County	Lassen	16.8	10.8
County	Los Angeles-	16.8	10.8
County	Los Angeles-	19.8	14.7
County	Madera	16.8	10.8
County	Marin	10.8	10.8
County	Mariposa	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Mendocino-	16.8	10.8
County	Merced	16.8	10.8
County	Modoc	16.8	10.8
County	Mono	16.8	10.8
County	Monterey	16.8	10.8
County	Napa	10.8	10.8

County	Nevada	16.8	10.8
County	Orange	19.8	14.7
County	Placer-Lake	16.8	10.8
County	Placer-Mountain	16.8	10.8
County	Placer-	16.8	10.8
County	Plumas	16.8	10.8
County	Riverside-	16.8	10.8
County	Riverside-	19.8	14.7
County	Riverside-Salton	14.6	11
County	Riverside-South	19.8	14.7
County	Sacramento	15	10
County	San Benito	16.8	10.8
County	San Bernardino-	16.8	10.8
County	San Bernardino-	19.8	14.7
County	San Diego	16.8	10.8
County	San Francisco	10.8	10.8
County	San Joaquin	16.8	10.8
County	San Luis Obispo	13	13
County	San Mateo	10.8	10.8
County	Santa Barbara-	8.3	8.3
County	Santa Barbara-	8.3	8.3
County	Santa Clara	10.8	10.8
County	Santa Cruz	16.8	10.8
County	Shasta	16.8	10.8
County	Sierra	16.8	10.8
County	Siskiyou	16.8	10.8
County	Solano-	15	10
County	Solano-San	16.8	10.8
County	Sonoma-North	16.8	10.8
County	Sonoma-San	10.8	10.8
County	Stanislaus	16.8	10.8
County	Sutter	16.8	10.8
County	Tehama	16.8	10.8
County	Trinity	16.8	10.8
County	Tulare	16.8	10.8
County	Tuolumne	16.8	10.8
County	Ventura	16.8	10.8
County	Yolo	15	10
County	Yuba	16.8	10.8
Statewide	Statewide	16.8	10.8

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**
Mininum	**10.80**	**10.80**
Maximum	**19.80**	**14.70**
Range	**9.00**	**3.90**

Attachment B

CalEEMod Version: CalEEMod.2016.3.2 | Page 1 of 44 | Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Village South Specific Plan (Proposed)
Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding 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	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

CalEEMod Version: CalEEMod.2016.3.2 Page 3 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1969	213.1969	0.0601	0.0000	214.6993
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.6826	1,721.6826	0.1294	0.0000	1,724.9187
2023	0.6148	3.3649	5.8747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.5295	1,627.5295	0.1185	0.0000	1,630.4925
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9078	52.9078	9.0200e-003	0.0000	53.1082
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.6826**	**1,721.6826**	**0.1294**	**0.0000**	**1,724.9187**

CalEEMod Version: CalEEMod.2016.3.2 Page 5 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

2.1 Overall Construction

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					
2021	0.1713	1.8242	1.1662	2.4000e-003	0.4169	0.0817	0.4986	0.1795	0.0754	0.2549	0.0000	213.1967	213.1967	0.0601	0.0000	214.6991
2022	0.6904	4.1142	6.1625	0.0189	1.3058	0.1201	1.4259	0.3460	0.1128	0.4588	0.0000	1,721.682 3	1,721.682 3	0.1294	0.0000	1,724.918 3
2023	0.6148	3.3648	5.8747	0.0178	1.1963	0.0996	1.2959	0.3203	0.0935	0.4138	0.0000	1,627.529 1	1,627.529 1	0.1185	0.0000	1,630.492 1
2024	4.1619	0.1335	0.2810	5.9000e-004	0.0325	6.4700e-003	0.0390	8.6300e-003	6.0400e-003	0.0147	0.0000	52.9077	52.9077	9.0200e-003	0.0000	53.1092
Maximum	**4.1619**	**4.1142**	**6.1625**	**0.0189**	**1.3058**	**0.1201**	**1.4259**	**0.3460**	**0.1128**	**0.4588**	**0.0000**	**1,721.682 3**	**1,721.682 3**	**0.1294**	**0.0000**	**1,724.918 3**

	ROG	NOx	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	9-1-2021	11-30-2021	1.4103	1.4103
2	12-1-2021	2-28-2022	1.3613	1.3613
3	3-1-2022	5-31-2022	1.1985	1.1985
4	6-1-2022	8-31-2022	1.1921	1.1921
5	9-1-2022	11-30-2022	1.1918	1.1918
6	12-1-2022	2-28-2023	1.0774	1.0774
7	3-1-2023	5-31-2023	1.0320	1.0320
8	6-1-2023	8-31-2023	1.0260	1.0260

9	9-1-2023	11-30-2023	1.0265	1.0265
10	12-1-2023	2-29-2024	2.8857	2.8857
11	3-1-2024	5-31-2024	1.6207	1.6207
		Highest	2.8857	2.8857

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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0469	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2911	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	566.6420	595.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	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

CalEEMod Version: CalEEMod.2016.3.2 | Page 8 of 44 | Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 Page 9 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	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	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

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					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

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	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
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	9.7000e-004	7.5000e-004	9.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

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					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 2021

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	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
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	9.7000e-004	7.5000e-004	8.5100e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2251	2.2251	7.0000e-005	0.0000	2.2267
Total	**2.9000e-003**	**0.0641**	**0.0233**	**2.0000e-004**	**6.4100e-003**	**2.1000e-004**	**6.6200e-003**	**1.7300e-003**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**19.6816**	**19.6816**	**1.2800e-003**	**0.0000**	**19.7136**

3.3 Site Preparation - 2021

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

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	7.7000e-004	8.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

CalEEMod Version: CalEEMod.2016.3.2 | Page 14 of 44 | Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.3 Site Preparation - 2021

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	7.7000e-004	8.0000e-004	6.8100e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7801	1.7801	5.0000e-005	0.0000	1.7814
Total	**7.7000e-004**	**6.0000e-004**	**6.8100e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7801**	**1.7801**	**5.0000e-005**	**0.0000**	**1.7814**

3.4 Grading - 2021

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					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

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	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

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					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

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	1.6400e-003	1.2700e-003	0.0144	4.0000e-005	4.1600e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.7579	3.7579	1.1000e-004	0.0000	3.7607
Total	**1.6400e-003**	**1.2700e-003**	**0.0144**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.7579**	**3.7579**	**1.1000e-004**	**0.0000**	**3.7607**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

CalEEMod Version: CalEEMod.2016.3.2 Page 17 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

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					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.1000e-004	2.4400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6679	0.6679	2.0000e-005	0.0000	0.6684
Total	**2.8000e-004**	**2.1000e-004**	**2.4400e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6679**	**0.6679**	**2.0000e-005**	**0.0000**	**0.6684**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4088	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

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	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.4089	0.3066	3.5305	0.0107	1.1103	8.8700e-003	1.1192	0.2949	8.1700e-003	0.3031	0.0000	966.8117	966.8117	0.0266	0.0000	967.4773
Total	**0.4616**	**2.0027**	**3.9885**	**0.0152**	**1.2243**	**0.0121**	**1.2363**	**0.3278**	**0.0112**	**0.3390**	**0.0000**	**1,408.7952**	**1,408.7952**	**0.0530**	**0.0000**	**1,410.1208**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4916**

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	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

CalEEMod Version: CalEEMod.2016.3.2 Page 22 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.3753	0.2708	3.1696	0.0101	1.0840	8.4100e-003	1.0924	0.2879	7.7400e-003	0.2957	0.0000	909.3439	909.3439	0.0234	0.0000	909.9291
Total	**0.4135**	**1.5218**	**3.5707**	**0.0144**	**1.1953**	**9.8700e-003**	**1.2051**	**0.3200**	**9.1400e-003**	**0.3292**	**0.0000**	**1,327.3369**	**1,327.3369**	**0.0462**	**0.0000**	**1,328.4915**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

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	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	3.1200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8963	0.8963	2.0000e-005	0.0000	0.8968
Total	**3.7000e-004**	**2.7000e-004**	**3.1200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.8000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.8963**	**0.8963**	**2.0000e-005**	**0.0000**	**0.8968**

3.6 Paving - 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	0.0109	0.1049	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 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	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

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	0.0109	0.1049	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 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	5.9000e-004	4.1000e-004	4.9200e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4697	1.4697	4.0000e-005	0.0000	1.4706
Total	**5.9000e-004**	**4.1000e-004**	**4.9200e-003**	**2.0000e-005**	**1.8100e-003**	**1.0000e-005**	**1.8200e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.4697**	**1.4697**	**4.0000e-005**	**0.0000**	**1.4706**

3.7 Architectural Coating - 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	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 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	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9559
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9559**

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	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 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	0.0101	6.9900e-003	0.0835	2.8000e-004	0.0307	2.3000e-004	0.0309	8.1500e-003	2.2000e-004	8.3700e-003	0.0000	24.9407	24.9407	6.1000e-004	0.0000	24.9558
Total	**0.0101**	**6.9900e-003**	**0.0835**	**2.8000e-004**	**0.0307**	**2.3000e-004**	**0.0309**	**8.1500e-003**	**2.2000e-004**	**8.3700e-003**	**0.0000**	**24.9407**	**24.9407**	**6.1000e-004**	**0.0000**	**24.9558**

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	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.498 6	7,620.498 6	0.3407	0.0000	7,629.016 2
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.498 6	7,620.498 6	0.3407	0.0000	7,629.016 2

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.60	2,673.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

CalEEMod Version: CalEEMod.2016.3.2 | Page 30 of 44 | Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

CalEEMod Version: CalEEMod.2016.3.2 Page 31 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	2,512.646 5	2,512.646 5	0.1037	0.0215	2,521.635 6
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.646 5	2,512.646 5	0.1037	0.0215	2,521.635 6
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.426 7	1,383.426 7	0.0265	0.0254	1,391.647 8
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.426 7	1,383.426 7	0.0265	0.0254	1,391.647 8

CalEEMod Version: CalEEMod.2016.3.2 Page 32 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

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 Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30813e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1468
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91640	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

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 Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30813e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1488
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91640	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.8465**	**0.1037**	**0.0215**	**2,521.8356**

CalEEMod Version: CalEEMod.2016.3.2 Page 35 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.8465**	**0.1037**	**0.0215**	**2,521.6356**

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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

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	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

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	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1197	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

CalEEMod Version: CalEEMod.2016.3.2 Page 38 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		585.8052	3.0183	0.0755	683.7567

8.0 Waste Detail

8.1 Mitigation Measures Waste

CalEEMod Version: CalEEMod.2016.3.2 Page 41 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0484
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

CalEEMod Version: CalEEMod.2016.3.2 Page 43 of 44 Date: 1/6/2021 1:52 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0484
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		207.8079	12.2811	0.0000	514.8354

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

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Version: CalEEMod.2016.3.2 Page 1 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Village South Specific Plan (Proposed)

Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding 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	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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

CalEEMod Version: CalEEMod.2016.3.2 Page 4 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.797 4	6,234.797 4	1.9495	0.0000	6,283.535 2
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.56 74	15,251.56 74	1.9503	0.0000	15,278.52 88
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.52 69	14,807.52 69	1.0250	0.0000	14,833.15 21
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.9628	0.4743	0.4322	0.6476	0.0000	2,361.398 9	2,361.398 9	0.7177	0.0000	2,379.342 1
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.56 74**	**15,251.56 74**	**1.9503**	**0.0000**	**15,278.52 88**

CalEEMod Version: CalEEMod.2016.3.2 Page 5 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

2.1 Overall Construction (Maximum Daily Emission)

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					
2021	4.2769	46.4588	31.6840	0.0643	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,234.797 4	6,234.797 4	1.9495	0.0000	6,283.535 2
2022	5.3304	38.8967	49.5629	0.1517	9.8688	1.6366	10.7727	3.6558	1.5057	5.1615	0.0000	15,251.56 74	15,251.56 74	1.9503	0.0000	15,278.52 88
2023	4.8957	26.3317	46.7567	0.1472	9.8688	0.7794	10.6482	2.6381	0.7322	3.3702	0.0000	14,807.52 69	14,807.52 69	1.0250	0.0000	14,833.15 20
2024	237.1630	9.5575	15.1043	0.0244	1.7884	0.4698	1.8628	0.4743	0.4322	0.5476	0.0000	2,361.398 9	2,361.398 9	0.7177	0.0000	2,379.342 1
Maximum	**237.1630**	**46.4588**	**49.5629**	**0.1517**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**15,251.56 74**	**15,251.56 74**	**1.9503**	**0.0000**	**15,278.52 88**

	ROG	NOx	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

CalEEMod Version: CalEEMod.2016.3.2 Page 6 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	16,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4817	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1169**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	19,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4817	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	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	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 Page 8 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

CalEEMod Version: CalEEMod.2016.3.2 Page 9 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-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	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

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					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0389		1.5513	1.5513		1.4411	1.4411		3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

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	0.1273	4.0952	0.9602	0.0119	0.2669	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.241 3	1,292.241 3	0.0877		1,294.433 7
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	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.056 8**	**1,463.056 8**	**0.0927**		**1,465.375 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					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

CalEEMod Version: CalEEMod.2016.3.2 Page 11 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.2 Demolition - 2021

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	0.1273	4.0952	0.9602	0.0119	0.2689	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.241 3	1,292.241 3	0.0877		1,294.433 7
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	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.1916**	**4.1394**	**1.5644**	**0.0136**	**0.4346**	**0.0139**	**0.4485**	**0.1176**	**0.0133**	**0.1309**		**1,463.056 8**	**1,463.056 8**	**0.0927**		**1,465.375 0**

3.3 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

CalEEMod Version: CalEEMod.2016.3.2 Page 12 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.3 Site Preparation - 2021

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	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

3.3 Site Preparation - 2021

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	0.0772	0.0530	0.7250	2.0600e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

3.4 Grading - 2021

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

3.4 Grading - 2021

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	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

CalEEMod Version: CalEEMod.2016.3.2 Page 15 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.4 Grading - 2021

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	0.0857	0.0589	0.8056	2.2900e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		227.7540	227.7540	6.7100e-003		227.9217
Total	**0.0857**	**0.0589**	**0.8056**	**2.2900e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**227.7540**	**227.7540**	**6.7100e-003**		**227.9217**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.410 5	6,011.410 5	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

CalEEMod Version: CalEEMod.2016.3.2 Page 16 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.410 5	6,011.410 5	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

CalEEMod Version: CalEEMod.2016.3.2 Page 17 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0803	0.0532	0.7432	2.2100e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		219.7425	219.7425	6.0600e-003		219.8941
Total	**0.0803**	**0.0532**	**0.7432**	**2.2100e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**219.7425**	**219.7425**	**6.0600e-003**		**219.8941**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.548 2	3,896.548 2	0.2236		3,902.138 4
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.685 7	8,800.685 7	0.2429		8,806.758 2
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.23 39**	**12,697.23 39**	**0.4665**		**12,708.89 66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.548 2	3,896.548 2	0.2236		3,902.138 4
Worker	3.2162	2.1318	29.7654	0.0883	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,800.685 7	8,800.685 7	0.2429		8,806.758 2
Total	**3.6242**	**15.3350**	**33.1995**	**0.1247**	**9.8688**	**0.0949**	**9.9637**	**2.6381**	**0.0883**	**2.7263**		**12,697.23 39**	**12,697.23 39**	**0.4665**		**12,708.89 66**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

CalEEMod Version: CalEEMod.2016.3.2 Page 20 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.876 2	3,773.876 2	0.1982		3,776.830 0
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3746	0.0627	2.4372		8,478.440 8	8,478.440 8	0.2190		8,483.916 0
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.31 70**	**12,252.31 70**	**0.4172**		**12,262.74 60**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

CalEEMod Version: CalEEMod.2016.3.2 Page 21 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3027	10.0181	3.1014	0.0352	0.8156	0.0116	0.8271	0.2636	0.0111	0.2747		3,773.876 2	3,773.876 2	0.1982		3,776.830 0
Worker	3.0203	1.9287	27.4113	0.0851	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		8,478.440 8	8,478.440 8	0.2190		8,483.916 0
Total	**3.3229**	**11.9468**	**30.5127**	**0.1203**	**9.8688**	**0.0797**	**9.9485**	**2.6381**	**0.0738**	**2.7118**		**12,252.31 70**	**12,252.31 70**	**0.4172**		**12,262.74 60**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

CalEEMod Version: CalEEMod.2016.3.2 Page 23 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0566	0.0361	0.5133	1.5900e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		158.7723	158.7723	4.1000e-003		158.8748
Total	**0.0566**	**0.0361**	**0.5133**	**1.5900e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**158.7723**	**158.7723**	**4.1000e-003**		**158.8748**

3.6 Paving - 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	0.9892	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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

3.6 Paving - 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	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

3.6 Paving - 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	0.0535	0.0329	0.4785	1.5400e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		153.8517	153.8517	3.7600e-003		153.9458
Total	**0.0535**	**0.0329**	**0.4785**	**1.5400e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**153.8517**	**153.8517**	**3.7600e-003**		**153.9458**

3.7 Architectural Coating - 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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

CalEEMod Version: CalEEMod.2016.3.2 Page 26 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.7 Architectural Coating - 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	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.085 2	1,641.085 2	0.0401		1,642.088 6
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.085 2**	**1,641.085 2**	**0.0401**		**1,642.088 6**

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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1809	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.5707	0.3513	5.1044	0.0165	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,641.0852	1,641.0852	0.0401		1,642.0886
Total	**0.5707**	**0.3513**	**5.1044**	**0.0165**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,641.0852**	**1,641.0852**	**0.0401**		**1,642.0886**

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	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.60 34	50,306.60 34	2.1807		50,361.12 08
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.60 34	50,306.60 34	2.1807		50,361.12 08

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.60	2,673.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

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	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7

CalEEMod Version: CalEEMod.2016.3.2 | Page 31 of 35 | Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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 Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8884
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5659
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

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 Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

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	30.5020	15.0496	89.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.00 00	18,000.00 00	0.3450	0.3300	18,106.96 50
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.59 50**	**18,148.59 50**	**0.4874**	**0.3300**	**18,259.11 92**

CalEEMod Version: CalEEMod.2016.3.2 | Page 34 of 35 | Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

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

CalEEMod Version: CalEEMod.2016.3.2 Page 35 of 35 Date: 1/6/2021 1:54 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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

Village South Specific Plan (Proposed)
Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding 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	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82
tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27

tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.493 7	6,221.493 7	1.9491	0.0000	6,270.221 4
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.30 99	14,630.30 99	1.9499	0.0000	14,657.26 63
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.34 24	14,210.34 24	1.0230	0.0000	14,235.91 60
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.9628	0.4743	0.4322	0.5476	0.0000	2,352.417 8	2,352.417 8	0.7175	0.0000	2,370.355 0
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.30 99**	**14,630.30 99**	**1.9499**	**0.0000**	**14,657.26 63**

2.1 Overall Construction (Maximum Daily Emission)

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					
2021	4.2865	46.4651	31.6150	0.0642	18.2675	2.0461	20.3135	9.9840	1.8824	11.8664	0.0000	6,221.493 7	6,221.493 7	1.9491	0.0000	6,270.221 4
2022	5.7218	38.9024	47.3319	0.1455	9.8688	1.6366	10.7736	3.6558	1.5057	5.1615	0.0000	14,630.30 99	14,630.30 99	1.9499	0.0000	14,657.26 63
2023	5.2705	26.4914	44.5936	0.1413	9.8688	0.7800	10.6488	2.6381	0.7328	3.3708	0.0000	14,210.34 24	14,210.34 24	1.0230	0.0000	14,235.91 60
2024	237.2328	9.5610	15.0611	0.0243	1.7884	0.4698	1.9628	0.4743	0.4322	0.5476	0.0000	2,352.417 8	2,352.417 8	0.7175	0.0000	2,370.355 0
Maximum	**237.2328**	**46.4651**	**47.3319**	**0.1455**	**18.2675**	**2.0461**	**20.3135**	**9.9840**	**1.8824**	**11.8664**	**0.0000**	**14,630.30 99**	**14,630.30 99**	**1.9499**	**0.0000**	**14,657.26 63**

	ROG	NOx	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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	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	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 Page 8 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

CalEEMod Version: CalEEMod.2016.3.2 Page 9 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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	15.00	0.00	458.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

<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			
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.855 5	1,269.855 5	0.0908		1,272.125 2
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	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	0.2019	4.1943	1.5706	0.0133	0.4346	0.0141	0.4487	0.1176	0.0135	0.1311		1,430.693 2	1,430.693 2	0.0955		1,433.081 2

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					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	3.1651	31.4407	21.5650	0.0388	3.3074	1.5513	4.8588	0.5008	1.4411	1.9419	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4

CalEEMod Version: CalEEMod.2016.3.2 Page 11 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.2 Demolition - 2021

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	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.855 5	1,269.855 5	0.0908		1,272.125 2
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	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.2019**	**4.1943**	**1.5706**	**0.0133**	**0.4346**	**0.0141**	**0.4487**	**0.1176**	**0.0135**	**0.1311**		**1,430.693 2**	**1,430.693 2**	**0.0955**		**1,433.081 2**

3.3 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

3.3 Site Preparation - 2021

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	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

3.3 Site Preparation - 2021

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	0.0858	0.0587	0.6629	1.9400e-003	0.2012	1.6300e-003	0.2028	0.0534	1.5000e-003	0.0549		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.2012**	**1.6300e-003**	**0.2028**	**0.0534**	**1.5000e-003**	**0.0549**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

3.4 Grading - 2021

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

3.4 Grading - 2021

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	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

3.4 Grading - 2021

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	0.0954	0.0652	0.7365	2.1500e-003	0.2236	1.8100e-003	0.2254	0.0593	1.6600e-003	0.0610		214.4502	214.4502	6.3100e-003		214.6080
Total	**0.0954**	**0.0652**	**0.7365**	**2.1500e-003**	**0.2236**	**1.8100e-003**	**0.2254**	**0.0593**	**1.6600e-003**	**0.0610**		**214.4502**	**214.4502**	**6.3100e-003**		**214.6080**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.410 5	6,011.410 5	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.0896**	**0.0589**	**0.6784**	**2.0800e-003**	**0.2236**	**1.7500e-003**	**0.2253**	**0.0593**	**1.6100e-003**	**0.0609**		**206.9139**	**206.9139**	**5.7000e-003**		**207.0563**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.075 0	3,789.075 0	0.2381		3,795.028 3
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.901 3	8,286.901 3	0.2282		8,292.605 8
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.97 63**	**12,075.97 63**	**0.4663**		**12,087.63 41**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.075 0	3,789.075 0	0.2381		3,795.028 3
Worker	3.5872	2.3593	27.1680	0.0832	8.9533	0.0701	9.0234	2.3745	0.0646	2.4390		8,286.901 3	8,286.901 3	0.2282		8,292.605 8
Total	**4.0156**	**15.5266**	**30.9685**	**0.1186**	**9.8688**	**0.0957**	**9.9645**	**2.6381**	**0.0891**	**2.7271**		**12,075.97 63**	**12,075.97 63**	**0.4663**		**12,087.63 41**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.400 7	3,671.400 7	0.2096		3,676.641 7
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.731 8	7,983.731 8	0.2055		7,988.868 3
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.13 25**	**11,655.13 25**	**0.4151**		**11,665.50 99**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.400 7	3,671.400 7	0.2096		3,676.641 7
Worker	3.3795	2.1338	24.9725	0.0801	8.9533	0.0681	9.0214	2.3745	0.0627	2.4372		7,983.731 8	7,983.731 8	0.2055		7,988.868 5
Total	**3.6978**	**12.1065**	**28.3496**	**0.1144**	**9.8688**	**0.0803**	**9.9491**	**2.6381**	**0.0743**	**2.7124**		**11,655.13 25**	**11,655.13 25**	**0.4151**		**11,665.50 99**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

CalEEMod Version: CalEEMod.2016.3.2 Page 22 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

CalEEMod Version: CalEEMod.2016.3.2 Page 23 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0633	0.0400	0.4677	1.5000e-003	0.1677	1.2800e-003	0.1689	0.0445	1.1700e-003	0.0456		149.5081	149.5081	3.8500e-003		149.6043
Total	**0.0633**	**0.0400**	**0.4677**	**1.5000e-003**	**0.1677**	**1.2800e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**149.5081**	**149.5081**	**3.8500e-003**		**149.6043**

3.6 Paving - 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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

CalEEMod Version: CalEEMod.2016.3.2 Page 24 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.6 Paving - 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	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

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	0.9892	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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

3.6 Paving - 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	0.0601	0.0364	0.4354	1.4500e-003	0.1677	1.2600e-003	0.1689	0.0445	1.1600e-003	0.0456		144.8706	144.8706	3.5300e-003		144.9587
Total	**0.0601**	**0.0364**	**0.4354**	**1.4500e-003**	**0.1677**	**1.2600e-003**	**0.1689**	**0.0445**	**1.1600e-003**	**0.0456**		**144.8706**	**144.8706**	**3.5300e-003**		**144.9587**

3.7 Architectural Coating - 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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1809	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

CalEEMod Version: CalEEMod.2016.3.2 Page 26 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.7 Architectural Coating - 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	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.286 0	1,545.286 0	0.0376		1,546.226 2
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.286 0**	**1,545.286 0**	**0.0376**		**1,546.226 2**

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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1609	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.6406	0.3886	4.6439	0.0155	1.7884	0.0134	1.8018	0.4743	0.0123	0.4866		1,545.286 0	1,545.286 0	0.0376		1,546.226 2
Total	**0.6406**	**0.3886**	**4.6439**	**0.0155**	**1.7884**	**0.0134**	**1.8018**	**0.4743**	**0.0123**	**0.4866**		**1,545.286 0**	**1,545.286 0**	**0.0376**		**1,546.226 2**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

CalEEMod Version: CalEEMod.2016.3.2 | Page 28 of 35 | Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.80 05	47,917.80 05	2.1953		47,972.68 39
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.80 05	47,917.80 05	2.1953		47,972.68 39

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.60	2,673.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

CalEEMod Version: CalEEMod.2016.3.2 Page 30 of 35 Date: 1/6/2021 1:49 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7

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 Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

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 Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.00 00	18,000.00 00	0.3450	0.3300	18,106.96 50
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.59 50**	**18,148.59 50**	**0.4874**	**0.3300**	**18,259.11 92**

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

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

CalEEMod Version: CalEEMod.2016.3.2 Page 1 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Village South Specific Plan (Proposed)
Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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

CalEEMod Version: CalEEMod.2016.3.2 Page 4 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

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					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1788	0.0754	0.2542	0.0000	210.7654	210.7654	0.0600	0.0000	212.2661
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0683	0.2518	0.1103	0.3621	0.0000	1,418.655 4	1,418.655 4	0.1215	0.0000	1,421.692 5
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.441 2	1,342.441 2	0.1116	0.0000	1,345.229 1
2024	4.1592	0.1313	0.2557	5.0000e-004	0.0221	6.3900e-003	0.0285	5.8700e-003	5.9700e-003	0.0118	0.0000	44.8355	44.8355	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.655 4**	**1,418.655 4**	**0.1215**	**0.0000**	**1,421.692 5**

2.1 Overall Construction

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					
2021	0.1704	1.8234	1.1577	2.3800e-003	0.4141	0.0817	0.4958	0.1786	0.0754	0.2542	0.0000	210.7651	210.7651	0.0600	0.0000	212.2658
2022	0.5865	4.0240	5.1546	0.0155	0.9509	0.1175	1.0883	0.2518	0.1103	0.3621	0.0000	1,418.655 0	1,418.655 0	0.1215	0.0000	1,421.692 1
2023	0.5190	3.2850	4.7678	0.0147	0.8497	0.0971	0.9468	0.2283	0.0912	0.3195	0.0000	1,342.440 9	1,342.440 9	0.1115	0.0000	1,345.228 7
2024	4.1592	0.1313	0.2557	6.0000e-004	0.0221	6.3900e-003	0.0285	5.9700e-003	5.9700e-003	0.0118	0.0000	44.8354	44.8354	7.8300e-003	0.0000	44.8311
Maximum	**4.1592**	**4.0240**	**5.1546**	**0.0155**	**0.9509**	**0.1175**	**1.0683**	**0.2518**	**0.1103**	**0.3621**	**0.0000**	**1,418.655 0**	**1,418.655 0**	**0.1215**	**0.0000**	**1,421.692 1**

	ROG	NOx	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	9-1-2021	11-30-2021	1.4091	1.4091
2	12-1-2021	2-28-2022	1.3329	1.3329
3	3-1-2022	5-31-2022	1.1499	1.1499
4	6-1-2022	8-31-2022	1.1457	1.1457
5	9-1-2022	11-30-2022	1.1415	1.1415
6	12-1-2022	2-28-2023	1.0278	1.0278
7	3-1-2023	5-31-2023	0.9868	0.9868
8	6-1-2023	8-31-2023	0.9831	0.9831

CalEEMod Version: CalEEMod.2016.3.2 Page 6 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

9	9-1-2023	11-30-2023	0.9798	0.9798
10	12-1-2023	2-29-2024	2.8757	2.8757
11	3-1-2024	5-31-2024	1.6188	1.6188
		Highest	2.8757	2.8757

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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0468	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

CalEEMod Version: CalEEMod.2016.3.2 Page 7 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Energy	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	3,896.0732	3,896.0732	0.1303	0.0469	3,913.2833
Mobile	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.4986	7,620.4986	0.3407	0.0000	7,629.0162
Waste						0.0000	0.0000		0.0000	0.0000	207.8079	0.0000	207.8079	12.2811	0.0000	514.8354
Water						0.0000	0.0000		0.0000	0.0000	29.1632	556.6420	585.8052	3.0183	0.0755	683.7567
Total	**6.8692**	**9.5223**	**30.3407**	**0.0914**	**7.7979**	**0.2260**	**8.0240**	**2.0895**	**0.2219**	**2.3114**	**236.9712**	**12,294.1807**	**12,531.1519**	**15.7904**	**0.1260**	**12,963.4751**

	ROG	NOx	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

CalEEMod Version: CalEEMod.2016.3.2 Page 8 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 | Page 9 of 44 | Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	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	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

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					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

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	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
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	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

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					0.0496	0.0000	0.0496	7.5100e-003	0.0000	7.5100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**0.0496**	**0.0233**	**0.0729**	**7.5100e-003**	**0.0216**	**0.0291**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

CalEEMod Version: CalEEMod.2016.3.2 Page 12 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.2 Demolition - 2021

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	1.9300e-003	0.0634	0.0148	1.8000e-004	3.9400e-003	1.9000e-004	4.1300e-003	1.0800e-003	1.8000e-004	1.2600e-003	0.0000	17.4566	17.4566	1.2100e-003	0.0000	17.4869
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	7.2000e-004	5.3000e-004	6.0900e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5281	1.5281	5.0000e-005	0.0000	1.5293
Total	**2.6500e-003**	**0.0639**	**0.0209**	**2.0000e-004**	**5.6200e-003**	**2.0000e-004**	**5.8200e-003**	**1.5300e-003**	**1.9000e-004**	**1.7200e-003**	**0.0000**	**18.9847**	**18.9847**	**1.2600e-003**	**0.0000**	**19.0161**

3.3 Site Preparation - 2021

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

CalEEMod Version: CalEEMod.2016.3.2 Page 13 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.3 Site Preparation - 2021

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	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

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	5.8000e-004	4.3000e-004	4.8700e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2225	1.2225	4.0000e-005	0.0000	1.2234
Total	**5.8000e-004**	**4.3000e-004**	**4.8700e-003**	**1.0000e-005**	**1.3400e-003**	**1.0000e-005**	**1.3500e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2225**	**1.2225**	**4.0000e-005**	**0.0000**	**1.2234**

3.4 Grading - 2021

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					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5405	103.5405	0.0335	0.0000	104.3776
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5405**	**103.5405**	**0.0335**	**0.0000**	**104.3776**

3.4 Grading - 2021

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	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

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					0.1741	0.0000	0.1741	0.0693	0.0000	0.0693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0796	0.8816	0.5867	1.1800e-003		0.0377	0.0377		0.0347	0.0347	0.0000	103.5403	103.5403	0.0335	0.0000	104.3775
Total	**0.0796**	**0.8816**	**0.5867**	**1.1800e-003**	**0.1741**	**0.0377**	**0.2118**	**0.0693**	**0.0347**	**0.1040**	**0.0000**	**103.5403**	**103.5403**	**0.0335**	**0.0000**	**104.3775**

3.4 Grading - 2021

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	1.2200e-003	9.0000e-004	0.0103	3.0000e-005	2.8300e-003	2.0000e-005	2.8600e-003	7.5000e-004	2.0000e-005	7.8000e-004	0.0000	2.5808	2.5808	8.0000e-005	0.0000	2.5828
Total	**1.2200e-003**	**9.0000e-004**	**0.0103**	**3.0000e-005**	**2.8300e-003**	**2.0000e-005**	**2.8600e-003**	**7.5000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5808**	**2.5808**	**8.0000e-005**	**0.0000**	**2.5828**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

CalEEMod Version: CalEEMod.2016.3.2 Page 17 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

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					0.0807	0.0000	0.0807	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1360	0.1017	2.2000e-004		5.7200e-003	5.7200e-003		5.2600e-003	5.2600e-003	0.0000	19.0871	19.0871	6.1700e-003	0.0000	19.2414
Total	**0.0127**	**0.1360**	**0.1017**	**2.2000e-004**	**0.0807**	**5.7200e-003**	**0.0865**	**0.0180**	**5.2600e-003**	**0.0233**	**0.0000**	**19.0871**	**19.0871**	**6.1700e-003**	**0.0000**	**19.2414**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.5000e-004	1.7400e-003	1.0000e-005	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4587	0.4587	1.0000e-005	0.0000	0.4590
Total	**2.1000e-004**	**1.5000e-004**	**1.7400e-003**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4587**	**0.4587**	**1.0000e-005**	**0.0000**	**0.4590**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1324	293.1324	0.0702	0.0000	294.8881
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1324**	**293.1324**	**0.0702**	**0.0000**	**294.8881**

CalEEMod Version: CalEEMod.2016.3.2 | Page 19 of 44 | Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.977 1**	**1,105.977 1**	**0.0451**	**0.0000**	**1,107.103 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	tons/yr										MT/yr					
Off-Road	0.2158	1.9754	2.0700	3.4100e-003		0.1023	0.1023		0.0963	0.0963	0.0000	293.1321	293.1321	0.0702	0.0000	294.8877
Total	**0.2158**	**1.9754**	**2.0700**	**3.4100e-003**		**0.1023**	**0.1023**		**0.0963**	**0.0963**	**0.0000**	**293.1321**	**293.1321**	**0.0702**	**0.0000**	**294.8877**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0527	1.6961	0.4580	4.5500e-003	0.1140	3.1800e-003	0.1171	0.0329	3.0400e-003	0.0359	0.0000	441.9835	441.9835	0.0264	0.0000	442.6435
Worker	0.3051	0.2164	2.5233	7.3500e-003	0.7557	6.2300e-003	0.7619	0.2007	5.7400e-003	0.2065	0.0000	663.9936	663.9936	0.0187	0.0000	664.4604
Total	**0.3578**	**1.9125**	**2.9812**	**0.0119**	**0.8696**	**9.4100e-003**	**0.8790**	**0.2336**	**8.7800e-003**	**0.2424**	**0.0000**	**1,105.9771**	**1,105.9771**	**0.0451**	**0.0000**	**1,107.1039**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2789	286.2789	0.0681	0.0000	287.9814
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2789**	**286.2789**	**0.0681**	**0.0000**	**287.9814**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

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	0.1942	1.7765	2.0061	3.3300e-003		0.0864	0.0864		0.0813	0.0813	0.0000	286.2785	286.2785	0.0681	0.0000	287.9811
Total	**0.1942**	**1.7765**	**2.0061**	**3.3300e-003**		**0.0864**	**0.0864**		**0.0813**	**0.0813**	**0.0000**	**286.2785**	**286.2785**	**0.0681**	**0.0000**	**287.9811**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0382	1.2511	0.4011	4.3000e-003	0.1113	1.4600e-003	0.1127	0.0321	1.4000e-003	0.0335	0.0000	417.9930	417.9930	0.0228	0.0000	418.5624
Worker	0.2795	0.1910	2.2635	6.9100e-003	0.7377	5.9100e-003	0.7436	0.1960	5.4500e-003	0.2014	0.0000	624.5363	624.5363	0.0164	0.0000	624.9466
Total	**0.3177**	**1.4420**	**2.6646**	**0.0112**	**0.8490**	**7.3700e-003**	**0.8564**	**0.2281**	**6.8500e-003**	**0.2349**	**0.0000**	**1,042.5294**	**1,042.5294**	**0.0392**	**0.0000**	**1,043.5090**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

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	6.7100e-003	0.0663	0.0948	1.5000e-004		3.3200e-003	3.3200e-003		3.0500e-003	3.0500e-003	0.0000	13.0175	13.0175	4.2100e-003	0.0000	13.1227
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7100e-003**	**0.0663**	**0.0948**	**1.5000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0500e-003**	**3.0500e-003**	**0.0000**	**13.0175**	**13.0175**	**4.2100e-003**	**0.0000**	**13.1227**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.2300e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6156	0.6156	2.0000e-005	0.0000	0.6160
Total	**2.8000e-004**	**1.9000e-004**	**2.2300e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6156**	**0.6156**	**2.0000e-005**	**0.0000**	**0.6160**

3.6 Paving - 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	0.0109	0.1049	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

CalEEMod Version: CalEEMod.2016.3.2 | Page 25 of 44 | Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.6 Paving - 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	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

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	0.0109	0.1049	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.1048**	**0.1609**	**2.5000e-004**		**5.1500e-003**	**5.1500e-003**		**4.7400e-003**	**4.7400e-003**	**0.0000**	**22.0292**	**22.0292**	**7.1200e-003**	**0.0000**	**22.2073**

3.6 Paving - 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	4.4000e-004	2.9000e-004	3.5100e-003	1.0000e-005	1.2300e-003	1.0000e-005	1.2400e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0094	1.0094	3.0000e-005	0.0000	1.0100
Total	**4.4000e-004**	**2.9000e-004**	**3.5100e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0094**	**1.0094**	**3.0000e-005**	**0.0000**	**1.0100**

3.7 Architectural Coating - 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	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

CalEEMod Version: CalEEMod.2016.3.2 Page 27 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

3.7 Architectural Coating - 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	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

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	4.1372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0213	0.0317	5.0000e-005		1.0700e-003	1.0700e-003		1.0700e-003	1.0700e-003	0.0000	4.4682	4.4682	2.5000e-004	0.0000	4.4745
Total	**4.1404**	**0.0213**	**0.0317**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**1.0700e-003**	**1.0700e-003**	**0.0000**	**4.4682**	**4.4682**	**2.5000e-004**	**0.0000**	**4.4745**

3.7 Architectural Coating - 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	7.4800e-003	4.9300e-003	0.0596	1.9000e-004	0.0209	1.6000e-004	0.0211	5.5500e-003	1.5000e-004	5.7000e-003	0.0000	17.1287	17.1287	4.3000e-004	0.0000	17.1394
Total	**7.4800e-003**	**4.9300e-003**	**0.0596**	**1.9000e-004**	**0.0209**	**1.6000e-004**	**0.0211**	**5.5500e-003**	**1.5000e-004**	**5.7000e-003**	**0.0000**	**17.1287**	**17.1287**	**4.3000e-004**	**0.0000**	**17.1394**

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	tons/yr										MT/yr					
Mitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.498 6	7,620.498 6	0.3407	0.0000	7,629.016 2
Unmitigated	1.5857	7.9962	19.1834	0.0821	7.7979	0.0580	7.8559	2.0895	0.0539	2.1434	0.0000	7,620.498 6	7,620.498 6	0.3407	0.0000	7,629.016 2

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

CalEEMod Version: CalEEMod.2016.3.2 Page 31 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	2,512.646 5	2,512.646 5	0.1037	0.0215	2,521.635 6
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,512.646 5	2,512.646 5	0.1037	0.0215	2,521.635 6
NaturalGas Mitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.426 7	1,383.426 7	0.0265	0.0254	1,391.647 8
NaturalGas Unmitigated	0.1398	1.2312	0.7770	7.6200e-003		0.0966	0.0966		0.0966	0.0966	0.0000	1,383.426 7	1,383.426 7	0.0265	0.0254	1,391.647 8

CalEEMod Version: CalEEMod.2016.3.2 Page 32 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

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 Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1488
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

CalEEMod Version: CalEEMod.2016.3.2 | Page 33 of 44 | Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

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 Low Rise	408494	2.2000e-003	0.0188	8.0100e-003	1.2000e-004		1.5200e-003	1.5200e-003		1.5200e-003	1.5200e-003	0.0000	21.7988	21.7988	4.2000e-004	4.0000e-004	21.9284
Apartments Mid Rise	1.30613e+007	0.0704	0.6018	0.2561	3.8400e-003		0.0487	0.0487		0.0487	0.0487	0.0000	696.9989	696.9989	0.0134	0.0128	701.1408
General Office Building	468450	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	24.9983	24.9983	4.8000e-004	4.6000e-004	25.1488
High Turnover (Sit Down Restaurant)	8.30736e+006	0.0448	0.4072	0.3421	2.4400e-003		0.0310	0.0310		0.0310	0.0310	0.0000	443.3124	443.3124	8.5000e-003	8.1300e-003	445.9468
Hotel	1.74095e+006	9.3900e-003	0.0853	0.0717	5.1000e-004		6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	92.9036	92.9036	1.7800e-003	1.7000e-003	93.4557
Quality Restaurant	1.84608e+006	9.9500e-003	0.0905	0.0760	5.4000e-004		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	98.5139	98.5139	1.8900e-003	1.8100e-003	99.0993
Regional Shopping Center	91840	5.0000e-004	4.5000e-003	3.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.9009	4.9009	9.0000e-005	9.0000e-005	4.9301
Total		**0.1398**	**1.2312**	**0.7770**	**7.6200e-003**		**0.0966**	**0.0966**		**0.0966**	**0.0966**	**0.0000**	**1,383.4268**	**1,383.4268**	**0.0265**	**0.0254**	**1,391.6478**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.8465**	**0.1037**	**0.0215**	**2,521.8356**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	106010	33.7770	1.3900e-003	2.9000e-004	33.8978
Apartments Mid Rise	3.94697e+006	1,257.5879	0.0519	0.0107	1,262.0869
General Office Building	584550	186.2502	7.6900e-003	1.5900e-003	186.9165
High Turnover (Sit Down Restaurant)	1.58904e+006	506.3022	0.0209	4.3200e-003	508.1135
Hotel	550308	175.3399	7.2400e-003	1.5000e-003	175.9672
Quality Restaurant	353120	112.5116	4.6500e-003	9.6000e-004	112.9141
Regional Shopping Center	756000	240.8778	9.9400e-003	2.0600e-003	241.7395
Total		**2,512.8465**	**0.1037**	**0.0215**	**2,521.6356**

6.0 Area Detail

6.1 Mitigation Measures Area

CalEEMod Version: CalEEMod.2016.3.2 Page 36 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835
Unmitigated	5.1437	0.2950	10.3804	1.6700e-003		0.0714	0.0714		0.0714	0.0714	0.0000	220.9670	220.9670	0.0201	3.7400e-003	222.5835

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	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

6.2 Area by SubCategory

<u>Mitigated</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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3998					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0206	0.1763	0.0750	1.1200e-003		0.0143	0.0143		0.0143	0.0143	0.0000	204.1166	204.1166	3.9100e-003	3.7400e-003	205.3295
Landscaping	0.3096	0.1187	10.3054	5.4000e-004		0.0572	0.0572		0.0572	0.0572	0.0000	16.8504	16.8504	0.0161	0.0000	17.2540
Total	**5.1437**	**0.2950**	**10.3804**	**1.6600e-003**		**0.0714**	**0.0714**		**0.0714**	**0.0714**	**0.0000**	**220.9670**	**220.9670**	**0.0201**	**3.7400e-003**	**222.5835**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	585.8052	3.0183	0.0755	683.7567
Unmitigated	585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		585.8052	3.0183	0.0755	683.7567

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	1.62885 / 1.02688	10.9095	0.0535	1.3400e-003	12.6471
Apartments Mid Rise	63.5252 / 40.0485	425.4719	2.0867	0.0523	493.2363
General Office Building	7.99802 / 4.90201	53.0719	0.2627	6.5900e-003	61.6019
High Turnover (Sit Down Restaurant)	10.9272 / 0.697482	51.2702	0.3580	8.8200e-003	62.8482
Hotel	1.26834 / 0.140927	6.1633	0.0416	1.0300e-003	7.5079
Quality Restaurant	2.42827 / 0.154996	11.3934	0.0796	1.9600e-003	13.9663
Regional Shopping Center	4.14806 / 2.54236	27.5250	0.1363	3.4200e-003	31.9490
Total		585.8052	3.0183	0.0755	683.7567

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	207.8079	12.2811	0.0000	514.8354
Unmitigated	207.8079	12.2811	0.0000	514.8354

CalEEMod Version: CalEEMod.2016.3.2 Page 42 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0484
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	11.5	2.3344	0.1380	0.0000	5.7834
Apartments Mid Rise	448.5	91.0415	5.3804	0.0000	225.5513
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
High Turnover (Sit Down Restaurant)	428.4	86.9613	5.1393	0.0000	215.4430
Hotel	27.38	5.5579	0.3285	0.0000	13.7694
Quality Restaurant	7.3	1.4818	0.0876	0.0000	3.6712
Regional Shopping Center	58.8	11.9359	0.7054	0.0000	29.5706
Total		**207.8079**	**12.2811**	**0.0000**	**514.8354**

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

CalEEMod Version: CalEEMod.2016.3.2 Page 44 of 44 Date: 1/12/2021 2:26 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Version: CalEEMod.2016.3.2 Page 1 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Village South Specific Plan (Proposed)
Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

CalEEMod Version: CalEEMod.2016.3.2 Page 3 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.416 6	6,163.416 6	1.9475	0.0000	6,212.103 9
2022	4.5441	38.8811	40.8776	0.1240	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.44 03	12,493.44 03	1.9485	0.0000	12,518.57 07
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.48 90	12,150.48 90	0.9589	0.0000	12,174.46 15
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.180 8	2,313.180 8	0.7166	0.0000	2,331.095 6
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.44 03**	**12,493.44 03**	**1.9485**	**0.0000**	**12,518.57 07**

2.1 Overall Construction (Maximum Daily Emission)

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					
2021	4.2561	46.4415	31.4494	0.0636	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,163.416 6	6,163.416 6	1.9475	0.0000	6,212.103 9
2022	4.5441	38.8811	40.8776	0.1240	6.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,493.44 03	12,493.44 03	1.9485	0.0000	12,518.57 07
2023	4.1534	25.7658	38.7457	0.1206	7.0088	0.7592	7.7679	1.8799	0.7136	2.5935	0.0000	12,150.48 90	12,150.48 90	0.9589	0.0000	12,174.46 15
2024	237.0219	9.5478	14.9642	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,313.180 8	2,313.180 8	0.7166	0.0000	2,331.095 5
Maximum	**237.0219**	**46.4415**	**40.8776**	**0.1240**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,493.44 03**	**12,493.44 03**	**1.9485**	**0.0000**	**12,518.57 07**

	ROG	NOx	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

CalEEMod Version: CalEEMod.2016.3.2 Page 6 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1169**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	18,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.6034	50,306.6034	2.1807		50,361.1208
Total	**41.1168**	**67.2262**	**207.5497**	**0.6278**	**45.9592**	**2.4626**	**48.4217**	**12.2950**	**2.4385**	**14.7336**	**0.0000**	**76,811.1816**	**76,811.1816**	**2.8282**	**0.4832**	**77,025.8786**

	ROG	NOx	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	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 Page 8 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	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	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

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					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	0.1273	4.0952	0.9602	0.0119	0.2689	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.241 3	1,292.241 3	0.0877		1,294.433 7
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	0.0487	0.0313	0.4282	1.1800e-003	0.1141	9.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3678
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.521 2**	**1,409.521 2**	**0.0912**		**1,411.801 5**

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					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

CalEEMod Version: CalEEMod.2016.3.2 | Page 11 of 35 | Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.2 Demolition - 2021

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	0.1273	4.0952	0.9602	0.0119	0.2689	0.0126	0.2795	0.0732	0.0120	0.0852		1,292.241 3	1,292.241 3	0.0877		1,294.433 7
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	0.0487	0.0313	0.4282	1.1800e-003	0.1141	8.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		117.2799	117.2799	3.5200e-003		117.3679
Total	**0.1760**	**4.1265**	**1.3884**	**0.0131**	**0.3810**	**0.0135**	**0.3946**	**0.1034**	**0.0129**	**0.1163**		**1,409.521 2**	**1,409.521 2**	**0.0912**		**1,411.801 5**

3.3 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

3.3 Site Preparation - 2021

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	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

3.3 Site Preparation - 2021

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	0.0584	0.0375	0.5139	1.4100e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		140.7359	140.7359	4.2200e-003		140.8414
Total	**0.0584**	**0.0375**	**0.5139**	**1.4100e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**140.7359**	**140.7359**	**4.2200e-003**		**140.8414**

3.4 Grading - 2021

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

3.4 Grading - 2021

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	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

CalEEMod Version: CalEEMod.2016.3.2 | Page 15 of 35 | Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.4 Grading - 2021

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	0.0649	0.0417	0.5710	1.5700e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		156.3732	156.3732	4.6900e-003		156.4904
Total	**0.0649**	**0.0417**	**0.5710**	**1.5700e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**156.3732**	**156.3732**	**4.6900e-003**		**156.4904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.410 5	6,011.410 5	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0607	0.0376	0.5263	1.5100e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		150.8754	150.8754	4.2400e-003		150.9813
Total	**0.0607**	**0.0376**	**0.5263**	**1.5100e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**150.8754**	**150.8754**	**4.2400e-003**		**150.9813**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4075	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.548 2	3,896.548 2	0.2236		3,902.138 4
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.558 5	6,042.558 5	0.1697		6,046.800 0
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.106 7**	**9,939.106 7**	**0.3933**		**9,948.938 4**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

CalEEMod Version: CalEEMod.2016.3.2 Page 19 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4079	13.2032	3.4341	0.0364	0.9155	0.0248	0.9404	0.2636	0.0237	0.2873		3,896.548 2	3,896.548 2	0.2236		3,902.138 4
Worker	2.4299	1.5074	21.0801	0.0607	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		6,042.558 5	6,042.558 5	0.1697		6,046.800 0
Total	**2.8378**	**14.7106**	**24.5142**	**0.0971**	**7.0087**	**0.0741**	**7.0828**	**1.8799**	**0.0691**	**1.9490**		**9,939.106 7**	**9,939.106 7**	**0.3933**		**9,948.938 4**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.876 2	3,773.876 2	0.1992		3,776.830 0
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.402 8	5,821.402 9	0.1529		5,825.225 4
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.279 0**	**9,595.279 0**	**0.3511**		**9,604.055 4**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

CalEEMod Version: CalEEMod.2016.3.2 Page 21 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3027	10.0181	3.1014	0.0352	0.9156	0.0116	0.9271	0.2636	0.0111	0.2747		3,773.876 2	3,773.876 2	0.1982		3,776.830 0
Worker	2.2780	1.3628	19.4002	0.0584	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,821.402 8	5,821.402 9	0.1529		5,825.225 4
Total	**2.5807**	**11.3809**	**22.5017**	**0.0936**	**7.0088**	**0.0595**	**7.0682**	**1.8799**	**0.0552**	**1.9350**		**9,595.279 0**	**9,595.279 0**	**0.3511**		**9,604.055 4**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

CalEEMod Version: CalEEMod.2016.3.2 Page 23 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0427	0.0255	0.3633	1.0900e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		109.0150	109.0150	2.8600e-003		109.0866
Total	**0.0427**	**0.0255**	**0.3633**	**1.0900e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**109.0150**	**109.0150**	**2.8600e-003**		**109.0866**

3.6 Paving - 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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

3.6 Paving - 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	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

CalEEMod Version: CalEEMod.2016.3.2 Page 25 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.6 Paving - 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	0.0403	0.0233	0.3384	1.0600e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		105.6336	105.6336	2.6300e-003		105.6992
Total	**0.0403**	**0.0233**	**0.3384**	**1.0600e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**105.6336**	**105.6336**	**2.6300e-003**		**105.6992**

3.7 Architectural Coating - 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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1809	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

CalEEMod Version: CalEEMod.2016.3.2 Page 26 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

3.7 Architectural Coating - 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	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4585
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.4296	0.2481	3.6098	0.0113	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,126.7583	1,126.7583	0.0280		1,127.4585
Total	**0.4296**	**0.2481**	**3.6098**	**0.0113**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,126.7583**	**1,126.7583**	**0.0280**		**1,127.4583**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

CalEEMod Version: CalEEMod.2016.3.2 Page 28 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive 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	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.60 34	50,306.60 34	2.1807		50,361.12 08
Unmitigated	9.8489	45.4304	114.8495	0.4917	45.9592	0.3360	46.2951	12.2950	0.3119	12.6070		50,306.60 34	50,306.60 34	2.1807		50,361.12 08

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.60	2,673.52	2617.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive 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	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7

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 Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

CalEEMod Version: CalEEMod.2016.3.2 Page 32 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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 Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

6.0 Area Detail

6.1 Mitigation Measures Area

CalEEMod Version: CalEEMod.2016.3.2 Page 33 of 35 Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive 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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.00 00	18,000.00 00	0.3450	0.3300	18,106.96 50
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.59 50**	**18,148.59 50**	**0.4874**	**0.3300**	**18,259.11 92**

CalEEMod Version: CalEEMod.2016.3.2 | Page 34 of 35 | Date: 1/12/2021 2:29 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Summer

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	2.2870					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

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

CalEEMod Version: CalEEMod.2016.3.2 Page 1 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Village South Specific Plan (Proposed)
Los Angeles-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	45.00	1000sqft	1.03	45,000.00	0
High Turnover (Sit Down Restaurant)	36.00	1000sqft	0.83	36,000.00	0
Hotel	50.00	Room	1.67	72,600.00	0
Quality Restaurant	8.00	1000sqft	0.18	8,000.00	0
Apartments Low Rise	25.00	Dwelling Unit	1.56	25,000.00	72
Apartments Mid Rise	975.00	Dwelling Unit	25.66	975,000.00	2789
Regional Shopping Center	56.00	1000sqft	1.29	56,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2 Page 2 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

Table Name	Column Name	Default Value	New Value
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberWood	1.25	0.00
tblFireplaces	NumberWood	48.75	0.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblVehicleTrips	ST_TR	7.16	6.17
tblVehicleTrips	ST_TR	6.39	3.87
tblVehicleTrips	ST_TR	2.46	1.39
tblVehicleTrips	ST_TR	158.37	79.82

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

tblVehicleTrips	ST_TR	8.19	3.75
tblVehicleTrips	ST_TR	94.36	63.99
tblVehicleTrips	ST_TR	49.97	10.74
tblVehicleTrips	SU_TR	6.07	6.16
tblVehicleTrips	SU_TR	5.86	4.18
tblVehicleTrips	SU_TR	1.05	0.69
tblVehicleTrips	SU_TR	131.84	78.27
tblVehicleTrips	SU_TR	5.95	3.20
tblVehicleTrips	SU_TR	72.16	57.65
tblVehicleTrips	SU_TR	25.24	6.39
tblVehicleTrips	WD_TR	6.59	5.83
tblVehicleTrips	WD_TR	6.65	4.13
tblVehicleTrips	WD_TR	11.03	6.41
tblVehicleTrips	WD_TR	127.15	65.80
tblVehicleTrips	WD_TR	8.17	3.84
tblVehicleTrips	WD_TR	89.95	62.64
tblVehicleTrips	WD_TR	42.70	9.43
tblWoodstoves	NumberCatalytic	1.25	0.00
tblWoodstoves	NumberCatalytic	48.75	0.00
tblWoodstoves	NumberNoncatalytic	1.25	0.00
tblWoodstoves	NumberNoncatalytic	48.75	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					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.337 7	6,154.337 7	1.9472	0.0000	6,203.018 6
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.34 40	12,035.34 40	1.9482	0.0000	12,060.60 13
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.40 80	11,710.40 80	0.9617	0.0000	11,734.44 97
2024	237.0656	9.5503	14.9372	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.051 7	2,307.051 7	0.7164	0.0000	2,324.962 7
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.34 40**	**12,035.34 40**	**1.9482**	**0.0000**	**12,060.60 13**

2.1 Overall Construction (Maximum Daily Emission)

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					
2021	4.2621	46.4460	31.4068	0.0635	18.2032	2.0456	20.2488	9.9670	1.8820	11.8490	0.0000	6,154.3377	6,154.3377	1.9472	0.0000	6,203.0186
2022	4.7966	38.8851	39.6338	0.1195	8.8255	1.6361	10.4616	3.6369	1.5052	5.1421	0.0000	12,035.3440	12,035.3440	1.9482	0.0000	12,060.6013
2023	4.3939	25.8648	37.5031	0.1162	7.0088	0.7598	7.7685	1.8799	0.7142	2.5940	0.0000	11,710.4080	11,710.4080	0.9617	0.0000	11,734.4497
2024	237.0656	9.5503	14.9372	0.0239	1.2171	0.4694	1.2875	0.3229	0.4319	0.4621	0.0000	2,307.0517	2,307.0517	0.7164	0.0000	2,324.9627
Maximum	**237.0656**	**46.4460**	**39.6338**	**0.1195**	**18.2032**	**2.0456**	**20.2488**	**9.9670**	**1.8820**	**11.8490**	**0.0000**	**12,035.3440**	**12,035.3440**	**1.9482**	**0.0000**	**12,060.6013**

	ROG	NOx	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

CalEEMod Version: CalEEMod.2016.3.2 Page 6 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	19,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.5950	18,148.5950	0.4874	0.3300	19,259.1192
Energy	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.9832	8,355.9832	0.1602	0.1532	8,405.6387
Mobile	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.8005	47,917.8005	2.1953		47,972.6839
Total	**40.7912**	**67.7872**	**202.7424**	**0.6043**	**45.9592**	**2.4640**	**48.4231**	**12.2950**	**2.4399**	**14.7349**	**0.0000**	**74,422.3787**	**74,422.3787**	**2.8429**	**0.4832**	**74,637.4417**

CalEEMod Version: CalEEMod.2016.3.2 Page 7 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	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	9/1/2021	10/12/2021	5	30	
2	Site Preparation	Site Preparation	10/13/2021	11/9/2021	5	20	
3	Grading	Grading	11/10/2021	1/11/2022	5	45	
4	Building Construction	Building Construction	1/12/2022	12/12/2023	5	500	
5	Paving	Paving	12/13/2023	1/30/2024	5	35	
6	Architectural Coating	Architectural Coating	1/31/2024	3/19/2024	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

CalEEMod Version: CalEEMod.2016.3.2 | Page 8 of 35 | Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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	15.00	0.00	458.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	801.00	143.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	160.00	0.00	0.00	10.00	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

<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					
Fugitive Dust					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

CalEEMod Version: CalEEMod.2016.3.2 Page 10 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.2 Demolition - 2021

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	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.855 5	1,269.855 5	0.0908		1,272.125 2
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	0.0532	0.0346	0.3963	1.1100e-003	0.1141	8.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.326 2**	**1,380.326 2**	**0.0941**		**1,382.679 1**

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					3.3074	0.0000	3.3074	0.5008	0.0000	0.5008			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**3.3074**	**1.5513**	**4.8588**	**0.5008**	**1.4411**	**1.9419**	**0.0000**	**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

CalEEMod Version: CalEEMod.2016.3.2 Page 11 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.2 Demolition - 2021

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	0.1304	4.1454	1.0182	0.0117	0.2669	0.0128	0.2797	0.0732	0.0122	0.0854		1,269.855 5	1,269.855 5	0.0908		1,272.125 2
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	0.0532	0.0346	0.3963	1.1100e-003	0.1141	8.5000e-004	0.1151	0.0303	8.8000e-004	0.0311		110.4707	110.4707	3.3300e-003		110.5539
Total	**0.1835**	**4.1800**	**1.4144**	**0.0128**	**0.3810**	**0.0137**	**0.3948**	**0.1034**	**0.0131**	**0.1165**		**1,380.326 2**	**1,380.326 2**	**0.0941**		**1,382.679 1**

3.3 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

CalEEMod Version: CalEEMod.2016.3.2 Page 12 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.3 Site Preparation - 2021

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	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

CalEEMod Version: CalEEMod.2016.3.2 Page 13 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.3 Site Preparation - 2021

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	0.0638	0.0415	0.4755	1.3300e-003	0.1369	1.1400e-003	0.1381	0.0363	1.0500e-003	0.0374		132.5649	132.5649	3.9900e-003		132.6646
Total	**0.0638**	**0.0415**	**0.4755**	**1.3300e-003**	**0.1369**	**1.1400e-003**	**0.1381**	**0.0363**	**1.0500e-003**	**0.0374**		**132.5649**	**132.5649**	**3.9900e-003**		**132.6646**

3.4 Grading - 2021

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

CalEEMod Version: CalEEMod.2016.3.2 Page 14 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.4 Grading - 2021

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	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.043 4	6,007.043 4	1.9428		6,055.613 4
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**	**0.0000**	**6,007.043 4**	**6,007.043 4**	**1.9428**		**6,055.613 4**

CalEEMod Version: CalEEMod.2016.3.2 Page 15 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.4 Grading - 2021

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	0.0709	0.0462	0.5284	1.4800e-003	0.1521	1.2700e-003	0.1534	0.0404	1.1700e-003	0.0415		147.2943	147.2943	4.4300e-003		147.4051
Total	**0.0709**	**0.0462**	**0.5284**	**1.4800e-003**	**0.1521**	**1.2700e-003**	**0.1534**	**0.0404**	**1.1700e-003**	**0.0415**		**147.2943**	**147.2943**	**4.4300e-003**		**147.4051**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

CalEEMod Version: CalEEMod.2016.3.2 Page 16 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.410 5	6,011.410 5	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**	**0.0000**	**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0665	0.0416	0.4861	1.4300e-003	0.1521	1.2300e-003	0.1534	0.0404	1.1300e-003	0.0415		142.1207	142.1207	4.0000e-003		142.2207
Total	**0.0665**	**0.0416**	**0.4861**	**1.4300e-003**	**0.1521**	**1.2300e-003**	**0.1534**	**0.0404**	**1.1300e-003**	**0.0415**		**142.1207**	**142.1207**	**4.0000e-003**		**142.2207**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

CalEEMod Version: CalEEMod.2016.3.2 Page 18 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.075 0	3,789.075 0	0.2381		3,795.028 3
Worker	2.6620	1.6677	19.4899	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.935 4	5,691.935 4	0.1602		5,695.940 8
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.010 4**	**9,481.010 4**	**0.3984**		**9,490.969 1**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4284	13.1673	3.8005	0.0354	0.9155	0.0256	0.9412	0.2636	0.0245	0.2881		3,789.075 0	3,789.075 0	0.2381		3,795.028 3
Worker	2.6620	1.6677	19.4699	0.0571	6.0932	0.0493	6.1425	1.6163	0.0454	1.6617		5,691.935 4	5,691.935 4	0.1602		5,695.940 8
Total	**3.0904**	**14.8350**	**23.2704**	**0.0926**	**7.0087**	**0.0749**	**7.0836**	**1.8799**	**0.0699**	**1.9498**		**9,481.010 4**	**9,481.010 4**	**0.3984**		**9,490.969 1**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

CalEEMod Version: CalEEMod.2016.3.2 Page 20 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.400 7	3,671.400 7	0.2096		3,676.641 7
Worker	2.5028	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.797 4	5,483.797 4	0.1442		5,487.402 0
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.198 1**	**9,155.198 1**	**0.3538**		**9,164.043 7**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.3183	9.9726	3.3771	0.0343	0.9156	0.0122	0.9277	0.2636	0.0116	0.2752		3,671.400 7	3,671.400 7	0.2096		3,676.641 7
Worker	2.5028	1.5073	17.8820	0.0550	6.0932	0.0479	6.1411	1.6163	0.0441	1.6604		5,483.797 4	5,483.797 4	0.1442		5,487.402 0
Total	**2.8211**	**11.4799**	**21.2591**	**0.0893**	**7.0088**	**0.0601**	**7.0688**	**1.8799**	**0.0557**	**1.9356**		**9,155.198 1**	**9,155.198 1**	**0.3538**		**9,164.043 7**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0469	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.584 1	2,207.584 1	0.7140		2,225.433 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.584 1**	**2,207.584 1**	**0.7140**		**2,225.433 6**

CalEEMod Version: CalEEMod.2016.3.2 Page 23 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0489	0.0282	0.3349	1.0300e-003	0.1141	9.0000e-004	0.1150	0.0303	8.3000e-004	0.0311		102.6928	102.6928	2.7000e-003		102.7603
Total	**0.0469**	**0.0282**	**0.3349**	**1.0300e-003**	**0.1141**	**9.0000e-004**	**0.1150**	**0.0303**	**8.3000e-004**	**0.0311**		**102.6928**	**102.6928**	**2.7000e-003**		**102.7603**

3.6 Paving - 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	0.9892	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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

CalEEMod Version: CalEEMod.2016.3.2 Page 24 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.6 Paving - 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	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**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**

3.6 Paving - 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	0.0444	0.0257	0.3114	1.0000e-003	0.1141	8.8000e-004	0.1150	0.0303	8.1000e-004	0.0311		99.5045	99.5045	2.4700e-003		99.5663
Total	**0.0444**	**0.0257**	**0.3114**	**1.0000e-003**	**0.1141**	**8.8000e-004**	**0.1150**	**0.0303**	**8.1000e-004**	**0.0311**		**99.5045**	**99.5045**	**2.4700e-003**		**99.5663**

3.7 Architectural Coating - 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	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1809	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

CalEEMod Version: CalEEMod.2016.3.2 Page 26 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

3.7 Architectural Coating - 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	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.381 8	1,061.381 8	0.0264		1,062.041 0
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.381 8**	**1,061.381 8**	**0.0264**		**1,062.041 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					
Archit. Coating	236.4115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1809	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**236.5923**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.4734	0.2743	3.3220	0.0107	1.2171	9.4300e-003	1.2266	0.3229	8.6800e-003	0.3315		1,061.381 8	1,061.381 8	0.0264		1,062.041 0
Total	**0.4734**	**0.2743**	**3.3220**	**0.0107**	**1.2171**	**9.4300e-003**	**1.2266**	**0.3229**	**8.6800e-003**	**0.3315**		**1,061.381 8**	**1,061.381 8**	**0.0264**		**1,062.041 0**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

CalEEMod Version: CalEEMod.2016.3.2 Page 28 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.80 05	47,917.80 05	2.1953		47,972.68 39
Unmitigated	9.5233	45.9914	110.0422	0.4681	45.9592	0.3373	46.2965	12.2950	0.3132	12.6083		47,917.80 05	47,917.80 05	2.1953		47,972.68 39

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	145.75	154.25	154.00	506,227	506,227
Apartments Mid Rise	4,026.75	3,773.25	4075.50	13,660,065	13,660,065
General Office Building	288.45	62.55	31.05	706,812	706,812
High Turnover (Sit Down Restaurant)	2,368.80	2,873.52	2817.72	3,413,937	3,413,937
Hotel	192.00	187.50	160.00	445,703	445,703
Quality Restaurant	501.12	511.92	461.20	707,488	707,488
Regional Shopping Center	528.08	601.44	357.84	1,112,221	1,112,221
Total	8,050.95	8,164.43	8,057.31	20,552,452	20,552,452

4.3 Trip Type Information

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

	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 Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	38	18	44
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Apartments Mid Rise	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
General Office Building	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
High Turnover (Sit Down Restaurant)	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Hotel	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Quality Restaurant	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821
Regional Shopping Center	0.543088	0.044216	0.209971	0.116369	0.014033	0.006332	0.021166	0.033577	0.002613	0.001817	0.005285	0.000712	0.000821

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	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7
NaturalGas Unmitigated	0.7660	6.7462	4.2573	0.0418		0.5292	0.5292		0.5292	0.5292		8,355.983 2	8,355.983 2	0.1602	0.1532	8,405.638 7

CalEEMod Version: CalEEMod.2016.3.2 Page 31 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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 Low Rise	1119.16	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35784.3	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.9164	4,209.9164	0.0807	0.0772	4,234.9339
General Office Building	1283.42	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22759.9	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.6342	2,677.6342	0.0513	0.0491	2,693.5460
Hotel	4769.72	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5057.75	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	251.616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.9832**	**8,355.9832**	**0.1602**	**0.1532**	**8,405.6387**

CalEEMod Version: CalEEMod.2016.3.2 Page 32 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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 Low Rise	1.11916	0.0121	0.1031	0.0439	6.6000e-004		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003		131.6662	131.6662	2.5200e-003	2.4100e-003	132.4486
Apartments Mid Rise	35.7843	0.3859	3.2978	1.4033	0.0211		0.2666	0.2666		0.2666	0.2666		4,209.916 4	4,209.916 4	0.0807	0.0772	4,234.933 9
General Office Building	1.28342	0.0138	0.1258	0.1057	7.5000e-004		9.5600e-003	9.5600e-003		9.5600e-003	9.5600e-003		150.9911	150.9911	2.8900e-003	2.7700e-003	151.8894
High Turnover (Sit Down Restaurant)	22.7599	0.2455	2.2314	1.8743	0.0134		0.1696	0.1696		0.1696	0.1696		2,677.634 2	2,677.634 2	0.0513	0.0491	2,693.546 0
Hotel	4.76972	0.0514	0.4676	0.3928	2.8100e-003		0.0355	0.0355		0.0355	0.0355		561.1436	561.1436	0.0108	0.0103	564.4782
Quality Restaurant	5.05775	0.0545	0.4959	0.4165	2.9800e-003		0.0377	0.0377		0.0377	0.0377		595.0298	595.0298	0.0114	0.0109	598.5658
Regional Shopping Center	0.251616	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.6019	29.6019	5.7000e-004	5.4000e-004	29.7778
Total		**0.7660**	**6.7463**	**4.2573**	**0.0418**		**0.5292**	**0.5292**		**0.5292**	**0.5292**		**8,355.983 2**	**8,355.983 2**	**0.1602**	**0.1532**	**8,405.638 7**

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	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92
Unmitigated	30.5020	15.0496	88.4430	0.0944		1.5974	1.5974		1.5974	1.5974	0.0000	18,148.59 50	18,148.59 50	0.4874	0.3300	18,259.11 92

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.00 00	18,000.00 00	0.3450	0.3300	18,106.96 50
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.59 50**	**18,148.59 50**	**0.4874**	**0.3300**	**18,259.11 92**

CalEEMod Version: CalEEMod.2016.3.2 Page 34 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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	2.2670					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.1085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1.6500	14.1000	6.0000	0.0900		1.1400	1.1400		1.1400	1.1400	0.0000	18,000.0000	18,000.0000	0.3450	0.3300	18,106.9650
Landscaping	2.4766	0.9496	82.4430	4.3600e-003		0.4574	0.4574		0.4574	0.4574		148.5950	148.5950	0.1424		152.1542
Total	**30.5020**	**15.0496**	**88.4430**	**0.0944**		**1.5974**	**1.5974**		**1.5974**	**1.5974**	**0.0000**	**18,148.5950**	**18,148.5950**	**0.4874**	**0.3300**	**18,259.1192**

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

CalEEMod Version: CalEEMod.2016.3.2 Page 35 of 35 Date: 1/12/2021 2:30 PM

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

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 C

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

EXHIBIT B

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

SOIL WATER AIR PROTECTION ENTERPRISE
2656 29th Street, Suite 201
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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:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Presentations:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Teaching Experience:

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

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

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

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

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

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

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

Academic Grants Awarded:

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

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

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

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

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

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

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

Deposition and/or Trial Testimony:

In the 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
Warm 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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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).

Senior Regulatory and Litigation Support Analyst:

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.

Other Experience:

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

9

EXHIBIT D

76578 Federal Register / Vol. 87, No. 240 / Thursday, December 15, 2022 / Rules and Regulations

[Revise the heading "8.0 Mailing List Services" to read as follows:]

8.0 Address Management System

* * * * *

[Replace current section 8.0 with new text to read as follows:]

8.0 Address Management System

8.1 Address Management System Products and Fees

For Address Management System (AMS) products and fees, see Notice 123—Price List.

8.1.2 Carrier Route Information System

The official city delivery scheme, called the Carrier Route Information System, is available to mailers.

8.1.3 Address Changes to Election Boards and Voter Registration Commissions

For the designated fee, the USPS provides address changes to election boards and voter registration commissions.

8.2 Election Boards and Voter Registration Commissions

8.2.1 General

Election boards or voter registration commissions may use the "Return Service Requested" endorsement and/or the National Change of Address Linkage System (NCOA[Link]) to maintain current address lists.

8.2.2 Fee Assessment

The fee for address changes provided to election boards and voter registration commissions is assessed for each Form 3575 submitted. The fee is collected on a per card basis regardless of the number of changes made on the card and whether the change concerns a person on the board's or commission's list of registrants. Instead of the actual forms, the USPS may supply facsimiles of the forms or copies of the information they contain at no additional fee.

8.2.3 Procedure

Election boards or voter registration commissions using permanent registration may obtain residential change-of-address information from Forms 3575:

a. An authorized official of the board or commission must sign and submit to the manager, address management systems (district), a written request that lists the Post Offices for which change-of-address information is desired.

b. If the request is approved, an agreement must be obtained from and signed by an authorized official of the board or commission detailing the terms under which the change-of-address information is to be released.

c. The board or commission receives the requested information from the postmasters of the listed Post Offices and pays those postmasters the applicable fees.

* * * * *

705 Advanced Preparation and Special Postage Payment Systems

* * * * *

8.0 Preparing Pallets

* * * * *

8.10 Pallet Presort and Labeling

* * * * *

8.10.3 USPS Marketing Mail or Parcel Select Lightweight—Bundles, Sacks, or Trays

* * * * *

[Revise the text of 8.10.3e to read as follows]

e. SCF, required, permitted for bundles, sacks, and trays. Pallet may contain carrier route, automation price, and/or Presorted price mail for the 3-digit ZIP Code groups in L005, or L051 for Parcel Select Lightweight sacks. Mailers may, at their option, place AADC trays on SCF pallets when the tray's "label to" 3-digit ZIP Code (from L801) is within that SCF's service area. Mailers may also, at their option, place mixed ADC or mixed AADC trays, labeled per L010, on an SCF pallet entered at the SCF facility responsible for the processing of mixed ADC or mixed AADC trays for that NDC/ASF facility. The SCF Pallet discount applies to 3-Digit, 5-Digit, Carrier Route, High Density, High Density Plus, Saturation (including EDDM—Not Retail) USPS Marketing Mail flat shaped pieces on a SCF pallet entered at an Origin (None), DNDC, or DSCF entry. SCF pallet discount does not apply to Marketing Mail letters or parcels. Labeling: * * *

Notice 123 (Price List)

[Revise prices as applicable.]

* * * * *

We will publish an appropriate amendment to 39 CFR part 111 to reflect these changes.

Sarah Sullivan,

Attorney, Ethics & Legal Compliance.

[FR Doc. 2022–26973 Filed 12–14–22; 8:45 am]

BILLING CODE 7710–12–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 312

[EPA–HQ–OLEM–2021–0946; FRL–9334.1–01–OLEM]

Standards and Practices for All Appropriate Inquiries

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is taking final action to amend the Standards and Practices for All Appropriate Inquiries to reference a standard practice recently made available by ASTM International, a widely recognized standards developing organization. Specifically, this final rule amends the All Appropriate Inquiries Rule (AAI rule) to reference ASTM International's E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" and allow for its use to satisfy the requirements for conducting all appropriate inquiries under the Comprehensive Environmental Response, Compensation and Liability Act, and to remove after one year recognition of the previous version of that standard, ASTM E1527–13, as compliant with the AAI rule.

DATES: This rule is effective on February 13, 2023.

FOR FURTHER INFORMATION CONTACT: For more detailed information on specific aspects of this rule, contact Patricia Overmeyer, Office of Brownfields and Land Revitalization (5105T), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460–0002, 202–566–2774, or *Overmeyer.patricia@epa.gov.*

SUPPLEMENTARY INFORMATION: Throughout this document, "we," "us," and "our" refer to the EPA.

Table of Contents

I. Does this action apply to me?

This action offers certain parties the option of using an available industry standard to conduct all appropriate inquiries. Parties purchasing potentially contaminated properties may use the ASTM E1527–21 standard practice to comply with the all appropriate inquiries requirements of the Comprehensive Environmental Response, Compensation, and Liability

Federal Register / Vol. 87, No. 240 / Thursday, December 15, 2022 / Rules and Regulations **76579**

Act (CERCLA). This rule does not require any entity to use this standard. Any party who wants to claim protection from liability under one of CERCLA's landowner liability protections may follow the regulatory requirements of the All Appropriate Inquiries Rule at 40 CFR part 312, use the ASTM E1527–13 "Standard Practice for Phase I Environmental Site Assessments" for up to one year after this rule becomes effective, use the ASTM E2247–16 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property," or use the standard recognized in this final rule, the ASTM E1527–21 standard, to comply with the all appropriate inquiries provision of CERCLA.

Entities potentially affected by this action, or who may choose to use the newly referenced ASTM standard to perform all appropriate inquiries, include public and private parties who, as bona fide prospective purchasers, contiguous property owners, or innocent landowners, are purchasing potentially contaminated properties and wish to establish a limitation on CERCLA liability in conjunction with the property purchase. In addition, any entity conducting a site characterization or assessment on a property with funding from a brownfields grant awarded under CERCLA Section 104(k)(2)(B)(ii) may be affected by this action. This includes State, local, and Tribal governments that receive brownfields site assessment grants. A summary of the potentially affected industry sectors (by North American Industry Classification System (NAICS) codes) is displayed in the table below.

Industry category	NAICS code
Real Estate	531.
Insurance	52412.
Banking/Real Estate Credit	522292.
Environmental Consulting Services	54162.
State, Local and Tribal Government	926110, 925120.
Federal Government	925120, 921190, 924120.

The list of potentially affected entities in the above table may not be exhaustive. Our aim is to provide a guide for readers regarding those entities that EPA is aware potentially could be affected by this action. However, this action may affect other entities not listed in the table. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding section entitled **FOR FURTHER INFORMATION CONTACT.**

II. Statutory Authority

This rule amends the All Appropriate Inquiries Rule setting Federal standards for the conduct of "all appropriate inquiries" at 40 CFR part 312. The All Appropriate Inquiries Rule sets forth standards and practices necessary for fulfilling the requirements of CERCLA section 101(35)(B) to obtain CERCLA liability protection and for conducting site characterizations and assessments with the use of brownfields grants per CERCLA section 104(k)(2)(B)(ii).

III. Background

On January 11, 2002, President Bush signed the Small Business Liability Relief and Brownfields Revitalization Act ("the Brownfields Amendments"). In general, the Brownfields Amendments to CERCLA provide funds to assess and clean up brownfield sites; clarify existing and establish new CERCLA liability provisions related to certain types of owners of contaminated properties; and provide funding to establish or enhance State and Tribal cleanup programs. The Brownfields Amendments revised some of the provisions of CERCLA Section 101(35) and limited liability under Section 107 for bona fide prospective purchasers and contiguous property owners, in addition to clarifying the requirements necessary to establish the innocent landowner liability protection under CERCLA Sections 107 and 101(35). The Brownfields Amendments clarified the requirement that parties purchasing potentially contaminated property undertake "all appropriate inquiries" into prior ownership and use of property before purchasing the property to qualify for protection from CERCLA liability.

The Brownfields Amendments of 2002 required EPA to develop regulations establishing standards and practices for how to conduct all appropriate inquiries. EPA promulgated regulations that set standards and practices for all appropriate inquiries on November 1, 2005 (70 FR 66070). In the final regulation, EPA referenced, and recognized as compliant with the rule, the ASTM E1527–05 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." In December 2008, EPA amended the All Appropriate Inquiries Rule to recognize another ASTM standard as compliant with the rule, ASTM E2247–08 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property." Both standards, the ASTM E1527–05 and the ASTM E2247–08, were subsequently revised by ASTM International. EPA referenced the revised ASTM E1527–13 standard on August 15, 2013 (78 FR 49690), and referenced the revised ASTM E2247–16 Standard on September 15, 2017 (82 FR 43310), as compliant with the All Appropriate Inquiries Rule. Currently, the All Appropriate Inquiries Rule (40 CFR part 312) allows for the use of the ASTM E1527–13 standard or the ASTM E2247–16 standard to conduct all appropriate inquiries, in lieu of following the requirements included in the rule. Once this action is final, the All Appropriate Inquiries Rule will allow for the use of the ASTM E1527–21 standard and will phase out use of the ASTM E1527–13 standard.

Recently, ASTM International published a revised standard for conducting Phase I environmental site assessments. This standard, ASTM E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," was reviewed by EPA, and determined by EPA to be compliant with the requirements of the All Appropriate Inquiries Rule.

On March 14, 2022, EPA published a direct final rule (87 FR 14174) to amend the All Appropriate Inquiries Rule to reference ASTM E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," and allow for its use to satisfy the requirements of the All Appropriate Inquiries Rule. A companion proposed rule, also published on March 14, 2022, invited comment on the direct final rule and stated that if EPA received adverse comment on the proposal to reference the ASTM E1527–21 standard, the Agency would withdraw the direct final rule. EPA received adverse comments on that action and published a notification of withdrawal of the direct final rule on May 2, 2022 (87 FR 25572). In this document, EPA is finalizing the amendment to the All Appropriate Inquiries Rule referencing the ASTM E1527–21 standard practice and addressing the comments received in response to the March 14, 2022 proposed rule.

IV. Summary of Comments

EPA received thirteen comments on the proposed rule published March 14, 2022. EPA developed a Response to Comments document and placed it in the docket for this action. The comments and EPA's responses are summarized here. Most commenters supported the Agency's proposed action to amend the All Appropriate Inquiries Rule to add a reference to ASTM

International's E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" and allow for its use to satisfy the requirements for conducting all appropriate inquiries under the Comprehensive Environmental Response, Compensation and Liability Act. Several commenters raised concerns related to the Agency's decision to continue to recognize a previous ASTM standard, ASTM E1527–13, as compliant with the All Appropriate Inquiries Rule. Commenters pointed out that the previous version of the ASTM standard, ASTM E1527–13, will sunset and will no longer be available from ASTM International. Commenters pointed out that the revised standard, ASTM E1527–21, was developed with input from industry professionals, users, and regulators and its updated provisions offer positive benefits to stakeholders. In addition, commenters asserted that the updated standard now represents "good commercial and customary business practice," and therefore should replace the current ASTM E1527–13 Phase I Environmental Site Assessment standard referenced by EPA, rather than merely being added as an additionally referenced standard. Other commenters stated that EPA's continued acceptance of the 2013 version of the ASTM E1527 standard will create confusion within the marketplace because users will need to unnecessarily compare the costs and benefits of the use of the two standards when receiving multiple bids from potential contractors before environmental site assessment. EPA recognizes the commenters' concerns.

In response to concerns raised by commenters regarding the potential confusion associated with the Agency's recognition of a historical standard no longer recognized by ASTM International as current, or no longer reflecting its current consensus-based, or customary business standard, the Agency will remove its reference to the ASTM E1527–13 Standard Practice for Environmental Site Assessments. To provide parties with an adequate opportunity to complete AAI investigations that may be on-going and to allow all parties sufficient notice to become familiar with the updated industry standard (ASTM E1527–21), the Agency is providing for a sunset period for the removal of its recognition of the historic standard (ASTM E1527–13) as compliant with all appropriate inquiries. The sunset period for removal of the reference to the ASTM E1527–13 Standard Practice for Environmental Site Assessments is one year from publication of this final rule. A Phase 1 Environmental Site Assessment completed before that date using ASTM E1527–13 will be recognized as compliant with the All Appropriate Inquiries Rule.

One commenter requested that EPA provide a formal notice and comment opportunity on the ASTM E1527–21 Phase I Environmental Site Assessment Process. The commenter also stated that the reference to "emerging contaminants" in the ASTM E1527–21 standard is an "out of scope" consideration that may lead to additional potential CERCLA liability prematurely for landowners and potential buyers. In the March 14 direct final rule and the accompanying proposed rule, EPA clearly stated that it was not requesting comment on the ASTM standard. The ASTM standard is not an EPA regulation, and its use is not required to comply with the All Appropriate Inquiries Rule or any other EPA regulations.

Industry standards may include elements that are not within the scope of the All Appropriate Inquiries Rule. Use of the ASTM E1527–21 standard is not required for compliance with the All Appropriate Inquiries Rule. Therefore, EPA does not consider these additional elements as a reason to avoid recognition of the revised E1527–21 standard as compliant with the All Appropriate Inquiries Rule.

Two commenters submitted requests for modifications to the ASTM E1527–21 standard. One commenter requested changes to the standard's requirements for environmental lien searches and to the definitions of "recognized environmental conditions." Another commenter requested a modification to the definition of "property use limitation" as it is used in the ASTM E1527–21 standard. The ASTM E1527–21 is not an EPA standard and the Agency stated in the proposed rule that it was not requesting comments on the ASTM standard. Requests to modify the ASTM standard should be directed to ASTM. Use of the ASTM standard is not required to comply with the All Appropriate Inquiries Rule.

V. What action is the EPA taking?

This rule amends the All Appropriate Inquiries Rule to allow for the use of the recently revised ASTM International standard ASTM E1527–21 to satisfy the all appropriate inquiries requirements under CERCLA for establishing the bona fide prospective purchaser, contiguous property owner, and innocent landowner liability protections.

With this action, parties seeking liability relief under CERCLA's landowner liability protections, as well as recipients of brownfields grants for conducting site assessments, will be considered in compliance with the requirements for all appropriate inquiries, if such parties comply with the procedures provided in the ASTM E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process."

The Agency notes that this action does not require any party to use the ASTM E1527–21 standard. Any party conducting all appropriate inquiries to comply with CERCLA's bona fide prospective purchaser, contiguous property owner, and innocent landowner liability protections, or a brownfields site assessment under CERCLA Section 104(k), may follow the provisions of the All Appropriate Inquiries Rule at 40 CFR part 312. This action merely allows for the option of using ASTM International's E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" by those parties purchasing potentially contaminated properties in lieu of following the specific requirements of the All Appropriate Inquiries Rule.

The Agency notes that there are no legally significant differences between the regulatory requirements and the ASTM E1527–21 standard. To facilitate an understanding of the slight differences between the All Appropriate Inquiries Rule and the revised ASTM E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," as well as the applicability of the E1527–21 standard to certain types of properties, EPA developed, and placed in the docket for this action, the document "Comparison of All Appropriate Inquiries Regulation, the ASTM E1527–13 Phase I Environmental Site Assessment Process, and ASTM E1527–21 Phase I Environmental Site Assessment Process." The document also provides a comparison of the two ASTM E1527 standards.

This action also includes the removal of the current reference in the All Appropriate Inquiries Rule to the ASTM E1527–13 Standard Practice for Environmental Site Assessments as compliant with all appropriate inquiries. The removal of the reference to the historic standard as compliant with the all appropriate inquiries requirements will take effect one year following publication of this final rule.

This action includes no changes to the All Appropriate Inquiries Rule other than to add a reference to the new

Federal Register / Vol. 87, No. 240 / Thursday, December 15, 2022 / Rules and Regulations 76581

ASTM E1527–21 standard and remove the current reference to the historic ASTM E1527–13 standard as compliant with all appropriate inquiries. With this final rule, EPA is recognizing the ASTM E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" as compliant with the all appropriate inquiries requirements. The reference to the ASTM E1527–13 standard as compliant with the all appropriate inquiries requirements will be removed from the reference section of the AAI (40 CFR 312.11) one year following publication of this final rule.

VI. Statutory and Executive Order Reviews

Under Executive Order 12866 (58 FR 51735, October 4, 1993) and Executive Order 13563 (76 FR 3821, January 21, 2011), this action is not a "significant regulatory action" and is therefore not subject to OMB review. This action merely amends the All Appropriate Inquiries Rule to reference ASTM International's E1527–21 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" and allow for its use to satisfy the requirements for conducting all appropriate inquiries under CERCLA. This action does not impose any requirements on any entity, including small entities. Therefore, pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), after considering the economic impacts of this action on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This action does not contain any unfunded mandates or significantly or uniquely affect small governments as described in sections 202 and 205 of the Unfunded Mandates Reform Act of 1999 (UMRA) (Pub. L. 104–4). This action does not create new binding legal requirements that substantially and directly affect Tribes under Executive Order 13175 (63 FR 67249, November 9, 2000). This action does not have significant federalism implications under Executive Order 13132 (64 FR 43255, August 10, 1999). Because this action is exempt from review under Executive Order 12866, this rule is not subject to Executive Order 13211, entitled "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001), or Executive Order 13045, entitled "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997). This action does not contain any information collections subject to OMB approval under the Paperwork Reduction Act of 1995 (PRA), 44 U.S.C. 3501 *et seq.*, nor does it require any special considerations under Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (59 FR 7629, February 16, 1994).

This action does involve technical standards. Therefore, the requirements of section 12(d) of the National Technology Transfer and Advancement Act of 1995 (Pub. L. 104–113; 15 U.S.C. 272) (NTTAA) apply. The NTTAA was signed into law on March 7, 1996, and, among other things, directs the National Institute of Standards and Technology (NIST) to bring together Federal agencies as well as state and local governments to achieve greater reliance on voluntary consensus standards and decrease dependence on in-house standards. It states that use of such standards, whenever practicable and appropriate, is intended to achieve the following goals: (a) Eliminate the cost to the government of developing its own standards and decrease the cost of goods procured and the burden of complying with agency regulations; (b) provide incentives and opportunities to establish standards that serve national needs; (c) encourage long-term growth for U.S. enterprises and promote efficiency and economic competition through harmonization of standards; and (d) further the policy of reliance upon the private sector to supply government needs for goods and services. The Act requires that Federal agencies adopt private sector standards, particularly those developed by standards developing organizations (SDOs), whenever possible in lieu of creating proprietary, non-consensus standards.

This action is compliant with the spirit and requirements of the NTTAA. This action allows for the use of the ASTM International standard known as Standard E1527–21 and entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." By taking this action, EPA is fulfilling the intent and requirements of NTTAA.

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, generally provides that before certain actions may take effect, the agency promulgating the action must submit a report, which includes a copy of the action, to each House of the Congress and to the Comptroller General of the United States. EPA submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 312

Administrative practice and procedure, Hazardous substances.

Barry N. Breen,
Acting Assistant Administrator, Office of Land and Emergency Management.

For the reasons set out in the preamble, 40 CFR part 312 is amended as follows:

PART 312—INNOCENT LANDOWNERS, STANDARDS FOR CONDUCTING ALL APPROPRIATE INQUIRIES

■ 1. The authority citation for part 312 continues to read as follows:

Authority: Section 101(35)(B) of CERCLA, as amended, 42 U.S.C. 9601(35)(B).

Subpart B—Definitions and References

■ 2. Section 312.11 is amended by:

■ a. Redesignating paragraphs (a) and (b) as paragraphs (b) and (c), respectively;

■ b. Adding a new paragraph (a); and

■ c. Revising newly redesignated paragraph (c).

The addition and revision read as follows:

§312.11 References.

* * * * *

(a) The procedures of ASTM International Standard E1527–21 entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." This standard is available from ASTM International at *www.astm.org*, 1–610–832–9585.

* * * * *

(c) Until February 13, 2024, the procedures of ASTM International Standard E1527–13 entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." This standard is available from ASTM International at *www.astm.org*, 1–610–832–9585.

[FR Doc. 2022–27044 Filed 12–14–22; 8:45 am]

BILLING CODE 6560–50–P

Letter O1

Mitchell M. Tasi Law Firm (Western States Regional Council of Carpenters)

September 30, 2024

O1-Intro

This comment is an introductory comment that summarizes the project characteristics. Additionally, the County acknowledges that the County decision-makers (i.e., Planning Commission and Board of Supervisors) must also consider any comments received prior to and/or during the public hearing for the proposed project, and comments raised by other parties, as part of the record of proceedings in considering whether to approve or deny the proposed project.

The County will provide notices to the commenter regarding the proposed project in accordance with CEQA and CEQA Guidelines noticing requirements.

O1-1

This comment does not raise an issue regarding the adequacy of the EIR. The potential economic and environmental benefits of hiring a local workforce are acknowledged. However, CEQA requires an analysis of physical impacts to the environment; it does not require analysis of social and economic impacts. Under CEQA, "[a]n economic or social change by itself shall not be considered a significant effect on the environment" (CEQA Guidelines, Sections 15131 and 15382). Effects analyzed under CEQA must be related to a physical change (CEQA Guidelines, Section 15358(b)). The EIR evaluation is consistent with the guidance provided in Section 15131.

The proposed project is a privately-initiated project, and the County does not impose local hiring restrictions on privately-initiated development projects. Ultimately, the developer of the project will select the appropriate vendors for project construction. In an effort to help incentivize and increase the potential local workforce, the County does offer various programs. For example, County Operated programs under the guidance of the Workforce Development Board, include the San Bernardino County Workforce Development Department (WDD) which administers programs funded by the Department of Labor's Workforce Innovation and Opportunity Act (WIOA). Through the County's three America's Job Centers of California (AJCCs) situated strategically across the East Valley, West Valley, and High Desert Regions, WDD implements comprehensive strategies tailored to meet the demands of local businesses for skilled workers. Simultaneously, these initiatives provide avenues for job seekers to acquire necessary skills and access well-paying career opportunities.

Regardless, the EIR analysis is based on reasonable assumptions for workforce characteristics in assessing air quality, GHG and traffic impacts associated with construction and operation of the proposed project.

O1-2

This comment is acknowledged; however, it does not raise an issue regarding the adequacy of the EIR; therefore, no further response is required.

O1-3

This comment provides a general summary of the purpose of CEQA and the purpose and requirements involved in preparation of an EIR. However, the comment does not raise an issue regarding the adequacy of the EIR; therefore, no further response is required.

O1-4a

The intended "shelf life" of a Phase I ESA is limited, primarily for protections and/or liabilities that may be a component of real-estate transactions. However, information contained in the Phase I prepared for the Sienna project provides appropriate and relevant information for environmental review of the Project under CEQA because: 1) the Phase I was prepared at the time the NOP was released (which sets the CEQA baseline for the EIR); 2) no uses that propose the handling, storage, or disposal of hazardous materials have been introduced into the project site since site reconnaissance and the Phase I ESA was prepared (January 2022). Based on a review of historic aerial photographs, historic topographic maps, governmental regulatory databases, and other regulatory and agency databases, the Phase I ESA concludes that no evidence for recognized environmental conditions (RECs) were observed or identified in connection with the Project site. San Bernardino County Code of Ordinances Section 23.06, Permits, Inspections and Hearing Procedures for Hazardous Materials, prohibits any person or business subject to the requirements of the CUPA Permit Program Elements from generating, producing, storing, treating, or other handling of hazardous materials or hazardous waste without getting the proper operation permitting and paying the appropriate fees. San Bernardino County Code of Ordinances 23.07, CUPA Permit Elements for Hazardous Materials, defines the types of facilities, activities, and operations that are subject to these fees and permit requirements. No new permits have been issued for uses within the project site. Accordingly, the Phase I ESA provides an accurate baseline of potentially adverse environmental conditions resulting from previous uses at the Sienna Project site and Calcite Substation site for purposes of evaluating Project-related impacts to hazards and hazardous substances in accordance with CEQA.

O1-4b

With respect to the updated ASTM E1527-21 standards, a review of the existing Phase I indicates that there are no "likely presence" or "likely release" conditions with the project site under the updated Phase I standards.

Further, there is no CEQA requirement that a Phase I ESA be prepared in support of an EIR. Under CEQA, the Lead Agency has the authority and discretion to analyze impacts and utilize methodologies for assessing impacts as deemed appropriate by the Lead Agency. The Phase I ESA is deemed an appropriate level of detail to identify potential REC's on the project site as it relates specifically to hazardous materials. Other hazards have been evaluated in EIR Section 3.9 Hazards and Hazardous Materials utilizing additional sources.

O1-4c

As identified in the Phase I ESA, there are "No indications of leaks, spills, or potential contamination" based on site reconnaissance and the extensive hazardous materials database searches conducted as part of preparation of the Phase I. Responses to owner and user questionnaires are intended to generally supplement other sources of information presented in the Phase I, if such information is known by either the property owner(s) or user. In this case, the property owner and user provided appropriate responses.

As indicated on EIR page 3.9-4, "The majority of the Project parcels are vacant and unoccupied. They are either active or former agricultural land, or vacant desert land. Some include rural residences or farmsteads. No evidence of significant leaks, spills, potential contamination was noted during the site reconnaissance." Further, "No significant quantities of hazardous substances or petroleum products were observed that had been released to the environment, were under conditions indicative of a release to the environment, or under conditions that likely pose a material threat of a release to the environment.

No evidence for recognized environmental conditions (RECs) were observed or identified in connection with the Project site."

O1-4d

Please refer to response to comment O1-4C.

O1-4e

Soil sampling was not recommended as part of the Phase I ESA conducted for the project site. Please refer to response to comment O1-4C.

O1-5a

This comment summarizes information contained in the EIR. Information presented in this comment is consistent with the information presented in the EIR. No further response is required.

O1-5b

The conclusions summarized in this comment are consistent with the conclusions presented in the EIR. Although the project will involve various ground disturbing activities associated with construction, cultural resources professionals have determined that no historical resources will be demolished, nor will the project materially alter any historic properties in a manner that would affect character defining features that convey its significance. As indicated in the EIR:

> "the Sienna Project does not propose any direct modifications to the road and would not introduce any major visual changes to its setting which would impair its ability to convey its significance. As such, implementation of the Sienna Project would not result in a significant impact to this historical resource as defined by Section 15064.5(b) of the *CEQA Guidelines*.
>
> Additionally, construction and operation of the proposed Sienna Project would not entail the demolition or substantial alteration of any utility towers associated with the four historic transmission lines which traverse the Sienna Project area. The transmission lines extend upwards of 100 miles and the potential minor modification of some towers to accommodate new infrastructure from the proposed substation would not affect the ability any of these resources to convey the reason for their significance. Therefore, the Sienna Project would not result in a significant impact to these four historical resources as defined by Section 15064.5(b) of the *CEQA Guidelines*." (EIR page 3.6-12)

With respect to the Calcite substation, no significant impacts have been identified to historical and cultural resources within the substation parcel. As concluded in the EIR:

> Prehistoric Site 3380-13 was recommended eligible for the CRHR under Criterion 1, 3, and 4, but it is not within the proposed substation boundary so direct impacts to the prehistoric site are not anticipated. However, avoidance of this site is proposed, which would be ensured primarily through implementation of Mitigation Measure CS-CR-7 (Avoidance of Environmentally Sensitive Area). This measure would be implemented in conjunction with Mitigation Measures CS-CR-1 through CS-CR-6 to reduce impacts to a level less than significant.
>
> The second historical resource that could be affected by the proposed Calcite Substation is the SCE Lugo-Pisgah No. 1 220 kV transmission line, which is directly associated with the history of

the boulder Dam and Hoover Dam construction and hydroelectric generation project and serves as one of the first lines to transmit high voltage electricity to the Los Angeles region by SCE. By looping in the existing Lugo-Pisgah No. 1 220 kV transmission line to the proposed Calcite Substation, two new 220 kV transmission lines would be created. These new transmission lines would depart from the existing SCE Lugo-Pisgah No. 1 line approximately 2,500 feet south of the Calcite Substation, and cross under two other SCE lines before entering the Calcite Substation from the north. The addition of two new transmission line segments directly north of the SCE Lugo-Pisgah No. 1 transmission line would not disrupt the larger important historical connections associated with the conveyance of power between the Hoover Dam and Los Angeles. Therefore, potential impacts to this historical resource would be considered less than significant, and no mitigation is required.

The commenter asserts that construction activities within a half-mile radius of historic properties may cause effects to these resources but does not indicate which resources would be affected or how.

Mitigation Measures CS-CR-1 through CS-TCR-2 are proposed to ensure no impacts to cultural resources occur and include measures to be applied in the event that a previously unidentified resource was discovered during construction of the proposed Calcite Substation and was determined to be eligible for listing in the CRHR. Some of these mitigation measures follow regulations and standard practices. Because the Stagecoach Solar Project included a similar facility at the same location as the Calcite Substation, the required mitigation measures are similar. This is to be expected.

Finally, neither CS-CR-1 or CS-CR-2 improperly defer mitigation. CEQA does not require the project proponent to identify or name a specific cultural resources specialist (CRS) during the EIR process. Rather, CS-CR-1 appropriately requires that, prior to construction activities, the proponent identify a CRS that meets specific qualifications to monitor construction activities and ensure all measures related to the protection of cultural resources are implemented during construction. Additionally, CS-CR-2 properly identifies specific criteria and specific steps that will be taken to ensure potential impacts to cultural resources are mitigated. Specifically, the measure requires that the Cultural Resource Monitoring Plan (CRMP) be provided to SCE and the Yuhaaviatam of San Manuel Nation Cultural Resources Department representative for review and approval at least 60 days before the start of construction; incorporate the result of preconstruction geoarchaeological testing, including any project-related design or route changes that would successfully result in resource avoidance; specify the level of tribal participation in monitoring, the qualifications for archaeological monitors, the handling of discoveries, and the process for evaluating unanticipated resources; and include provisions for treatment of cultural resources that are Native American in nature consistent with CS-TCR-2. These specific requirements would ensure that impacts to cultural and historic resources would be mitigated to a level that is less than significant. **O1-6**

As indicated in the original draft EIR, the conclusion of a significant unavoidable impact was based on the assumption that there would be a very large number of construction trips (1,380 total trips) when the Calcite Substation trips are combined with the, at that time, proposed Stagecoach Solar Generation Plant estimated trips. Even when mitigated, this number of trips would substantially affect safety along the affected rural roadway network (vehicles, pedestrians, and bicyclists) and be inconsistent with applicable plans that contain overall goals to maintain a safe roadway network (California State Lands Commission 2021). However, the Revised Draft EIR was modified to reflect the conclusions of the traffic study prepared specifically for the Sienna project, which accounts for the Calcite substation and Sienna project construction timeframes, which are different than the assumptions presented in the Stagecoach EIR. A traffic study dated July 2023 is provided in Appendix L of the Revised Draft EIR. As provided in the RDEIR, construction of the proposed Calcite Substation would not require any temporary road or travel lane closures, except for a brief closure of SR-247 when distribution line stringing across the highway is required. It is estimated that peak construction could temporarily result in up to 180 vehicle trips per day (60 passenger vehicle trips and 120 truck trips). To reduce potential temporary impacts, Mitigation Measure CS-TRA-1 would require a number of traffic control practices to reduce the number of temporary construction trips, control traffic ingress/egress, and ensure any oversized vehicle trips associated with delivery of materials for the Calcite Substation are obtained and followed.

O1-7

The trip generation estimates provided in the EIR are the basis of estimating VMT impacts. As discussed in the EIR, "VMT is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person. Construction traffic associated with the proposed Sienna Project would be temporary and would not permanently affect VMT characteristics in this part of San Bernardino County or elsewhere. Long-term, operational traffic would be limited, with a small work force of (5 employees), most of whom would be sourced from the local and/or regional employment pool. Therefore, VMT resulting from operation of the proposed Sienna Project would be nominal and largely comprised of redistributed trips (i.e., from local employees). According to technical guidance issued by the Office of Planning and Research (OPR) and the County's TISG (County of San Bernardino Public Works Department 2019), projects generating less than 110 or fewer daily vehicle trips may be presumed to have a less than significant impact involving VMT. The Sienna Project is anticipated to result in "Low VMT" based upon an estimate of 64 daily trips. Impacts are considered less than significant." (EIR page 3.13-22) There is no evidence that the project's nominal long-term VMT would result in any significant impacts to other resources, such as GHG, water, biological resources, noise, hazards or human health. Each of these is appropriately analyzed throughout the EIR.

O1-8

Please refer to preceding responses to comments O1-1 through O1-7. Recirculation of the RDEIR is not required as none of the criteria pursuant to CEQA Guidelines 15088.5 have been met.

MBCA

morongo basin conservation association

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September 30, 2024

County of San Bernardino, Land Use Services
Department Attn: Jim Morrissey, Planner
385 North Arrowhead
Avenue, First Floor San
Bernardino, CA 92415
Email: Jim.Morrissey@lus.sbcounty.gov

RE: Comments on Recirculated Draft Environmental Impact Report
Sienna Solar and Storage Project
SCH No, 20220805128
July 2024

Dear Mr. Morrissey:

MBCA takes this opportunity to again comment on the proposed Sienna Solar and Storage Project.

Our previous comments presented within our letter of September 22, 2022 (attached to this email) remain largely unaddressed and unrecognized within this current DEIR. The relevance and importance of acknowledging and addressing those comments has become ever more urgent as the effects of the warming climate on the integrity of intact ecosystems and the life they support continue to be degraded. O2-1

MBCA believes Alternative 1: No Project Alternative has not been adequately evaluated. As with so many industrial scale photovoltaic developments now proposed, or under construction, we believe the alternative of a distributed photovoltaic system in the built environment utilizing batteries acting as virtual power plants has not been adequately considered. The resilience and sustainability of such a system with the potential to create vibrant business opportunities remains untapped. O2-2

The California Desert's Role in 30X30: Carbon Sequestration and Biodiversity is attached to this email. This report shows how the desert is a vital component to the 30x30 effort and presents alternatives to placing industrial scale renewables on the intact desert. O2-3

This current project version differs **substantially** from the Planning Project Notice issued by the County of San Bernardino on August 7, 2017 (attached to this email). O2-4

1

The project studied within the Recirculated DEIR is for a **significantly** different project. We joined others in making this case within a letter (attached to this email) dated April 25, 2022. This letter was **not** included within the comments of the current6 DEIR :

- The project being studied is in a completely different location, over a mile away, and shares no common boundaries with the project noticed over 7 years ago. The current project is on the opposite side of a significant State Highway!

- The configuration of the project being studied consists of multiple parcels with a cumulative project perimeter significantly larger than the project noticed. This revision is manifest in the significant length of transmission lines needed to connect to the proposed sub-station.

- The project being studied is significantly larger than that submitted: 1854 acres versus 1330 acres. An increase of nearly 40% in area!

- The project being studied is for a 525-mw solar generating facility while the project noticed in 2017 called for 300-mw facility. An increase of 75% in size!

- The project being studied is for a 525-mw battery energy Storage System (BESS) while the size of any BESS was not described in the project noticed.

- The current project has different owner and name.

O2-5

The project being studied in this DEIR is not the same project described in the Project Notice of 2017. The project being studied must be considered a new project and subject to the Renewable Energy and Conservation Element (RECE) of the County Wide plan adopted in February 2019. The RECE prohibits the construction of renewable energy projects of this size within this portion of the County. This is direct conflict with a finding of *less than significant impact* with the following:

> *Impact 3.11-2: Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or*
> *mitigating an environmental effect?*

O2-6

Thank you for your consideration,

Steve Bardwell

Steve Bardwell, Director

Cc:

Supervisor Dawn Rowe	Dawn.Rowe@bos.sbcounty.gov
Chuck Bell	chuckb193@outlook.com

2

MBCA
morongo basin conservation association

September 22, 2022

County of San Bernardino, Land Use Services Department
Attn: Jim Morrissey, Planner
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415
Email: Jim.Morrissey@lus.sbcounty.gov

RE: Scoping Comments for Sienna Solar and Storage Project in Lucerne Valley

Dear Mr. Morrissey:

MBCA takes this opportunity to comment on the proposed Sienna Solar and Storage Project consisting of the installation of a photovoltaic (PV) solar facility, a battery storage system (BESS), Project substation, operations and maintenance building(s), and the underground collection system on approximately 1,932-acres/500MW. The Project would interconnect with the SCE Calcite Substation (currently pending final permits and construction) via a proposed overhead and/or underground 230-kV gen-tie line in addition to other ancillary facilities utilizing private and potentially public right-a-way. O2-7

RECE Policy 4.10, 4.10.2, Co Resolution No. 2019-17, Section 3, and Sienna 2

- The Renewable Energy and Conservation Element (RECE) Policy 4.10: Prohibits utility-oriented renewable energy (RE) project development on sites that would create adverse impacts on the quality of life or economic development opportunities in existing unincorporated communities.
- Re 4.10.2 prohibits development of utility-oriented RE projects within the boundaries of existing community plans, which at the time of the RECE adoption included Lucerne Valley. This would seem to protect Lucerne Valley from the larger Sienna 2. However, O2-8
- County Resolution No. 2019-17 Section 3 states: *Any application for development of a renewable energy generation project that has been accepted as complete in compliance with CA Gov. Code Sec. 65943 before the effective date of this Resolution* *__shall be processed in compliance with the policies and regulations in effect at the time the application was accepted as complete__*. *__These applications may be located to other sites under the same policies and regulations__*.

The RECE and the Resolution were adopted in February 2019. The Resolution was not incorporated into the RECE. The original Sienna Application for a CUP was accepted in 2014.

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However, eight years earlier the RECE incorporated the Countywide Vision Core Values as fundamental to development of the siting criteria for utility-scale RE projects. The Core Values sited on page 4 of the RECE were adopted on June 30, 2011 as part of the Countywide Vision Statement. The RECE Guiding Principles, based largely on the Core Values, are subject to the General Plan (2007). When complying with the policies and regulations, which comes first? In this case the chickens: General Plan (2007) and Core Values[1] (2011) precede the 2014 Sienna 1 Application. The County Resolution NO. 2019-17, Section 3, and the 2022 Sienna 2 NOP, the eggs, follow.

The proposed Sienna 2 project and its footprint is significantly different than the project described in the original application even though the 645 ac/300 MW (2014) grew over time to 1630 ac/450 MW (2018). The applicant, 99MT 8ME, LLC, remains the same.

The relocated Sienna 2 is larger than the final design of Sienna 1 by 302 acres. It now also includes a towering 45 foot high battery storage structure and a whopping 39 miles of collector and gen-tie lines to connect areas in within its irregular footprint with the substation. A reasonable person could assume these are not the same projects. See Sienna 2 NOP Figure 2-Local Vicinity Map.

O2-8 Contd.

CEQA Environmental Factor IX. LAND USE AND PLANNING: a) The large footprint Sienna 2 physically divides the established community as clearly visualized in Appendix A Figure 10.

Comment: Approval of Sienna 2 is questionable under Section 3. However, If Sienna 2 is approved under Section 3 it will bring regionally permanent adverse changes to the character, quality-of-life, and economy of the severely disadvantaged community (SDAC) of Lucerne Valley (https://gis.water.ca.gov/app/dacs/ Figure 9 Appendix A). These changes must be itemized under potentially significant cumulative impacts at all levels off-site and on-site.

O2-9

Project Objectives

Is the SDAC community of Lucerne Valley included in the proposed Sienna 2 Project Objectives? No. But, it should be. See the RECE Community-Oriented Guiding Principles (page 5).

- Keep large-scale utility projects separate from or sufficiently buffered from existing communities, to avoid adverse impacts on community development and quality of life.

O2-10

[1] CORE VALUES Renewable Energy and Conservation Element Page 4.
The Countywide Vision Statement adopted by the Board of Supervisors on June 30, 2011, fosters strategic countywide coordination in a manner that reflects the priorities of local residents, businesses, and stakeholders. The citizens of San Bernardino County share the following core values, as articulated in the Countywide Vision:
 Quality of Life: A high quality of life for residents of the county that provides a broad range of choices to support the county's diverse people, geography, and economy to live, work, and play.
 Vibrant Economy: Ample economic opportunities for current residents and businesses that support countywide prosperity, as well as new investment in economic growth.
 Conservation of Natural and Cultural Resources: Stewardship that conserves and responsibly uses environmental, scenic, recreational, and cultural assets, ensures healthy habitats for sensitive plants and wildlife, enhances air quality and makes the county a great place for residents and visitors alike. Renewable energy, when developed responsibly, is a valuable natural resource.
 Sustainable Systems: High quality built, natural, and social systems that complement, rather than degrade, the county's natural resources, environment, and existing communities.
 Self-Reliance: Communities or individuals meeting their own energy needs.
 Open Governance: Governance guided by open, transparent, and ethical decision-making that values the county's environment, people, heritage, location, economy, and community spirit.

2 | Page

- Provide residents more affordable, reliable, diverse, and safe access to energy, especially renewable energy.

Comment: Should the proposed Sienna 2 be approved, the SDAC of Lucerne Valley will be required to absorb impacts to its development and quality of life. How much of that 500 MW of solar power will be diverted directly to community residents or community buildings? How will 8ME bring affordable, reliable, and safe access to renewable energy to Lucerne Valley residents? O2-10 Contd.

CEQA Environmental Factor
I. AESTHETICS
The project would: a) have a substantial adverse effect on a scenic vista; b) substantially damage scenic resources; c) substantially degrade the existing visual character or quality of public views of the site and its surroundings; d) create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Impacts of this project on scenic vistas and the visual character of the community are significant. The quality-of life for all residents will be changed. No longer will the view out the window or from the front porch be one's neighbor (wave to say hi) and the surrounding mountains. O2-11

The Project footprint would industrialize an area of ~5 square miles of land east of SR 247. It will be visible for 322 sq. /mi, and within the viewshed of 2,761 homes,

See Figure 2: Visibility of Proposed Sienna Solar and SCE Substation Projects (page 4) and Figure 10 Appendix A

Figure 1: Landscape view of Proposed Project showing its basin location in relation to the surrounding mountainous viewshed.

The NOP does not provide information on lighting but one assumes for security purposes lighting will be required. In addition, the lighting glow at night could be substantial and affect wildlife as well as the residents. Please consult the SB Co Outdoor Lighting Ordinance https://lus.sbcounty.gov/planning-home/outdoor-lighting-regulations/ O2-12

The County has designated SR 247 as scenic. Currently, its views are largely unobstructed. SR 247 could be one of the least despoiled series of desert views in California.

As proposed, Sienna 2 will impact SR 247's designation by Caltrans as "eligible" for Scenic Highway status. The State has established it as eligible for scenic designation; therefore it has scenic protection under Chapter 27 of the California Department of Transportation Standard Environmental Reference: *The intent of the State Scenic Highway Program is to protect and enhance California's natural scenic beauty. If a highway is listed as eligible for official designation, it is also part of the Scenic Highway System and care must be taken to preserve its eligible status.* Department of Transportation website: O2-13
http://www.dot.ca.gov/ser/vol1/sec3/community/ch27via/chap27via.htm#scenic

3 | Page

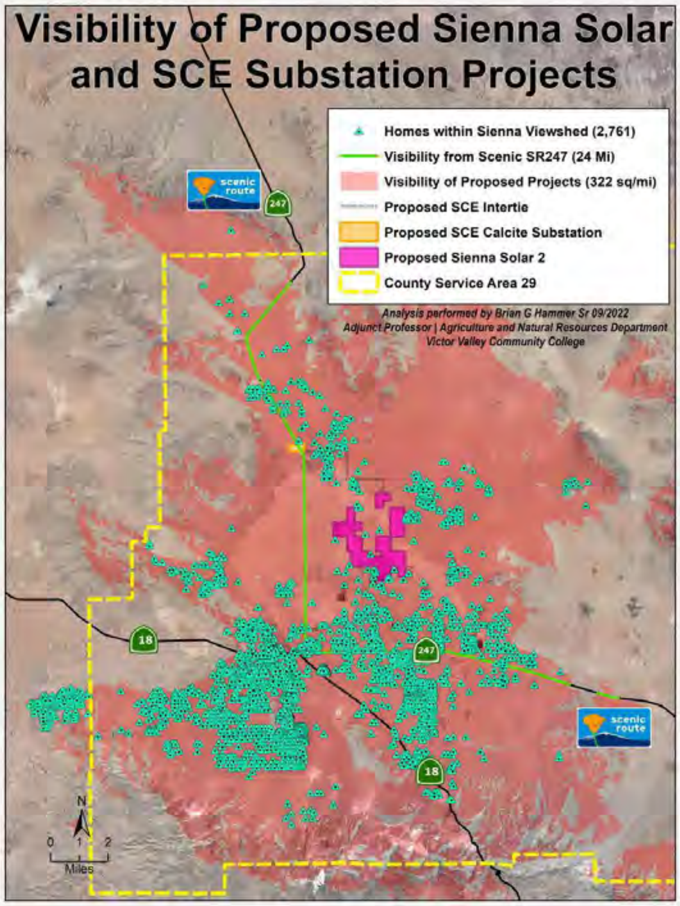

Figure 2: Visibility of proposed Sienna Solar and SCE Substation Projects

Because of the scale the homes look close together but in reality, and factoring in the history of homesteading back to the 1870s and the later Small Tract Act (5 acre Jackrabbit Homesteads 1938-1976) most homes are on 1 to 5 acres and larger. See Figure 10 Appendix A

Comment: The Impact of the proposed Project is potentially significant and all mitigation measures must take into consideration the whole action involved, including off- and on-site.

O2-13 Contd.

4 | Page

THIS IS NOT AN ACT OF GOD

Taken 03/17/2014 at 2:04 PM at the top of Camp Rock Road, Lucerne Valley

THIS IS INDUSTRIAL SOLAR IN THE DESERT

O2-13 Contd.

CEQA Environmental Factor
III AIR QUALITY:
As we will see (Figure 3, page 6), when disturbed the Sienna 2 project area soils will release considerable PM 10 and PM 2.5 exposing a large number of sensitive receptors (Figure 2) to substantial dust pollution resulting in significant health impacts. See the Newberry Springs blog referenced below.

Unfortunately, the local Mojave Desert Air Quality Management District (MDAQMD) is not able to make accurate PM determinations because it lacks ambient air quality monitors in the affected area. Their monitors are in Hesperia and Victorville approximately 22 miles west, upwind of the proposed project and blocked by the Granite Mountain ridges. The Lucerne Valley ambient air monitor is located at a school on Aliento Road off Route 18 going toward Big Bear. It monitors descending air from the higher up Mitsubishi Cement Mine and would not record PM rising from disturbance 5 miles to the north although the dust clouds will be visible. O2-14

As a Best Management Practice 8ME would have baseline monitoring data for at least one year, but 2 is better. Without baseline data you would be advised to rely on local experience including consultation with Chuck Bell and members of LVEDA. When the wind blows, beginning at 15 mph. the dust will rise during the 12 to 24 months of continuous construction and during operation. See photo at the top of this page. The MDAQMD Dust Control Plan which 8ME will have to sign relies on water and chemicals. To see how well this has worked for the folks in Newberry Springs during the current construction of the Daggett Solar Project visit http://newberryspringsinfo.com/Alliance/Compilation3.html O2-15

Figure 3: Soils with potential for dust issues illustrates how wise 8ME was to move Sienna 1 east off the dry lake proper. The beige color in Figure 3 is the shrinking clays found at the upper edges of Pleistocene lakes. Following storms, as the slimy clays dry out, huge fissures form which swell and heave making it difficult to travel across. A thick gravel surface will be required for vehicles traveling across the project area. The agricultural parcels will lose their cover crops along with the moisture and roots which hold the clay surface in place. O2-16

5 | Page

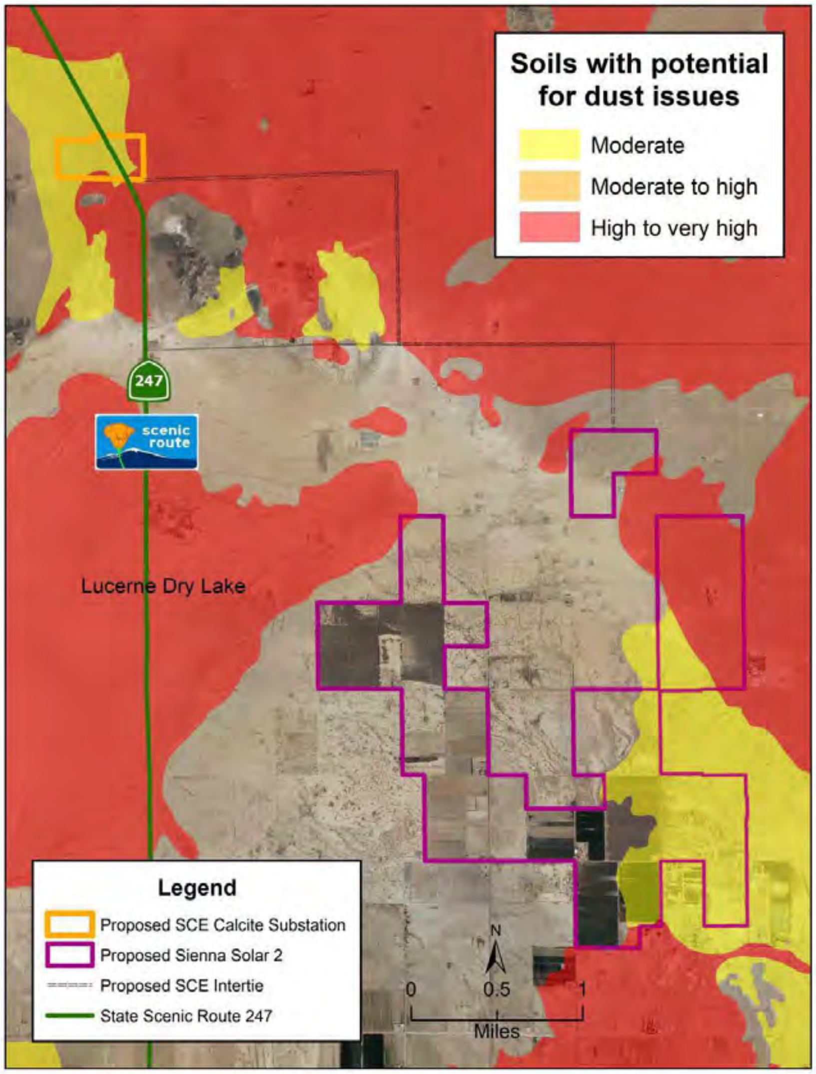

Figure 3: Soils with potential for dust issues

Although CEQA lists the factors to be addressed alphabetically nature doesn't work that way. All discussion of air quality includes the geology and soils and water availability for the life of the project and beyond. O2-16 Contd.

6 | Page

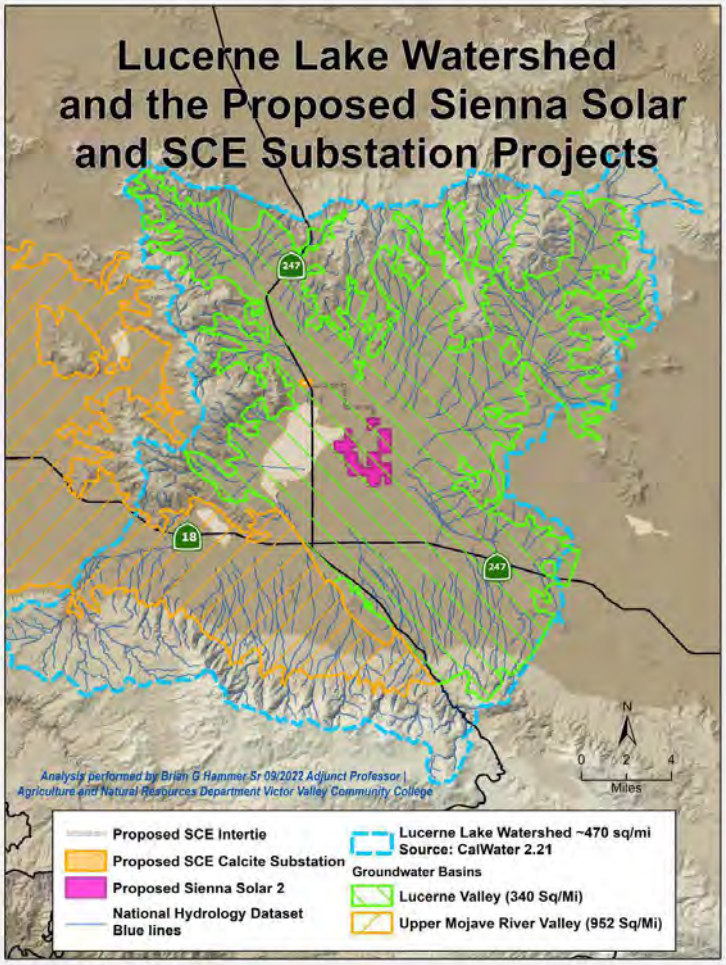

Figure 4: Lucerne Lake Watershed and Groundwater Basins

Comment: Local residents relying on wells must be protected. Water for construction, operation, and decommissioning (unless the project is continued) must be accounted for. Chuck Bell, President of LVEDA, has pointed out that estimates for previous projects primarily for soil stabilization have been a fraction of what was actually used or needed. The EIR needs to be realistic about water and dust control. Locals have the experience to know when soil stabilization and water calculations are based on the best available information. O2-17

7 | Page

Dust control and water availability, including recharge have potentially significant impacts from the proposed Sienna 2 project. Before any approval of the CUP 8ME must show they have the water rights and/or will serve letters to provide all the water required for the duration of the project without drying up neighboring wells. This information must be publically disclosed. O2-17 Contd.

For these comments the USGS 2022 study done with the Mojave Water Agency was consulted. https://www.usgs.gov/publications/hydrogeology-and-simulation-groundwater-flow-lucerne-valley-groundwater-basin

> *Groundwater withdrawal from pumping has exceeded the amount of water recharged to the basin, causing groundwater declines of more than 100 feet between 1917 and 2016 in the center of the basin. The continued withdrawal has resulted in an increase in pumping costs, reduced well efficiency, and land subsidence near Lucerne Lake. Although the volume of pumping has declined in recent years, there is concern that new agricultural growth and limits on imported water will continue to strain the sustainability of the groundwater system.*

Dust Control: Those of us living in areas subject to dust storms during construction and operation of utility-scale solar projects speak from experience. It must be dealt with up front to prevent both the health and property impacts. We suggest again that the Newberry Springs blog visualizing their ongoing experience with the construction of Daggett Solar be viewed.
http://newberryspringsinfo.com/Alliance/Compilation3.html
The Great Basin Unified Air Pollution Control District provides useful guidance on the technology for controlling dust in our basins.
https://gbuapcd.org/OwensLake/DustControls/

CEQA Environmental Factor
IV BIOLOGICAL RESOURCES
d) The project would interfere substantially with the movement of established native resident or migratory wildlife species and their migratory corridors. O2-18

The EIR biological report must account for the golden eagles known to fly the area. The 39 miles of connector and gen-tie pole lines will provide a number of perches for eagles and other birds especially ravens. Raven numbers are out of control in the region – poor desert tortoise, https://www.29palms.marines.mil/Portals/56/Docs/Environmental%20Affairs/RavenManagementFinalPEA_signedFONSI.pdf

Apple Valley is preparing a Multispecies Habitat Conservation Plan And Natural Community Conservation Plan (Apple Valley MSHCP/NCCP). O2-19
https://www.applevalley.org/home/showpublisheddocument/31135/637575478074670000

8 | Page

Figure 5: Plan Area for the Apple Valley HCCP

The Plan Area does not overlap with the proposed Sienna 2 site but the covered species are not impressed with artificial boundaries and should be studied for overlap with the Sienna 2 site in the EIR. See Table 1 below for the list of covered species especially those that are threatened, endangered, or candidate species under federal and state laws.

Figure 6: Terrestrial Connectivity (page 10) places the proposed Sienna 2 within both Connectivity Rank 3 and 4 as developed by California Department of Fish and Wildlife. It is also within the DRECP Desert Linkage Network. O2-19 Contd.

The terrestrial connectivity bridges the area between the San Bernardino Mountains and the Newberry and Rodman Mountain Wilderness Areas.

Covered Species

The species proposed for coverage under the MSHCP/NCCP include four State and/or Federally listed species and five special status species and/or state fully protected species in the Plan Area (see Table 1, below). The list of species proposed to be covered in the MSHCP/NCCP may be modified to include additional threatened or endangered species, and species that may become listed as endangered or threatened during the life of the permit that occur within the project area and may be affected by the covered activities.

TABLE 1 – SPECIES PROPOSED FOR INCLUSION IN THE APPLE VALLEY MSHCP/NCCP

Common name	Scientific name	Federal status	State status
Birds			
Burrowing owl	*Athene cunicularia*	None	State Species of Concern (SSC)
Golden eagle	*Aquila chrysaetos*	Protected under BGEPA and MBTA	Fully Protected Watch List
Least Bell's vireo	*Vireo belli pusillus*	Endangered	Endangered
Southwestern willow flycatcher	*Epidonax traillii extimus*	Endangered	Endangered
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Candidate	Endangered
Mammals			
Desert bighorn sheep	*Ovis canadensis*	None	Fully Protected
Desert kit fox	*Vulpes marotis arsipus*		Fully Protected Furbearing Mammal
Reptiles			
Desert tortoise	*Gopherus agassizii*	Threatened	Threatened
Plants			
Joshua tree	*Yucca brevifolia*		Candidate Threatened

O2-20

9 | Page

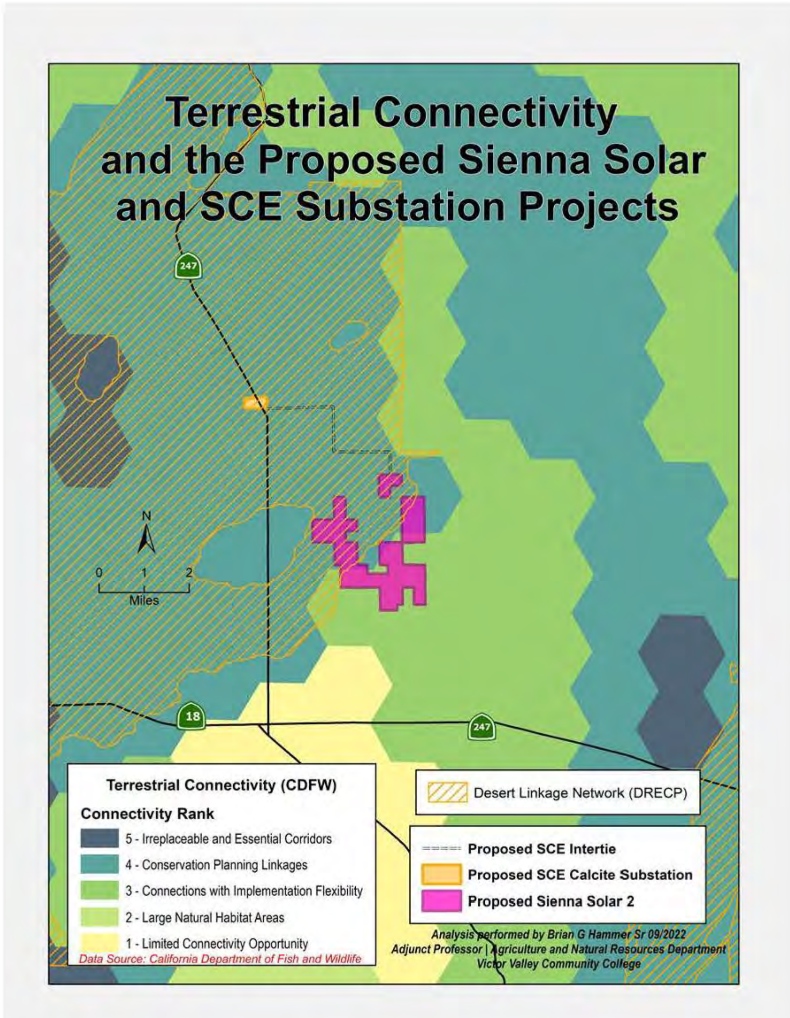

Figure 6: Terrestrial Connectivity

O2-20 Contd.

Comment: The EIR must analyze the biological richness of the area and the mitigation measures proposed for Sienna 2 on- and off-site including the larger surrounding area to maintain the integrity of the connectivity between the San Bernardino Mountains and the Newberry and Rodman Mountains Wilderness Areas.

CEQA Environmental Factor
XIII PUBLIC SERVICES
The proposed Project's battery storage system will include up to 525 MW of energy storage capacity. Lithium batteries are known to be highly explosive and flammable under certain conditions. A fire in the battery storage system would have a significant impact on the surrounding community and Fire fighting service.. O2-21

Comment: The EIR must account for the flammabality of the 45' high storage facility and show if the local San Bernardino Fire Station 8 has the equipment and the trained fighters to extinguish a lithim blaze while protecting the surrounding community members. Mitigation could require 8ME to support expanded equipment, personnel, and training.

CEQA Environmental Factor
XVII. MANDATORY FINDINGS OF SIGNIFICANCE
a) Does the project have the potential to substantilally degrade the quality of the environment?
b) Does the project have impacts that are individually limited but cumulatively considerable?

The answer to both a. and b. is yes. Following we show the degradation of the environment as it relates to migratory bird species. And we will demonstrate the triggering affect of this project and its dependence on additional projects.

Cumulative effects
Please see Figure 7: Cumulative Solar Projects (page 12)
Figure 7 shows the existing and planned solar projects and the SCE Calcite Substation.

Southern Lucerne Valley
- Agincourt (80 acres) and
- Marathon (152 acres) off Camp rock road in

Northern Lucerne Valley
- Sienna 2 (proposed – 1932 acres) O2-22
- Ord Mountain (proposed - 483 acres)
- Calcite Solar (proposed - 664 acres)
- Stagecoach Solar (proposed – 1950 acres)

Daggett Solar (in construction – 3500 acres) in Newberry Springs

The four Projects in northern Lucerne Valley depend on the approval and construction of the Calcite Substation for energy distribution. The EIR for Calcite is connected to Stagecoach Solar with approval by the CPUC before construction. Stagecoach is on State Lands and California State Lands is the Lead Agency.

Comment: Figure 7: Cumulative Solar Projects (page 12) is included to assist with the cumulative analysis on the environment and on the SDAC communities of Lucerne Valley and Newberry Springs. From the personal investment of homeowners, health effects from diminished air quality, loss of community tourist revenue, the personal loss of viewshed and dark night skies, and the change in day-today living that the muliple effects will change many lives. Watch again the Newberry Springs blog documenting Daggett Solar construction.

Lake Effect and degradation of the environment

If all the listed projects are built the millions of solar panels when stowed at night under moonlight or just starlight will resemble a series of ponds of varying sizes. Migrating birds, many species flying at night, will see the ponds as places to stop and rest, and feed, before continuing on to the Salton Sea and other points south. Unfortunately, they tend to crashland on the hard panel surface with fatal results. Panel glow will also attract birds during daylight hours.

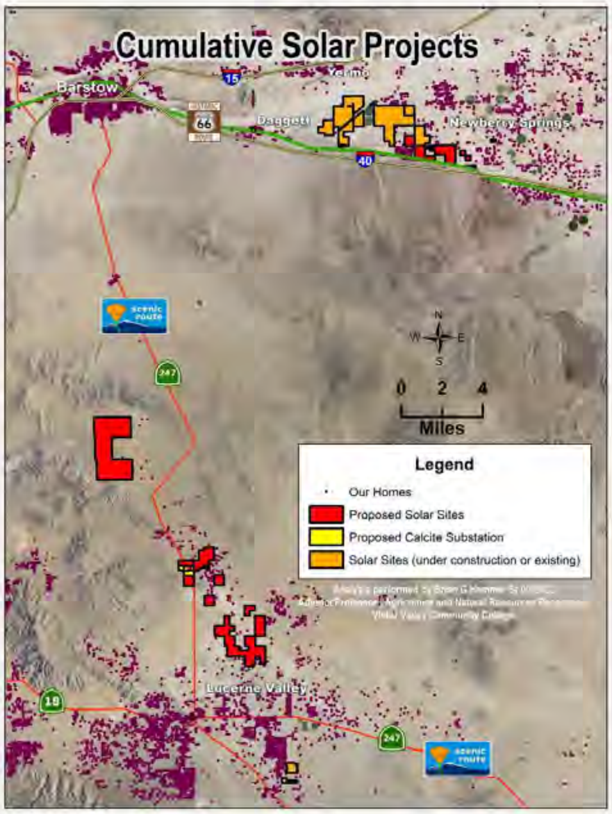

Figure 7: Cumulative Solar Projects

Birds have been migrating the inland route of the Pacific Flyway for millions of years. During the Pleistocene (Ice Ages) they would have been used to seeing the landscape below them dotted with lakes in the basins between the hundreds of mountain ranges. At the end of the Ice Ages the climate warmed and the lakes became ephemiral and then disappeared. Now, human created ponds attract the birds to rest and eat. It can be hard to distinguish the difference between a solar field and a pond at night and certain times during the day. The Lake Effect is a deadly illusion. O2-23

The Lake Effect as a bird killer has been known since 1982 with the installation of the experimental Solar One in Daggett. During migration hundreds of migrating birds a day would be observed in the Daggett Evaporation Ponds. Occasionally, disoriented birds flew into a heliostat. This reviewer reports from experience as the biologist on site to observe and record the birds.

In order to understand the magnitude of the bird problem it is necessary to look beyond bird surveys of the solar sites themselves for a regional picture. Fortunately this is easy to do because the Cornell Lab of Ornithology has given us the tool: eBird is a citizen science, peer reviewed site where people record birds at locations around the world. To access this project go to https://ebird.org/hotspots. When the world map comes up type "Daggett Evaporation Ponds" into the Hotspot search window. Shortly you will see the hotpot on a larger map. For a better look at O2-24

O2-24 Contd.

the area activate the satellite map. Pulling back you will get a view of other hotspots in the area. I am interested in the ones marked by yellow or red balloons. Figure 8 shows the mapped area in Figure 7. Daggett/Newberry Springs is on the east side. Lucerne Valley is at the base of the arc of mountains. The Mojave River defines the mountain arc and includes the red balloon Mojave Narrows Regional Park.

O2-25

The yellow balloons:
Piute Rd. Dairy, Daggett Evaporation Ponds and Tees & Trees surround the Daggett Solar Project. The rest of the yellow balloons trace ponds along the Mojave River.

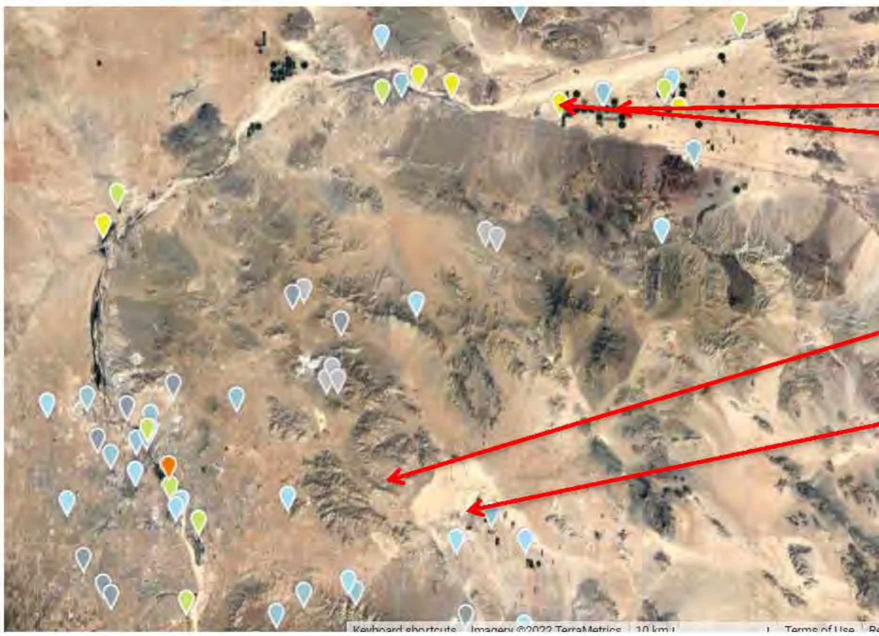

Figure 8: eBird Hotspots captured 9/19/2022

eBird Hotspot from east to west	# species	# counts
Camp Cady	109	38
Piute Rd. Dairy	125	135
Daggett Evaporation Ponds	150	291
Tees & Trees – Barstow Ponds	256	218
Barstow WTP	165	186
Barstow Community College	121	310
Helendale WTP	126	141
Silver Lakes (SBE Co.)	187	235
Mojave Narrows Regional Park (red balloon)	267	1222

Table 2: eBird Hotspot data from east to west. The #counts is the number of times that a person has uploaded observations to the site.

The area is rich is species diversity. Most of the species are migratory, heading south to the Salton Sea and beyond.

13 | Page

The proliferation of utility solar sites in this area of the flyway is deadly. Without scientific study and transparent reporting there is no way to know if any mitigation measures work. O2-25 Contd.

Comment: In addition to the CEQA Mandatory Findings the County Development Code Findings must be completely evaluated in the project EIR.

The San Bernardino County Development Code § 85.06.040 Findings Required

(1) The site for the proposed use is adequate in terms of shape and size to accommodate the proposed use and all landscaping, loading areas, open spaces, parking areas, setbacks, walls and fences, yards, and other required features pertaining to the application.

(2) The site for the proposed use has adequate access, which means that the site design incorporates appropriate street and highway characteristics to serve the proposed use.

(3) The proposed use will not have a substantial adverse effect on abutting property or the allowed use of the abutting property, which means that the use will not generate excessive noise, traffic, vibration, or other disturbance. In addition, the use will not substantially interfere with the present or future ability to use solar energy systems. O2-26

(4) The proposed use and manner of development are consistent with the goals, maps, policies, and standards of the General Plan and any applicable community or specific plan.

(5) There is supporting infrastructure, existing or available, consistent with the intensity of development, to accommodate the proposed development without significantly lowering service levels.

(6) The lawful conditions stated in the approval are deemed reasonable and necessary to protect the public health, safety, and general welfare.

Thank you for your consideration of these Scoping Comments. O2-27

Special thanks to Board Member Brian Hammer for the informative and visually compelling maps without which this analysis could not have been done.

Sincerely,

Pat Flanagan

Pat Flanagan, MBCA Board Member and Project Reviewer

Steve Bardwell

Steve Bardwell, MBCA Board President

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APPENDIX A

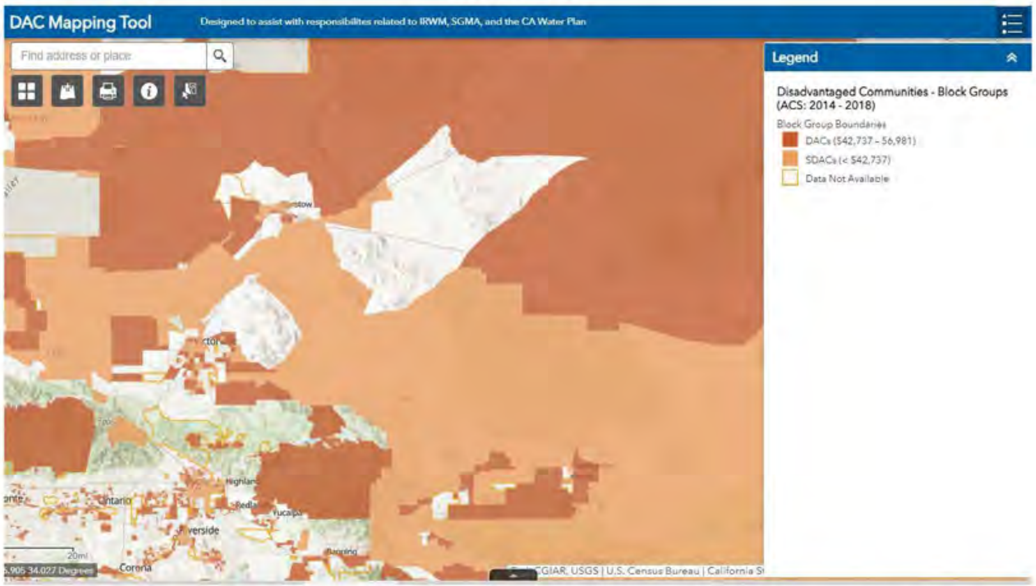

Figure 9: Map showing the Severely Disadvantaged Communities (SDAC) of Lucerne Valley and Newberry Springs.

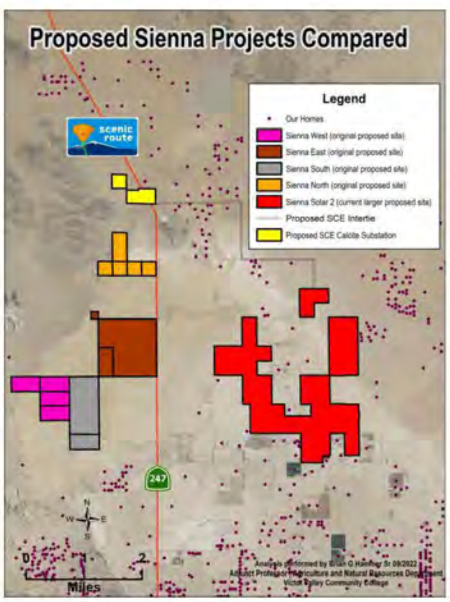

Figure 10: Proposed Sienna Projects Compared

The map demonstrates the degree to which the original Sienna 1 Project, even after the additional acres were added, did not physically divide the community of Lucerne Valley as the proposed Sienna 2 does.

15 | Page

The California Desert's Role in 30X30: Carbon Sequestration and Biodiversity

February 6, 2024

Dr. Michael Allen, Ph.D. Distinguished Professor Emeritus. Department of Microbiology and Plant Pathology, University of California, Riverside

Dr. Cameron Barrows, Ph.D. Conservation Ecologist, Emeritus. Center for Conservation Biology, University of California, Riverside

Colin Barrows, Co-founder, Cactus to Cloud Institute

Susy Boyd, MNR. Master of Natural Resources, Forests and Climate Change. Oregon State University

Pat Flanagan, B.A. Biology. California State University, Long Beach

Robin Kobaly, M.S. Biology and Plant Ecology. University of California, Riverside

Arch McCulloch, M.S. Computer Science. Azusa Pacific University. B.S Geology / Computer Science. California State University, Dominguez Hills

Joan Taylor, Governing board of the Coachella Valley Mountains Conservancy, and boards of Friends of the Desert Mountains and The Wildlands Conservancy. Chairperson, California Conservation Committee and California/Nevada Desert Committee of Sierra Club

Author Biography

Dr. Michael Allen. Dr. Michael Allen has a Bachelor of Science in Biology from Southwestern College in Kansas, a Master of Science in Botany from the University of Wyoming, and a Ph.D. in Botany from the University of Wyoming, and is currently a Distinguished Professor Emeritus in Microbiology and Plant Pathology at the University of California, Riverside. He has worked on carbon flux and mycorrhizae since his dissertation, served as a program officer at the National Science Foundation where he managed Long-Term Projects, Ecosystems, and Conservation and Restoration Biology. During his tenure, he led discussions for the initiation of the National Ecological Observatory Network (NEON), served as an original member of various NEON boards, led the Biodiversity workshop, led the California bioregion discussions, and designed the soil sensor network that was adopted by NEON to measure soil carbon flux.

Dr. Cameron Barrows. Dr. Cameron Barrows worked for The Nature Conservancy (TNC) with his wife Kate, managing the last remaining old growth redwood forest in Mendocino County, CA, and conducting research on Spotted Owls (1980-1986). Dr. Barrows continued working for TNC and other NGO conservation organizations to implement the first-in-the-nation Habitat Conservation Plan in the Coachella Valley and expanding that plan to encompass the full breadth of biodiversity within that valley (1986-2005). Research focused on the Coachella Valley fringe-toed lizard and flat-tailed horned lizard. He worked with the Research Faculty at the University of California Riverside's (UCR) Center for Conservation Biology (2005-2022). Research focused on the response and resilience of desert species to modern climate change. Emeritus Research Faculty at UCR (2022-Retired). Still doing research and still married to Kate (44 years and counting). Their son Colin is carrying the desert conservation torch into the coming decades.

Colin Barrows. Colin is a Coachella Valley naturalist and desert advocate who works to promote conservation of natural open spaces and native species. He works with local agencies to advance habitat conservation, recreational trails planning, and education about desert ecosystems. He also serves on the board of the Mt. San Jacinto Natural History Association. Colin currently serves as co-founder of the Cactus to Cloud Institute.

Susy Boyd. Susy Boyd completed her MNR [Master of Natural Resources] degree at Oregon State University with an emphasis in Forests and Climate Change. Her research project developed climate change predictions and impacts on Seasonally Dry Tropical Forests in Mexico's Yucatan region. Prior to her studies with OSU, she received a Master of Arts degree in Rhetoric and Communication at UC Davis where she also served as lecturer. She currently works with Mojave Desert Land Trust as Public Policy Coordinator.

Pat Flanagan. Pat Flanagan is a naturalist - educator with a BA degree in biology from CSU Long Beach. She was the director of education at the Tijuana River National Estuarine Research Reserve for 10 years. She developed the first bilingual coastal wetland curriculum for bi-national distribution and training. This curriculum was later adapted to the Colorado Desert for the Desert Protective Council. She was a founding member of the Mojave Desert Land Trust where she held various positions. She is on the board of the Morongo Basin Conservation Association (20 years) for whom she has studied and commented extensively on Utility Scale Solar projects in the Mojave Desert. She is an advisor to the Mojave Desert Resource Conservation District and the naturalist at the historic 29 Palms Inn Oasis of Mara.

Robin Kobaly. Robin Kobaly holds both BS and MS degrees in Biology and Plant Ecology from the University of California, Riverside. She served as a botanist for the U.S. Bureau of Land Management for 21 years, working on regional conservation plans, habitat management plans, management plans for Areas of Critical Environmental Concern (ACEC), and environmental impact statements. Kobaly served on the Independent Science Panel providing science-based input to the planning process for the Desert Renewable Energy Conservation Plan (DRECP). She currently serves as Executive Director of The SummerTree Institute, an environmental education non-profit.

Arch McCulloch. Arch McCulloch has Bachelor of Science degrees in Computer Science and in Geology from California State University at Dominguez Hills, and a Master of Science degree in Computer Science from Azusa Pacific University. He spent 35 years as a software and information assurance engineer in the defense industry. He is currently on the boards of Morongo Basin Conservation Association (MBCA) and the Mojave Desert Chapter of California Native Plant Society (CNPS).

Joan Taylor. Joan Taylor has been conserving the California desert for over five decades, including eight years as an appointed stakeholder to DRECP, where she co-authored the joint environmental NGO comments on the CEC energy-acreage calculator. Joan has received numerous awards and acknowledgements for her life-long leadership

1

in desert conservation. Currently, she serves on the governing board of the Coachella Valley Mountains Conservancy, The Wildlands Conservancy, and Friends of the Desert Mountains. Joan also chairs the Sierra Club's California Conservation Committee and its California/Nevada Desert Committee.

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2

The California Desert Conservation Area

Executive Summary

Our state's southeast desert region is unlike any other locale of the state. California's desert ecosystem comprises a staggering 25% of state land (approx.26 million acres) and is locally accessible to approximately half of our state's population. The unique beauty of the desert ecosystem has driven visitation to the region, with Joshua Tree National Park recognized as the 8th most visited national park in the country in 2022.

In spite of its rapidly rising popularity, the California desert as an ecosystem remains poorly understood, underfunded, and misperceived. One of the most persistent mischaracterizations is that the California desert is a barren wasteland with low biodiversity and limited capacity for carbon storage. Scientific data refutes these inaccuracies, and this report will demonstrate that the California desert has extremely high biodiversity and is a significant carbon sink with tremendous opportunity to sequester carbon and help our state meet its atmospheric carbon reduction goals.

There are 2 key takeaway messages from this report:

1. **The desert's carbon storage process differs significantly from more widely understood sectors such as forests, grasslands, chaparral, and wetlands.**
2. **Because of the distinct carbon storage process found in the desert ecosystem, there is one recommended strategy to maximize the desert sector's contribution to carbon emission reduction: intact desert lands need to be left undisturbed.**

3

REPORT OVERVIEW

I. Introduction. California's goal of carbon neutrality seeks to balance the net flux of greenhouse gas emissions (GHG) from all sources and sinks.

> California's non-forest habitats play an unappreciated but critical role [in carbon sequestration] .... As with forests, non-forest habitats can store carbon by keeping it from being released and sequester it by removing it from the atmosphere. Habitats in arid and semi-arid regions — including shrublands, grasslands, and deserts — have been found to store significant amounts of carbon while being resilient to drought and increased atmospheric carbon (Yap et al., 2023).

As reported by Yap et al., globally, scientists estimate that deserts store 999 – 1,899 petagrams [Pg] of carbon. In the United States, southwest deserts sequester 50 teragrams [Tg] of carbon annually (equal to 0.05 Pg). And in California's northern Mojave Desert, field experiments demonstrated that CO_2 exchange plays a larger role in global carbon cycling than what scientists and policy makers have long assumed. The desert ecosystem, unlike other sectors, is largely unmanaged with the exception of some restoration projects. Additionally, the desert's recovery from alterations of any kind takes place on a time scale at a much slower rate relative to other ecosystem types, up to thousands of years.

The desert's function as a significant global carbon sink is an emerging and exciting scientific territory that merits a central place in any endeavor to meet climate change goals.

Center for Biological Diversity, Yap, T., Prabhala, A., & Anderson, I. (2023). *Hidden in Plain Sight. California's Native Habitats are Valuable Carbon Sinks* (W. Leung, Ed.)

II. Maximizing Carbon Sequestration and Biodiversity Protections

Maximizing carbon sequestration and concurrent protection of high biodiversity in the California desert ecosystem is achieved by conserving 100% of <u>undisturbed</u> public lands.

Arch McCulloch, MS
Board Member, Morongo Basin Conservation Association / Mojave Desert Chapter of CNPS

It is axiomatic that disturbances in the desert take a long time to heal. Scars in terrain altered by General Patton's World War II training exercises remain visible today, and areas grazed by cattle still, over 60 years later, support vegetation assemblages that indicate a history of grazing and associated fires (Sawyer et al. 2009). Deliberate disturbances, such as the desert intaglios near Blythe, can last for many centuries.

Many desert perennials are long-lived: Joshua trees (*Yucca brevifolia*) can live over 100 years and Mojave yuccas (*Yucca schidigera*) can live over 1,000 years; desert ironwood (*Olneya tesota*) may live a thousand or more (Rymer 2023). Creosote bush (*Larrea tridentata*) clonal rings over 10,000 years old are still living in parts of the Mojave Desert (Porter 2012). Blackbrush (*Coleogyne ramosissima*) may take over 60 years to re-establish on sites where it has been removed (Anderson 2001). Obviously, restoration of disturbed sites is complicated by these time scales.

In desert soils, restoration is even more complicated due to very deep and expansive root systems and to the complex soil biota that has co-evolved with plants on particular sites over millennia. After removal of perennial plants, the re-establishment of this deep soil biota, even more than the extremely slow growth rates of desert perennials, means there is no practical way to restore lands where this relationship has been disrupted.

5

Photovoltaic solar (PV) is rightly seen as a core energy resource to reduce our carbon footprint. The issue is where to place it to best attain this goal. There is great risk of unintended consequences when Southern California deserts are narrowly assumed to be the primary locale for utility scale solar, as we discuss in the following sections. Photovoltaic efficiency is highest on cool, sunny days, which maximizes the electric potential of the solar cell. Since cloud cover and high ambient temperatures both reduce PV efficiency, cooler areas with higher cloud covers will have PV efficiency comparable to hot areas with lower cloud cover. Locating solar panels as close as practicable to load will reduce resistance losses. The success of PV generation in Germany shows that acceptable efficiency is achievable with these strategies.

Given the ability of undisturbed desert land to bind and hold carbon on a scale of millennia, and the difficulty of restoring disturbed desert lands to anything approaching this capability, we believe that any solar project proposed for the desert should be sited on the vast areas that have already been disturbed by urban, agricultural, and industrial installations (and by the ruins, both physical and biological, of former installations).

In sum, any calculation of equivalent carbon savings by a desert solar installation must, if it is honest, subtract carbon no longer sequestered by the destroyed vegetation, as well as carbon being released to the atmosphere by soil now exposed to weathering. It must also account for replacing an ecosystem service (that, if undisturbed, would continue to operate independently and indefinitely), with an industrial service requiring near-constant maintenance and complete equipment replacement every few decades.

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Characterizing Disturbed Lands

Susy Boyd, MNR. Master of Natural Resources, Forests and Climate Change, Oregon State University
Public Policy Coordinator, Mojave Desert Land Trust

Disturbed lands are those areas where infrastructure development has been or may be encouraged. The state of California as a whole has much to offer in terms of disturbed lands suitable for utility infrastructure as we transition to clean energy and meet our state's impressive climate change mitigation goals.

Landscape-scale disturbance falls across a continuum. A pristine desert ecosystem characterizes one end of the spectrum, and worst-case scenario characterized by loss of ecosystem function represents the other end of the spectrum (C. Barrows Ph.D., personal communication, September 14, 2023). A functioning desert ecosystem provides ecosystem services beyond carbon sequestration including habitat for desert organisms. So long as perennial woody vegetation remains intact, the landscape can be considered a functioning ecosystem, even with presence of non-native grasses and mustard that have

6

ephemeral impacts based on water availability. Other examples of undisturbed lands subject to minor impacts include areas with light or well-managed grazing, lands affected by wildfire (with root zone left undisturbed), and lands impacted by flooding with no expected continuing disturbance.

Examples of landscapes that have lost most of their functionality would be abandoned building sites, fallow agricultural lands, and large-scale mining operations; degraded OHV playgrounds, parking lots, and rights-of-way for transmission lines and canals. Residential and commercial developments are also regions where ecosystem function has been reduced to nonfunctional status.

In 2023, the California Energy Commission [CEC] released a staff report entitled, "Land-Use Screens for Electric System Planning." Land use screens are high level land use evaluation tools that identify favorable sitings for renewable energy after considering technical and economic criteria; legal restrictions; and planning considerations for biodiversity, crop production, climate resilience, and landscape intactness. The 2023 report provides descriptors for landscape intactness:

> Terrestrial landscape intactness: ***A measure of landscape condition based on the extent to which human impacts such as agriculture, urban development, natural resource extraction, and invasive species have disrupted the landscape across California.*** The Conservation Biology Institute (CBI) has created a multicriteria evaluation model using more than 30 data layers, or variables… The CEC staff partitions this dataset at the mean to create two categories: areas that are already disturbed and have degraded ecosystem function and areas where development would impair the landscape and cause new disturbance. In this analysis, areas of low landscape intactness are most suited for exploration of renewable resource potential, whereas areas of high intactness are better suited for conservation. Therefore, the higher category of landscape intactness values is used to remove technical resource potential from the state.

Lands with degraded ecosystem function are shown in blue (below the mean) in the following map and areas with high intactness value (above the mean) are displayed in orange. Areas with high landscape intactness (orange) indicate areas with low priority for infrastructure development in order to preserve ecosystem function, biodiversity, and carbon sequestration capacity. Intact landscape characterizes much of the California desert region, though large tracts of disturbed land across the state remain highly viable options for renewable energy development. More thorough analysis of disturbed desert lands is needed for planning purposes. Future industrial scale solar projects should be sited on disturbed lands that already exhibit low intactness.

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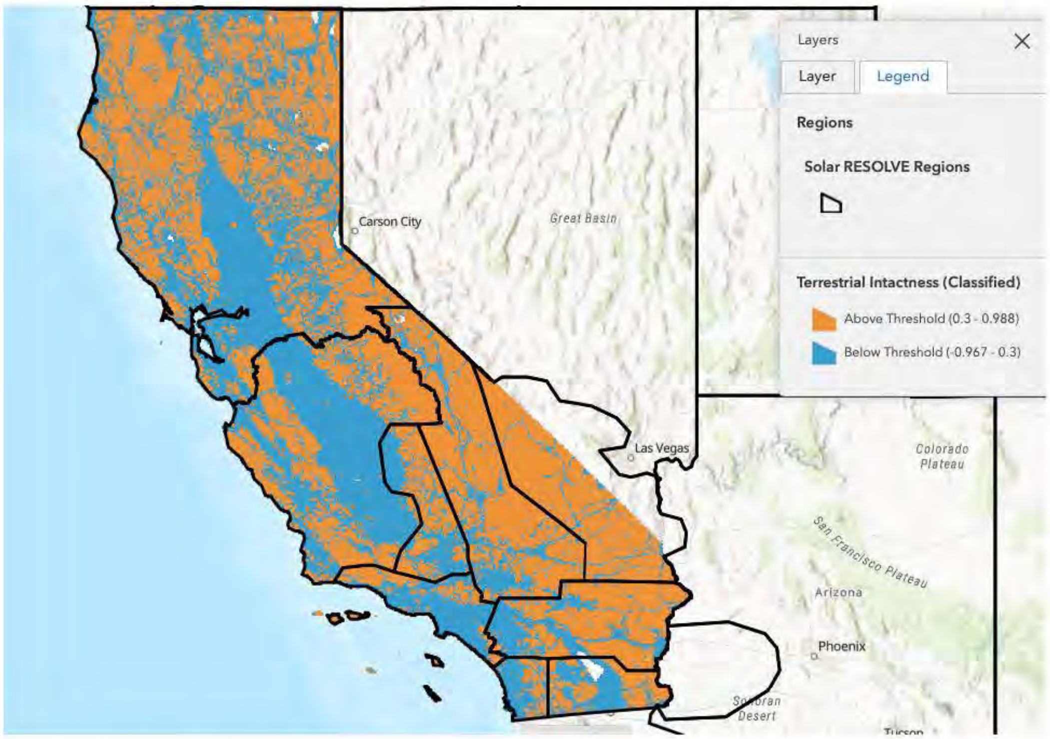

Source: Hossainzadeh, S. et al. 2023.

Landscape Intactness as calculated by CBI is partitioned into high and low categories based on the mean.
Orange = High Intactness [Undisturbed]
Blue = Low Intactness [Disturbed]

Reference

Hossainzadeh, Saffia, Erica Brand, Travis David, and Gabriel Blossom. 2023. Land-Use Screens for Electric System Planning: Using Geographic Information Systems to Model Opportunities and Constraints for Renewable Resource Technical Potential in California. California Energy Commission. Publication Number: CEC-700-2022-006-F.

8

Why desert restoration is not an effective means to achieve atmospheric carbon reduction goals

Robin Kobaly, M.S. Biology and Plant Ecology, University of California, Riverside
Executive Director, The Summertree Institute

The rate and success of restoration efforts or recovery of disturbed ecosystems is largely dependent upon water availability. When an impacted ecosystem has ample water available for seed germination, root establishment, and growth of new foliage, recovery can be fairly rapid, ushering back the community of insects, reptiles, birds, mammals, and microbes that depend upon plants in the ecosystem. However, if a disturbed ecosystem has limited rainfall and low soil nutrient content, recovery either naturally or through restoration efforts takes much longer and may not always succeed. Recovery from disturbance by temperate ecosystems is much faster than in arid ecosystems, with both infrequent, unpredictable precipitation and low soil nutrients contributing to the slower recovery of arid ecosystems such as those in the California deserts.

Recovery and restoration in forest ecosystems requires about 40 years, but recovery and restoration in desert ecosystems can take centuries longer. Research suggests that removal of desert vegetation and disturbance of the topsoil requires about 30 years before the pre-existing plant community begins to grow back, over two centuries before even partial recovery of species composition occurs, 50 – 300 years for recovery of plants to pre-disturbance cover and biomass, and up to 3,000 years before the disturbed area returns to the ecosystem function it had before disturbance. Disturbance is defined here as a physical force (e.g., road building, plowing for agriculture, construction of industrial-scale solar fields, etc.) that removes most or all the plant biomass.

Research indicates that the older the plant community, the longer the recovery time. Desert ecosystems are known for the longevity of their perennial plant community, with many shrubs living hundreds (blackbrush, Mormon tea, galleta grass, pinyon, etc.) to thousands of years (creosote, Mojave yucca, California juniper, nolina, desert ironwood, etc.). Data show that protecting deserts from disturbance is critical for sustaining old communities, valuable for their generational contributions to ecosystem stability. The desert's ancient plants sustain their community through centuries of drought episodes, excessive heat waves, frosts that kill younger plants, and attacks by diseases and pests that compromise younger plants struggling to become established.

Some scientists have hypothesized that if disturbed, the oldest communities may not actually recover, even with restoration efforts, and they could be replaced by an alternative community. The reasoning is that climate and other conditions (e.g., invasion by exotic species, climate extremes, anthropogenic nitrogen deposition) have changed so much since the communities developed hundreds to thousands of years ago, restoration attempts may not be successful in recreating the original ecosystem, and a different community may become established instead of the original community.

Active revegetation in southwestern deserts has generally been confined to small areas because of its expense, the unpredictable weather that makes restoration effectiveness uncertain, and logistical challenges associated with implementing treatments across large desert areas.

Since disturbances can leave scars in the desert visible for multiple human generations and because restoration is so difficult, costly, and not guaranteed, great care should be exercised before disturbing the desert, not simply for ecosystem health, but also to preserve visual aesthetics, air quality, human health, ecotourism viability, biodiversity, and carbon sequestration capacity. For these reasons, conservation of intact desert lands should be prioritized over restoration of land not already scheduled for disturbance by infrastructure projects.

9

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III. The Critical Relationship Between Undisturbed California Desert Lands and Carbon Sequestration

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A microphyll woodland that was later denuded for a utility-scale solar energy facility. While individual trees and shrubs are small aboveground, belowground their roots expand horizontally and vertically, filling the interspaces and reaching to depths of tens of meters. These deep-rooted plants are also very long-lived, sequestering carbon for hundreds to thousands of years. One clonal creosote shrub was measured as 22 by 8 meters across, and was over 11 thousand years old.

- Carbon fixation and allocation in microphyll woodlands and creosote shrubland is relatively insensitive to local precipitation due to the access that these vegetation types have to two alternate sources of water: moisture from large rain events even miles away that saturate the soil,

10

and access to groundwater by deep roots. These factors allow plants in microphyll woodlands and creosote bajadas to photosynthesize and sequester carbon throughout the seasons even without local precipitation. Although highly variable annually, measurements of net ecosystem exchange [NEE] in mesquite stands through a growing season can exceed 200 kilograms of carbon per hectare per year (kgC/ha/y) and net ecosystem exchange of creosote bajada scrub can exceed 1,000 kgC/ha/y. Our back-of-the-envelope conservative estimates suggest that these two vegetation types could sequester an average of 1.5 million tons of C per year. [By comparison, NEE during a wet year in Baja California was 520 kgC/ha/y with a sky island coniferous forest above southern California desert at 300 kgC/ha/y, a 100-year-old chaparral during a wet year of 520 kgC/ha/y, and drought year of 180 kgC/ha/y, the La Selva tropical rainforest of 1,000 kgC/ha/y (dry year)/3,000 kgC/ha/y (average)/5,000 kgC/ha/y (wet year), and a boreal forest 780 kgC/ha/y]. In deserts, the organic carbon of the ecosystem turns over on an average of 38 years, with soil and sediments turning over on a 200-year average. This contrasts with a temperate forest of 25 and 55 years, respectively; a cropland turnover of 22 and 40 years, respectively; and a perennial grassland turnover of 36 and 100 years, respectively. Desert organic carbon once fixed stays in the system longer than in other ecosystems, releasing back to the atmosphere slowly.

However, unlike the large storage of organic C in most ecosystems, much of the desert total carbon is stored as calcites, generated by respiration.

- Calcites, layered into caliche, form from autotrophic respiration from deep roots and symbiotic microbes, and from heterotrophic respiration of the transferred organic matter. If buried and undisturbed, this carbon can remain sequestered for millennia. We estimate that more than 262 million tons of C could be stored in California deserts as calcites.
- Importantly, buried calcites are dissolved upon exposure to air and water. Upon exposure, the CO_2 in calcium carbonates can be released from disturbed soils up to 2.4 gC/m^2/day, or 24 kgC/ha/day following a precipitation event.
- We suggest a new C sequestration modeling approach to validate and close the desert carbon budgets using an ecohydrology approach, incorporating deeper water use and using normalized difference vegetative index {NDVI} rather than precipitation as a driver of CO_2 fixation, and linking the NEE to deep C sequestration.

Conclusion

- Large-scale disturbance of deserts, particularly within critical ecosystems such as creosote bajadas and microphyll woodlands, has the potential to reduce not only California's biodiversity, but also a source of long-term carbon sequestration, releasing calcite carbon stored for millennia.

IV. Overview of Carbon Sequestration Process in Desert Ecosystems

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What drives carbon capture and storage in deserts?

The combination of a hot, dry climate, and dynamic plant adaptations to that extreme climate has created a unique pathway for the capture and storage of carbon (carbon sequestration) in deserts. Sparse rainfall has resulted in desert soils that are abundant in minerals such as calcium, but low in nutrients like nitrogen necessary for plant growth. That sparse rainfall, combined with hot, dry surface soils, has enticed many desert plants to grow exceptionally long roots to reach deep soils that still hold moisture from rain

11

events from years past and possibly from miles away, or even deep enough to reach down to groundwater.

Root partners like fungi and bacteria living on or within those deep-rooted desert plants absorb and share resources with their plant host, helping their plant partners overcome the minimal presence of water and nutrients. These pressures, adaptations, and partnerships all work together to create an unexpected mechanism for extremely long-term carbon storage – and carbon capture that can continue even when we least expect it: when rainfall is just a memory across the desert.

How does the desert capture and store carbon?

While desert plants do capture and store carbon aboveground in foliage and woody tissue, they store much of their captured carbon deep underground in a massive network of connected roots and fungal root-partners, unlike forests which store most of their carbon aboveground or near the soil surface. Some of this carbon is stored in the tiny but numerous filaments of root-partnering fungi, called mycorrhizal fungi, that live in partnership with plant roots. The filaments, or mycelia, of one large group of these mycorrhizal fungi are coated with a "sealant" called glomalin made from carbon that was captured aboveground by the plant host. Because there can be so many miles of fungal hyphae (covered with glomalin) in each cubic foot of desert soil, glomalin is attributed with storing one-third of the world's soil organic carbon.

Much of the carbon these plants capture aboveground from the air and convert into sugar is eventually turned into inorganic carbon underground. When the long roots breathe out (respire) carbon dioxide deep into dark moist soil, this carbon dioxide combines with the abundant calcium in our arid soils to create mineralized deposits called calcite (calcium carbonate), or "caliche" when it forms into layers. These deposits start as tiny crystals but eventually grow to large crystals, then chunks, and into layers of caliche that can start at the soil surface or form at various depths underground. These calcite/caliche deposits can store captured carbon in this inorganic form for hundreds, to thousands, to even hundreds of thousands of years…if not disturbed.

Where does carbon sequestration occur in deserts?

Historically, much of the desert's "soil organic carbon" has been missed by soil scientists, because many soil studies conclude at "plow-line depth," or between 6 and 12 inches. These studies aren't of much relevance in the desert because most of the carbon that desert plants capture is stored extremely deep in the soil. Roots of most (non-succulent) desert plants grow incredibly deep, up to ten times longer than the plant is tall in their critical quest to find soil moisture, and the subterranean biomass of this network of deep roots is filled with organic carbon. A veritable inverted "forest" of root mass holds carbon deep underground in desert soils. These deep roots and their connected fungal root partners continuously breathe out carbon dioxide from just below the soil surface down to as much as 150 feet (over 40 meters), or down to groundwater. That exhaled carbon, in contact with calcium and moisture, is eventually converted underground into calcium carbonate (calcite) crystals which can form into layers of caliche, capable of storing that carbon for millennia.

When does carbon sequestration happen in deserts?

Carbon is captured wherever desert plants grow, but the level and timing of that capture varies with the types and distribution of those plants across the landscape. Desert grasslands and areas with *shallow*-rooted shrubs and cacti capture carbon in response to rain events; in these habitats, carbon accumulation after precipitation can be as high as in wetter ecosystems. Habitats with *deep*-rooted plants, such as

12

microphyll woodlands (dry washes with small-leaved trees like palo verde, mesquite, and ironwood), as well as creosote bajada scrub (broad alluvial slopes with creosote bushes) can continue to photosynthesize and capture carbon long after rain events. Because of their long roots that reach to deep, percolated water from previous rain events (possibly occurring miles away), or even reaching down to groundwater, these stands of desert plants can extend their carbon fixation long into drought cycles. These factors allow plants in microphyll woodlands and creosote bajadas to photosynthesize and sequester carbon throughout the seasons even without local precipitation.

How much carbon is captured and stored in the desert?

Scientists are currently working on ways to measure deeply buried carbon across vast landscapes like the California Desert that are highly diverse in topography, soils, climate, and vegetation. Carbon-storing calcite/caliche deposits are distributed in patches in some places and in vast layers in others. Also, these deposits are distributed at varying soil levels depending upon rainfall and the depth of desert plant roots that can deposit carbon all the way down to groundwater. Arriving at a total value for stored underground carbon in a diverse desert is much more challenging than for other more homogeneous landscape types. However, we do have data that measures how much carbon is accumulated by plants in some specific desert habitats, and can compare capture rates to other ecosystems around the planet.

The primary gauge of an ecosystem's carbon sink potential is the net exchange of carbon between the ecosystem and the atmosphere, i.e., the carbon balance of the land, or how much carbon comes in versus how much carbon goes out. This measurement is called "net ecosystem exchange," or NEE. By comparing the carbon balance of diverse ecosystems, we can get an idea of the relative strength of each ecosystem's carbon sink capacity. Dr. Michael Allen has summarized NEE measured within various ecosystems worldwide. He compared them to those measured across two vegetation types thought to sequester significant amounts of carbon in the California desert (microphyll woodlands, which can contain mesquite, and creosote bajada scrub). As shown in the table below, the carbon sink capacity of creosote bajada scrub rivals that of a tropical rainforest or boreal forest. Even microphyll woodlands are in the range of coniferous forests in southern California. **The combined two desert vegetation types, microphyll woodland and creosote bajada scrub (just two of many vegetation types in the California desert), could sequester an average of 1.5 million tons of carbon per year.**

Net Ecosystem Exchange Rate	kilograms Carbon per hectare per year
Sky island coniferous forest in southern California desert	300
100-year-old chaparral during a wet year	520
100-year-old chaparral during a drought year	180
La Selva tropical rainforest (wet year)	5000
La Selva tropical rainforest (dry year)	1000
Boreal forest	780
Mesquite stands (microphyll woodland) in California desert	200+
Creosote bajada scrub in California desert	1000+

13

What happens to stored carbon if we disturb desert soils?

Despite its long-term storage capacity, caliche releases its sequestered carbon when vegetation is removed and soils are disturbed and exposed to erosion. As caliche degrades in disturbed soils, its calcium and carbon molecules are uncoupled, releasing the carbon to reenter the atmosphere as carbon dioxide.

Why care?

We risk losing massive accumulations of carbon stored underground as calcite/caliche if the desert soil surface is disturbed. This carbon capture and storage system is functioning now and will continue to capture and store carbon if soils are not disturbed. Most of the caliche in our desert soils was actually formed during the Pleistocene when the climate supported more dense and productive vegetation**. In fact, Dr. Michael Allen at the UCR Center for Conservation Biology commented on the desert's capacity to store large amounts of carbon dioxide as caliche, noting that, "The amount of carbon in caliche, when accounted globally, may be equal to the entire amount of carbon as carbon dioxide in the atmosphere."**

Removal of carbon from our atmosphere is now being considered an important component of fighting climate change. The synthetic conversion of excess atmospheric carbon dioxide to calcite and storing it underground is gaining much attention and funding (although with major technical difficulties). Our deserts are performing this conversion every day, automatically, without any input from humans, and it will continue that unaided sequestration and long-term storage if simply left undisturbed

V. Quantification of Carbon Sequestration in the Desert

Carbon and California Deserts: June 2023.

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Arid lands worldwide have sequestered carbon (C) for millennia. Human–caused perturbations of deserts alter this balance and risk releasing significant amounts of CO_2 to the atmosphere, exacerbating global warming. **Although the net primary production in California Desert Ecosystems is generally low, there remains a net positive carbon sequestration in wildland ecosystems, particularly across desert bajadas and microphyll woodlands.**

There *remains a view* that, because of low precipitation, high temperatures, and sparse vegetation, hot deserts of southern California are of limited value to carbon sequestration. However, our deserts contain a very large carbon sink. Laid down over thousands of years, desert C is more dynamic and sensitive to disturbance than is often acknowledged. As Martin and colleagues (Martin et al. 2021) noted:

> "Although equilibrium is often assumed between soil carbon dioxide and groundwater, disequilibrium may result from heterogeneous distributions of recharge, flow paths, and respiration often seen in the carbonate critical zone. Understanding the controls of this disequilibrium, which drives carbon dioxide dissolution or evasion and alters pH, weathering reactions, and carbonate mineral dissolution or precipitation, is critical in linking the carbonate critical zone to the global climate system."

Below, I outline the basis for our concerns with the loss in natural wildland deserts because of its importance in the global atmospheric carbon budget as well as the associated loss of biodiversity (Hernandez et al. 2015).

CO_2 fixation. Due to the low leaf area, one assumption made by large-scale ecosystem models is that deserts fix carbon at relatively low rates. But when water is available, leaves of desert plants photosynthesize at the same rates as in other ecosystems, and leaves can grow rapidly with soil moisture. Broadly, and especially during drought, rates of flux, net ecosystem exchange (NEE), across scales measured by techniques such as eddy flux, are often low but highly variable. At Deep Canyon during a series of dry years, our NEE was slightly positive. Alternatively, from the desert free air CO_2 enrichment (FACE) research project, under ambient CO_2 conditions, NEE was estimated up to 1.27 metric tons of carbon per hectare per year (MTC/ha/y) (Jasoni et al. 2005). The standing crop mass was 11 kg of carbon per hectare (kgC/ha), 80% of which was soil organic carbon (SOC) and sensitive to atmospheric CO_2 levels, largely deposited as soil C (Evans et al. 2014). For the Sonoran desert ecosystem, NEE was estimated as ranging from 120 kg of carbon per hectare during a dry season to 360 kg of carbon per hectare during a wet season (Huxman et al. 2004). [By comparison, NEE for a wet year in a desert in Baja California was up to 520 kgC/ha/y, a sky island above southern California desert at 200 to 300 kgC/ha/y, a 100 year old Chaparral of 520 kgC/ha/y, and drought year of 180 kgC/ha/y, the La Selva tropical rainforest of 1,000 kgC/ha/y (dry year)/3,000 kgC/ha/y (average)/5,000 kgC/ha/y (wet year), and a boreal forest 780 kgC/ha/y].

From these desert NEE measurements, where is the additional carbon in deserts? Likely deep in the profile (see discussion in C sequestration). Desert grasslands and areas with shallow-rooted shrubs and cacti are coupled to precipitation and carbon accumulation depending on local precipitation. However, large pulses in precipitation provide groundwater that extends the length of active photosynthesis of deeply-rooted shrubs (greater than 50m) such as creosote and mesquite (*Prosopis)* (Huxman et al. 2004) and utilization of deep groundwater from storms generated far upstream can extend the carbon fixation of stands into drought cycles in deserts (Scott et al. 2006) and in the uplands such as the montane sky islands (Kitajima et al. 2013). Plants with shallow roots in deeper pools and in groundwater can access many sources of water in which to undertake photosynthesis and carbon accumulation (Querejeta et al. 2007, Querejeta et al. 2009). Reynolds and colleagues (Reynolds et al. 2004) challenged the simple "pulse-reserve" complex showing that in deserts, sequences of pulses are more important than individual events, and Weiss and colleagues (Weiss et al. 2004) found that Normalized Difference Vegetation Index (NDVI), using satellite imagery that visualizes greenness, showed that water from distant sources (groundwater) can extend photosynthetic activity (Bisigato et al. 2013, Rohde et al. 2021).

What is clear is that simple precipitation models are inadequate for assessing carbon sequestration in arid lands, riparian corridors, or any areas that have underground sources of water. Understanding and modeling Carbon requires a complex approach that integrates ecohydrology and plant morphologies (Gutiérrez-Jurado et al. 2006).

Where does the fixed CO_2 go? Groundwater originates at higher elevations in complex terrain, traveling in subsurface flows to lower bajadas, providing moisture to creosote and microphyll woodlands. At these lower elevations, plants have very deep rooting systems from several meters down at least to 53m [174'] in the case of honey mesquite, *Prosopis juliflora*, (Canadell et al. 1996) and down into the caliche layer in the case of creosote, *Larrea tridentata* (Barbour 1969), sometimes growing through cracks and extending below the caliche layers and affecting water fluxes and soil development (Gutiérrez-Jurado et al. 2006). Because they can utilize the deep groundwater, shrub photosynthesis extends beyond the local precipitation season (Ávila-Lovera et al. 2017). Isotopic signature data from my group at Deep Canyon showed that the deep-rooted shrubs acquired between 69% and 87% of their water for photosynthesis from groundwater (M. Allen unpublished data). Others (Ogle et al. 2004) have shown that the water through the stem could well be used to model water uptake profiles, and thereby provide estimates of stored soil water use, and thereby assess the SOC buried deep in the profile.

15

This deeper C is the reason for some of the slow turnover of SOC and for the formation of calcites (discussed below).

C sequestration. In terrestrial ecosystems, there are three forms of sequestered C to be considered. The first is easier to estimate and model, and that is aboveground herbaceous and woody tissue, with some estimates providing belowground tissue C as well. At the global scale, current aboveground biomass is 349 Pg, belowground 92 Pg, totaling 441 Pg C (Walker et al. 2022). The second is the soil organic carbon (SOC), globally equaling 3,037 Pg C, or more than 8 times the estimated aboveground carbon, and nearly 7 times the total standing crop biomass.

If we use a NEE figure of 200 kgC/h/y (see CO_2 fixation section) for creosote and for microphyll woodlands, we can begin to estimate at least the C accumulation for desert ecosystems. There are 2.47 acres per ha. Using the CA 4th Climate Change Assessment for the Inland Desert Area, there are 489,423 acres of microphyll woodland and 17,466,886 of creosote. Using this estimate, that would amount to an average of 1.5 million tons of carbon accumulated by these two vegetation types annually. Using the EPA Level III Ecoregions map, that would amount to 1.88 million tons of carbon. These estimates are in the range for coniferous forests or oak woodlands in southern California.

There are large gaps, such as between the NEE of Jasoni and Huxman. If 80% of the carbon (C) is allocated belowground to a meter in depth (Evans et al. 2014), and a large fraction is transported deep, then the overall carbon accumulation will be underestimated. In isotopic studies, soil calcite values show evidence of C recycling in soil (Schlesinger 1985, Allen et al. 2013) above the caliche layers, suggesting extensive C recycling. C is transferred downward via roots deep into the profile (sometimes more than 50m). Respiration of roots and symbiotic microbes (autotrophic respiration) and decomposers (heterotrophic respiration) produces CO_2. Add water (ground water or surface precipitation) and calcium (Ca)-derived upslope from basalts, limestone, marble or dolomite -- and some of that CO_2 is bound into calcites, the most stable of which is $CaCO_3$. Because the process is a dynamic equilibrium, add water again, and exposed calcite can be re-solubilized. Some of the CO_2 is volatilized back to the atmosphere and the Ca moves downward with the water. That Ca rebinds with newly respired CO_2 in the deeper layer, again forming calcite. The deeper the process occurs, the higher the CO_2 concentration. The process continually repeats itself to the maximum depth that water travels (forming a caliche layer), or to groundwater. Surface measurements, such as from eddy covariance techniques, are highly variable as the environmental conditions are fickle even within the footprint of the sensors, and for sensitivity to assumptions regarding fetch and topography. Most comprehensive soil carbon measurements (from soil cores) to date are constrained to the top meter of the soil.

Further, to understand sequestration, we must also incorporate carbon turnover. For example, despite enormous production, tropical rainforests have fast rates of decomposition resulting in a rapid turnover, thereby returning the fixed carbon back to the atmosphere. In wet tropics, the average turnover for vegetation is 15 years, and soil organic carbon (SOC) 27 years. Temperate forests vegetation turns over on average every 25 years, and the SOC in 55 years (Reichle 2020). Desert vegetation turns over every 38 years, but the SOC turns over on a 200-year span. Moreover, carbonates, when buried, can remain for millennia, but upon exposure, will volatilize releasing CO_2 to the atmosphere.

The soil carbon component is complex, but there are indicators that deserts may sequester SOC in many complex forms. As an initial example, in the Mojave Desert under Creosote (*Larrea tridentata)* canopy, the arbuscular mycorrhizal fungal standing crop was 423 kgC/ha (and 635 kgC/ha under elevated CO_2). It is very challenging to determine the hyphal lifespan, critical to estimating C sequestration, as literature values range from 5 days (Staddon et al. 2003) to 145 days (Treseder et al. 2010). Currently other efforts to estimate turnover are being undertaken by Allen from image data already collected. Much of the variation is probably due to responsiveness of fungal hyphae to individual precipitation events at daily to seasonal scales (Hernandez and Allen 2013). An example is glomalin, a glycoprotein complex produced largely by arbuscular mycorrhizal fungi, that has a long retention span (Rillig et al. 1999, Allen 2022). Glomalin is known to accumulate due to a slow turnover, (measured using immunoreactive soil protein

16

(IRSP), and can be as much as 40 μg/g soil (Clark et al. 2009). Using a 2m rooting depth, this means that there may be 2 metric tons of glomalin protein per ha across the extensive creosote shrubland soils, representing a significant pool of SOC.

Calcites/Caliche Carbon. Carbonates may be relatively unimportant to the global C cycle over a time scale of millions of years, as precipitation and dissolution is continuous. However, at time scales of decades to centuries, the inorganic carbon (C_i), is often in disequilibrium and can dramatically impact the carbon cycle (Martin 2017). At a global scale, as much as 940 Pg C_i is sequestered as soil calcium carbonate (or calcite) with as much as 1404 Pg C as bicarbonate in groundwater, more than all the soil organic C (1530 Pg C), and well more than the 594 Pg C of standing plant biomass (Monger et al. 2015). Chuckwalla, Gunsight and Cherioni soils contain extensive layering of calcites, and even Carsitas soils have carbonate coatings on the surface of rocks. In the Chuckwalla Valley, for example, estimates ranged from 36 metric tons of carbon/hectare to 82 metric tons of carbon/hectare. Using the smaller figure, and assuming that calcites underlie much of the creosote and microphyll woodlands (14.6 tons of carbon/acre), then a conservative estimate is that there could be as much as 262 million tons of carbon stored deep in desert soils.

Moreover, produced at approximately 4 kgC/ha/y, the buried calcite-C becomes relatively stable. Schlesinger (1985) estimated that the $CaCO_3$ in the Chuckwalla Valley was formed during the Pleistocene, between 15,000 and 20,000 years ago, and an 85,000-year residence time appears to be relatively accurate. However, upon disturbance, loss rate appears to be significant over annual to decadal time scales, as much as 10 kgC/ha/wet day (Swanson 2017).

The conversion of CO_2 to calcite is considered important enough that considerable effort is being undertaken to synthetically convert atmospheric CO_2 to calcite (Pogge von Strandmann et al. 2019), the process that desert plants undertake every day.

*The **Mechanism** in deserts.* Both roots and microorganisms respire CO_2: then CO_2 and H_2O (water) combine to form HCO_3^- and an H^+ ion, acidifying the soil. Upon encountering Ca^{2+} dissolved in soil water, HCO_3^- binds to the Ca to form $CaCO_3$, a large fraction of which precipitates to form calcite (limestone, $CaCO_3$), or upon layering, caliche.

Accessing groundwater acquired by deep roots of specialized desert plants. Roots can go down tens of meters to acquire water (Canadell et al. 1996, Jackson et al. 1999). At the interface of the water table, microbial activity may dramatically increase. Just above the water table, arbuscular mycorrhizae search for phosphorus and other nutrients, in part to sustain dinitrogen fixation (with high respiration rates) occurring in the groundwater (anaerobic) by associated bacteria that provides the nitrogen for these ecosystems (Virginia et al. 1986). Mycorrhizae increase respiration of CO_2 (Knight et al. 1989) as well as sequestering organic C (Rillig et al. 1999).

Groundwater in western deserts is notorious for being hard, that is, having high concentrations of $CaCO_3$. As it is pumped up for use, $CaCO_3$ dissociates, releasing CO_2 (Wood and Hyndman 2017). They estimated that groundwater depletion could account for a measurable fraction of annual CO_2 emission. As caliche is exposed to the atmosphere, caliche degrades releasing CO_2 (Hirmas and Allen 2007). One assumption is that because Ca^{2+} remains in the soil, re-association with HCO_3^- will occur (Mills et al. 2020). This certainly will be the case in a closed system (such as a laboratory beaker). But in an open ecosystem, equilibrium remains an open question and is in need of further examination (Leij et al. 1999, Martin 2017, Gallagher and Breecker 2020, Martin et al. 2021). On the surface, $CaCO_3$ equilibrates with CO_2 at ~400 ppm, the current atmospheric CO_2 level (Hirmas et al. 2010), but soil CO_2 where most exchange occurs can range up to 3,000 ppm (Allen et al. 2013), likely accounting for deposition of caliche beds (Schlesinger 1985). Rhizosphere CO_2 levels (in the soil rooting zone) can exceed 3,000 ppm in undisturbed soil, but drop in devegetated lands, only increasing CO_2 loss from $CaCO_3$ dissolution (Allen et al. 2013). Deep in groundwater, CO_2 bound as $CaCO_3$ can exceed 190 mg/L (DeSimone et al. 2009), degassing as it is pumped out (Wood and Hyndman 2017). Surface isotopic values of caliche show that

17

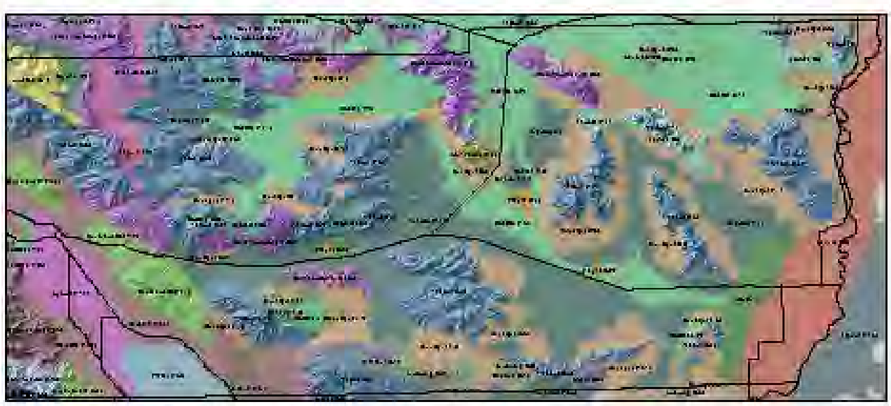
there is a fractionation in the caliche C, indicating that exchange (losses or gains in caliche C) is occurring (Allen et al. 2013, Mills et al. 2020). The conversion of land to agriculture and tree production is resulting in a shallowing of rooting depths nationwide along with a loss of deep root functioning (Billings et al. 2018).

Summary: Concerns.

Adding the dynamics of calcites to the slow SOC turnover demonstrates why the overall C cycling becomes extremely challenging to quantify, especially across long time scales and an area as diverse and large as the California desert. Loss of NEE from California deserts would amount to a significant loss of carbon in addition to loss in California's biodiversity.

But our largest concern is the risk of losing massive accumulations of carbon, stored underground as calcite-C. This C capture and storage system is functioning now and will continue to capture and store C for long time periods if soils are not disturbed. In the Chuckwalla Valley of the California deserts, C as $CaCO_3$ was 8 kgC/m², within the top 1.35 m of soil (Schlesinger 1985) in one profile and 3.5 kgC/m² in a second. $CaCO_3$ can be found across the valley. Assuming an average of 6 kgC/m², there could be 60 metric tons of C per ha of microphyll woodland/creosote bush in the surface soils. A large fraction of the Chuckwalla Valley creosote bush and microphyll woodland has already been stripped of vegetation for a single solar development.

It is always challenging to extrapolate beyond the actual locations of measurements. However, existing datasets support this concern. Schlesinger (1985) raised the issue that disturbance of desert caliche C was of concern to C budgets. When we examine soils maps, the bajadas and microphyll woodlands have high concentrations of soil $CaCO_3$, across Chuckwalla, Gunsight and Cherioni soils. These soils are alluvial soils, often with a calcic horizon ranging from 25 cm to more than a meter deep, and often with creosote scrub vegetation fingering into microphyll woodlands. These soils extend from almost every mountain range in the California deserts. So, this is our best estimate.



US Soil Map for East Riverside County

compname	id#	caco3_l	caco3_r	caco3_h
[illegible]	13	-	-	-
Cherioni	17	0	5	3
Gunsight	56	4	6	3
Gunsight	96	4	6	3
Cherioni	103	0	5	3

18

Other maps, such as the SSURGO Soil data for Coachella Valley show high calcite concentrations in the bajadas and in the desert washes north of the Salton Sea, but south of the Salton Sea, where agriculture predominates, that calcite is largely gone, except for some upper edges.

Our final concern is that with increasing disturbance of desert soils by utility-scale solar energy [USSE] there will be a loss of the high biodiversity of California's deserts. We are especially concerned with a direct loss in microphyll woodlands and desert bajadas, and in a potential for the decrease in the linkages between these vegetation types and the uplands where Ca and water inputs occur. Both biodiversity and regulation of carbon cycling will be impacted, to date with unpredictable consequences. The more we learn and apply understanding of the soil carbonate dynamics (Martin et al. 2021) to managing for biodiversity and carbon cycling, the better we will be able to manage desert lands to reduce greenhouse gas production and sustain our biodiversity (Allen and Mishler 2022).

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19

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VI. Modeling Carbon Sequestration in Our Deserts

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Many modeling efforts purporting to describe C sequestration in deserts are problematic. They underestimate C accumulation, as they use precipitation drivers at the location of production. However, desert plants use water over longer terms from single large events, and uplift groundwater precipitated in mountains well away from the locations of primary production. We agree with others who have critiqued the California Air Resources Board [CARB] modeling as dramatically underestimating the C sequestration potential by ignoring large parts of the C cycle (CarbonCycleInstitute 2022). Currently, destruction of large wildland deserts for agriculture, mining, or for Utility-Scale Solar Energy (USSE) development is on-going or proposed for California deserts.

We know that traditional precipitation-based modeling for C sequestration is inadequate. However, is there a more useful approach? We argue that there is a more promising direction based on existing modeling approaches.

First, Normalized Difference Vegetation Index (NDVI) should be used to identify the land areas with photosynthetic activity and the duration of that activity (Rohde et al. 2021), not local precipitation. From the greenness activity, it should be feasible to estimate C fixation, replacing the precipitation driver for wet periods in models such as DAYCENT (Parton et al. 1998).

Second, an ECOHYDROLOGY model (Gutiérrez-Jurado et al. 2006) allows for estimating water transport and coupling soil properties (including calcite horizons) building on HYDRUS (Šimůnek et al. 2005). HYDRUS can also be used with the equations described by Kitajima and colleagues (Kitajima et al. 2013) to quantify the additional timeframes for C gain using intermediate depth- and ground-water sources.

Third, the SLIC model (Hirmas et al. 2010) evaluates the transitions between $Ca + CO_2 + H_2O$ <> $CaCO_3$

Fourth, once the water sources and time frames are identified, NEE measurements coupled with soil respiration measurements could provide spot-checks on modeled values.

This modeling approach can provide a comprehensive overview to help close the carbon cycle in the deserts. It is important that the confirmation measurements are based on a long-term dataset, and that, given CO_2 and global temperature changes, two or more longer-term C cycling instrument facilities be deployed. The model as developed by the National Ecological Observatory Network (NEON), could serve as a model, and could be installed at field stations such as the NRS stations at the Granite Mountains and Boyd Deep Canyon, or the CSU Zzyzx station.

References: Please see previous section V.

VII. Mapping and Identifying Prioritized Areas of our Desert to Achieve Carbon Reduction Goals

Microphyll woodlands/Creosote

Colin Barrows. Co-founder, Cactus to Cloud Institute

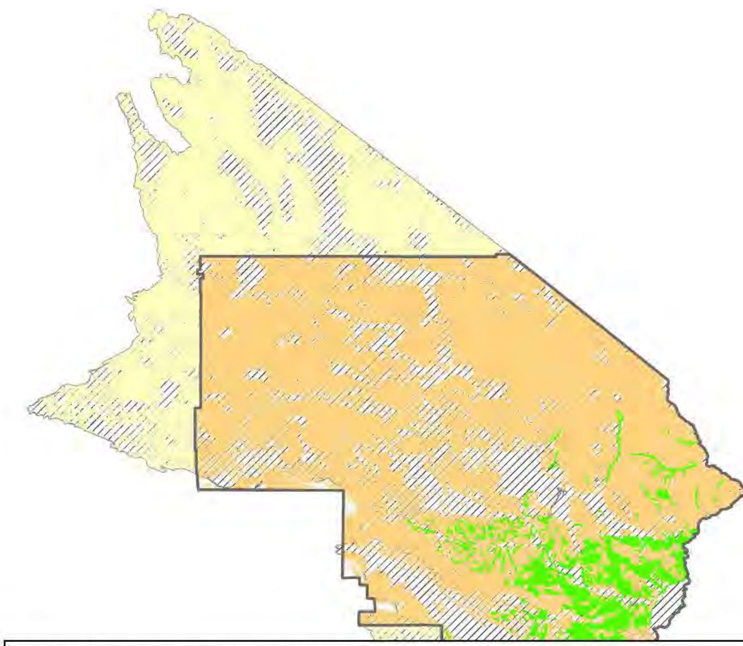
In sections IV, V and VI above, Kobaly and Allen indicated the importance of two specific desert vegetation types in the desert region's impressive capacity to store carbon. Kobaly notes the combined

21

carbon sequestration capacity of **microphyll woodland** and **creosote bajada scrub** could sequester an average of 1.5 million tons of carbon per year. Allen reports that these two vegetation types create a net positive carbon sequestration value within California's desert ecosystem.

Section VI discussion around the relationship between groundwater and underground caliche formation (carbon sequestration) plays out across these two vegetation types. With the groundwater originating at higher elevations, it traverses in subsurface flows to lower elevations such as those where the creosote bajadas and microphyll woodlands are found. The vegetation types here have rooting systems that can run over 53m [174'] deep. Root systems of creosote can grow into the caliche layer and beyond to reach groundwater sources.

The dynamics of these two vegetation types are of particular interest in demonstrating high capacity for carbon sequestration, though they are not the only vegetation types nor the only means by which carbon may be sequestered within the desert ecosystem. But microphyll woodlands and creosote are of high interest in discussion of carbon sequestration in the desert, and this section identifies and quantifies which desert regions warrant high prioritization for conservation.



EPAIII CA Deserts boundary (DRECP) [Exterior Boundary]
CA Climate Assessment inland desert boundary (30x30) [Interior Boundary]
Shrub/Scrub land cover for both areas in orange (30x30) and yellow (DRECP)
Microphyll woodland in green.
Small areas of lighter green outside the 30x30 area.

22

SUMMARY

Boundary Area	Desert Vegetation Type	Acres
CA 4th Climate Change Assessment Inland Desert Area [30X30] Boundary	Shrub Scrub Land Cover	**13,300,107**
EPA Level III Ecoregions, Mojave and Colorado CA Desert Area	Shrub Scrub Land Cover	**18,715,754**

Recommended acreage of conserved desert land for vegetation cover types microphyll woodlands and creosote bajadas.

It should be noted that these identified lands represent those areas recognized to be highest conservation priority for carbon sequestration function. These acreages represent only a partial opportunity to maximize carbon sequestration and protect biodiversity.

VIII. Additional benefits

Biodiversity in California's deserts

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California is by far the most biologically diverse of the United States' contiguous 48 states, with deserts comprising roughly one third of California's land surface. And yet California's deserts, as well as deserts worldwide, tend to be overlooked in discussions of biodiversity. The dictionary definition of "desert" reflects the prevailing bias: "a large area of land that has very little water and very few plants growing on it". Other descriptors include "wasteland," "barren," and "lifeless." *Desert* is often used as a euphemism for a place where little or no life, food, or culture exists. Other than being arid, none of these perceptions is accurate.

One can test the hypothesis that California deserts are biologically depauperate. Covering one third of California, if species were randomly distributed, then we would expect about 33% of California's plant and animal species to live in deserts. Values significantly less than 33% would support a belief that our deserts are, compared to elsewhere in California, lacking living things. On the other hand, if values are greater than 33%, then the assumption of our deserts being a barren wasteland would be categorically false.

While exact numbers will vary with shifting taxonomic classifications,

> **California is the home of almost 2300 native annual herbaceous plants, over 3600 native perennial herbaceous (not woody) plants, over 1300 species of native shrubs, and just under 240 native tree species** (using Calflora's Consortium of Herbaria database).

Combining California's three main deserts—the Great Basin, the Mojave, and the Colorado— along with the "sky island" mountains that are within or border those deserts, it was found:

23

> **55% of those native California annual herbaceous plants, 53% of perennial herbaceous plants, 60% species of shrubs, and 53% of those native tree species live in the California deserts.**

Of the three deserts,

> **The Mojave has the highest plant species richness, with 49% of those native annual herbaceous plants, 44% of perennial herbaceous plants, 52% of shrub species, and 45% of those native California tree species.**

Since this species richness is well above 33% in each of those plant categories, we can reject the hypothesis that California deserts have low biodiversity.

> **In the categories of annual herbaceous plants and shrubs, California deserts have more species than any other ecological region in California.**

Our desert "wastelands" are not only richer from a vegetation standpoint, but they also appear to be incubators of speciation, with many species occurring nowhere else on earth. A recently published study, Pillay et al. (2022, *Frontiers in Ecology and the Environment*, vol. 20, issue 1) looked at patterns of vertebrate animal species richness across our planet. As expected,

> **They found that the tropics ranked number one. However, deserts were the next most species-rich biome when it came to mammals, birds, and reptiles, higher than temperate forests, shrublands, and grasslands.**

In California, reptile species richness is especially high in our deserts.

> **California has 40 species of native lizards that call our state home. Ninety percent of those can be found in our deserts, again**, well above the expected 33% of lizards that were randomly distributed across California. **At least six of those lizards are found nowhere else.**

Some areas are especially species rich. Along with colleagues from the U.S. and Mexico, we looked at lizard species richness across North America and found nowhere else that compared to deserts in the number of species that occur together.

> **The top spot was the Coachella Valley at the edge of the Colorado and Mojave Deserts which has 33 lizard species within a 50 km [31.07 miles] radius circle. Of the 34 species of snakes found in California, 76% are found within desert habitats.**

We do not have similar data sets for insects. However:

> **Native bee pollinators in the Joshua Tree National Park area are estimated to include more than 600 species representing 40 genera in 6 families.**

And some insect families, such as darkling beetles (Tenebrionidae), specialize in living in arid habitats. Darkling beetles are the clean-up crews in deserts. Technically detritivores, they eat dead matter, replacing the job fungi and bacteria do in moist environments. Several years ago,

> **[Dr. C. Barrows] conducted a survey of darkling beetles living on the remaining sand dunes of the Coachella Valley. Across those dune fragments [Dr. C. Barrows] found 34 different darkling beetle species. Try to put that into perspective: Imagine finding a lake with 34 resident species of ducks, or a forest with 34 species of warblers, or a mountain range with 34 species of deer.**

Beyond biodiversity, people also put value on superlatives such as the antiquity of individual plants or animals. In the Pacific Northwest, redwood trees can reach the advanced age of 3200 years. In the central Sierra Nevada range, giant sequoias can reach 2700 years of age, and in the White Mountains,

24

bristlecone pines can be up to 4800 years old. That's impressive. But even more impressive is the oldest creosote bush, the most widely distributed desert shrub:

> **The King Clone creosote is 11,700 years old, an extreme superlative. There are also desert tortoises who can approach nearly 100 years of age.**

Courtesy of James M. Andre. Sweeney Granite Mountains Desert Research Center. gmdrc@ucr.edu

Economic benefits

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Land that is set aside for conservation holds potentially high economic value as a driver of tourism and recreation. The good news is that recreational use of public lands allows the land to remain largely undisturbed *and* continue to sequester carbon, thus fulfilling a dual mission while generating local business and tax revenue.

A 2014 report [ECONorthwest] noted economic contributions of Quiet Recreation Visits within 50 miles of recreation sites on BLM-managed lands within California. Total Direct Spending was $243,938,853. In inflation-adjusted dollars for 2023, that amount today would be $314,392,148.

Visit California's Economic Impact of Travel report for 2021 indicated Local Tax Revenue of $293,000 for the state's Desert Region, supporting community benefits such as safety, fire, recreation, and library services.

25

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Biocrusts in the desert

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Overview:

~ Microscopic organisms living at and near the surface of arid soils produce glue-like substances that hold undisturbed desert soils together and prevent soil erosion

~ These living soils, called biocrusts, create and store valuable fertilizing nutrients for the surrounding plant community

~ Biocrusts, when kept intact, hold otherwise dangerous PM10 and PM2.5 particles and spores, such as Valley Fever, in the soil and out of the air, protecting people from breathing in these health-impacting pollutants

A thin surface crust forms across arid soils on or within the top few centimeters of the soil surface. Surprisingly, these crusts are not made up simply of encrusted, excess soil minerals as often thought, but are created by microscopic and somewhat larger macroscopic organisms that live together in an unseen but profound world

The microbes that make up this living "biocrust" live only near the top few centimeters of the soil because they need sunlight to make their own food. As some of these organisms travel through the soil, their network of mucilaginous, hollow tunnels between soil grains records a history of their movements and leaves a legacy of soil cohesion.

These and other tiny microbes living between desert soil grains create and store scarce, valuable, fertilizing nutrients like phosphorus and nitrogen at and below the surface, and they share these building blocks for life with all the plants in the surrounding community. If not disturbed by vehicle wheels or bulldozer blades, this soil cement and the community that produced it can persist for many thousands of years—or more.

Biological soil crusts keep soils intact and prevent dust storms... unless soils are disturbed. The dried, glue-like threads of microbes in biocrusts form a resistant seal across the soil surface, keeping dust, particulate matter, and harmful fungal spores like valley fever from being blown up into the air wherever the soil has not been disturbed.

These living soil crusts take hundreds of years to develop into effective soil "sealants." When they are allowed to remain intact, they will hold back wind and water erosion, supply nutrients to neighboring plants, improve water infiltration, prevent particulate matter from entering the air, and help keep our air clean and healthy. When living soil crusts are disturbed, choking dust storms occur. Dust storms blow harmful particulate matter into the air – and we breathe it in. The smaller particulate matter (smaller than 10 microns, or PM 10 particles) when inhaled into our lungs cause health impacts ranging from coughing and wheezing to asthma attacks and bronchitis, as well as high blood pressure, heart attacks, strokes, and premature death in people with heart and lung disease.

Keeping desert biocrusts intact protects the health of people living near the soil disturbance as well as people living many hundreds of miles from the point of disturbance.

Health benefits

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Maximizing the desert region's carbon sequestration potential by conserving undisturbed non-military land provides the additional benefit of bolstering public health. Dust, particularly [Particulate Matter] PM_{10}, is an important outcome of disturbance in desert wildlands (Pointing and Belnap, 2014; Frie et al., 2019). Desert dust erosion resulting from disturbance of desert soils is a source of significant health issues (Lwin et al., 2023) ranging from respiratory particles to local sources of heavy metals including Aluminum, Arsenic, Selenium, Cadmium, Lead, Uranium and Thorium (Frie et al., 2019). Numerous studies have noted evidence of associations between desert and sandstorm dust, and morbidity/mortality rates. Particle size is believed to be one of the key factors implicated in health risk. Large-sized particles can cause damage to external organs causing skin, eye, and ear irritation. But small size particles are capable of entering the respiratory tract and causing disorders within that system. The smaller size particles may penetrate the respiratory tract and damage cardiovascular, cerebral, cerebrovascular, blood and immune systems.

The high incidence of childhood asthma surrounding the Salton Sea (at a rate over 20%) is among the highest in California. In on-going studies, mice models found that the dust collected from these disturbed desert areas triggered a significant neutrophil inflammatory response that is distinct from the known immune allergic response, causing "asthma-like symptoms" (Biddle et al., 2023). This tells us that there are unknown new diseases emerging from the increasing disturbances in California's desert.

Desert dust may also cause infectious disease by carrying pathogens. An example is Valley Fever, caused by spores of fungi of species of *Coccidiodes*, which is present in desert soils and triggered upon inhaling dust when surface soils are disturbed (https://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html). Valley fever is endemic in California desert soils and increasing dust with disturbance and global warming is of concern (Cat et al., 2019; Gorris et al., 2019). In new studies from California deserts, local dust emissions are increasing and releasing novel microbial pathogens (Freund et al., 2022) that we are only now beginning to identify.

At the global scale, it is estimated that 1.7% of lung-cancer and cardio-pulmonary disease deaths can be attributed to chronic exposure to desert dust. In latitudes with extensive deserts such as Africa, the middle East and Asia, the percentage jumps to 15 – 50%. Short-term exposure to dust was documented to be the source of respiratory illness among 70% of Afghan and gulf war veterans deployed between 2003-2004.

Clearly, scientific research demonstrates a concerning link between desert dust and severe public health risk. Disturbance to desert soil is a contributor to desert dust, presenting an additional benefit for leaving desert lands undisturbed.

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27

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IX. Transition to Clean Energy: Meeting our Clean Energy Goals and Minimizing Disturbance to our Desert Ecosystem

Introduction

There is a growing understanding that a tension exists between the need to conserve desert land, which itself functions as a significant nature-based solution to store carbon emissions – and expansive renewable energy projects that disturb desert lands and in doing so, release carbon back into the atmosphere.

This is a solvable problem that requires coordination between renewable energy developers, conservationists, policy makers, and the handful of experts who have carefully analyzed and evaluated desert lands and crafted detailed maps that consider solar industry needs, cost, and conservation all at once. This is the key work that needs to be done if desert lands are to continue their critical function as grand carbon sinks. Experts agree that the means to successfully navigate the nexus of industrial solar and conservation of carbon-storing natural desert lands lies with thoughtful, advanced planning, and integration of a suite of renewable energy options. If desert lands are perceived as a sacrificial ecosystem in the name of renewable energy, we run the risk of undermining the long-term carbon storage function they have performed for thousands of years and backpedaling on meeting carbon sequestration targets. And unlike other ecosystems, once disturbed, recovery in the desert is so long-term it should be considered as a non-option.

Utility Scale Solar and Avoidance of Desert Disturbance

Joan Taylor. Chairperson, California Conservation Committee and California/Nevada Desert Committee of Sierra Club.

CA Senate Bill 100 established a landmark policy requiring renewable energy and zero-carbon resources to supply 100 percent of electric retail sales to end-use customers by 2045. To meet this goal, the California Energy Commission, California Public Utilities Commission, California Air Resources Board SB 100 Joint Agency Report estimated a need for an additional 70,000 megawatts (MW) of utility-scale solar to come online by 2045 in its Core Scenario (CEC 2021). Notably, the Core Scenario assumed high electrification demand but did not factor in any advances in renewable technology or in tools to manage peak load, so this estimate can properly be considered conservative.

28

Based on the most recently approved large utility-scale solar project in California, 5.02 acres are required to develop one megawatt of ground-mount single-axis tracking utility-scale solar with four hours of battery storage, including generation ties and other infrastructure (California Water Boards 2021). This equates to approximately 350,000 acres of land or other surface on which to mount PV panels. Even were one to use the now-outdated number of 7.1 acres per megawatt that was assumed nearly a decade ago by CEC (CEC 2014), the total acreage requirement for utility-scale solar would be less than 500,000 acres. For context, there are over 105 *million* acres in California.

There are numerous feasible options for developing utility-scale solar in California that can deliver the estimated need for new utility-scale solar and provide increased local jobs and other benefits, without disturbing intact desert. Some of these include:

- Water-deprived agricultural lands in the Central Valley estimated to be a minimum of 500,000 acres (Hanak et al, 2019) or as much as 900,000 acres (Escriva-Bou et al, 2023)
- 250,000+ acres of selenium- contaminated land in the Westlands Water District
- 200,000+ acres of parking lots in California (USGS 2019)
- 11,500 MW of capacity on large commercial/industrial rooftops near substations (RETI 2009)
- 4,000 miles of canals and 16,000 miles of highway right of ways
- Agrivoltaics (ie, slightly elevated or spaced photovoltaic panels) on a portion of the 40+ million acres of farm and ranch lands throughout the state (CDFA)

Examples of appropriate utility-scale solar sites and potential additional renewable capacity

Preferred Sites	Acres	Total potential generation
Water-deprived Ag Lands Central Valley	500,000 – 900,000	100,000 MW – 250,000 MW
Selenium contaminated land, Westlands Water District	250,000	50,000 MW
Parking Lots in CA	200,000	40,000 MW
Large commercial/industrial rooftops near substations	n/a	11,500 MW, min (this 2009 estimate is outdated)
20,000 miles highway & canal right of ways (est 100' wide)	240,000+	47,000 MW, min
TOTAL	1,190,000 – 1,590,000	248,000 – 398,00 MW
Agrivoltaics on 40+ million acres farm & ranch lands	40,000,000+	Millions of MW

While utility-scale solar that is sited remote from load is dependent on high voltage transmission, utility-scale solar that is generated "In Front of the Meter" on large rooftops and parking lots at load centers is not dependent on the larger grid. Urban and peri-urban solar eliminates the capital costs, delay, average 7%-line energy losses, steep monthly ratepayer charges for new transmission capacity and inherent lack of reliability of electric power that relies on long-distance transmission. Moreover, transmission costs are rising faster than the cost of the energy wheeled, while PV prices are falling (CPUC 2021), making solar sited at load more attractive for ratepayers, not to mention the benefits of local jobs and energy reliability. But if the full estimated need for utility-scale solar cannot be met on the distribution grid, the alternative of siting solar on water-deprived or contaminated lands and/or utilizing agrivoltaics on a small fraction of the state's 40 million acres of farm and ranch lands can easily absorb the balance in a win-win for landowners as well as the environment (DOE 2023).

29

The potential solar capacity of the above options far exceeds the energy agencies' projected need for an additional 70,000 MW of new utility scale solar to meet the state's 2045 decarbonization goal. Clearly, the above options are the preferred resources to avoid land-use impacts and societal costs of developing transmission-dependent solar on intact desert lands in the California desert.

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X. Policy Strategies and Tools to Maximize Carbon Sequestration and Conservation Values

Susy Boyd, MNR. Master of Natural Resources, Forests and Climate Change, Oregon State University
Public Policy Coordinator, Mojave Desert Land Trust

The state of California has long been recognized for its leadership in transitioning towards new, clean energy sources to reduce CO_2 atmospheric emissions. There are, however, two aspects to emissions reductions work.

The first is "what". This piece is on track. The state has diligently passed legislation and dedicated millions of dollars towards reducing carbon emissions through technological innovation and utilizing our natural and working lands to reach net zero.

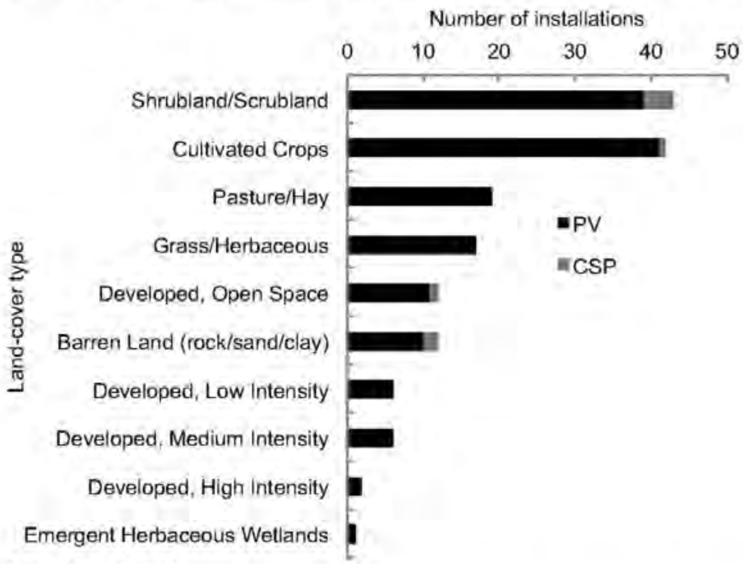
The second aspect of carbon emissions work is "how." While the state has rolled out dozens of utility scale solar energy projects (USSE's) at an accelerating pace across desert lands, this has taken place at the expense of disturbance of intact desert lands, which counterproductively serve as significant carbon sinks. The irony is that we are releasing carbon into the atmosphere by disturbing desert lands and their long-term sequestered carbon while building infrastructure intended to reduce atmospheric carbon. On this front, California has not yet realized fully its leadership potential. How these transitions are carried out

30

is based on siting decisions made in advance. For instance, China has directed their energy transition efforts towards utility-scale, ground-mounted PV [photovoltaic] panels, whereas Germany has achieved about 90% of its transition development within a built environment.

Several studies have revealed that regulations and policies in California have deemphasized solar growth and development within the built environment close to final destinations to meet demand, and instead favored development within shrublands and scrublands. Hernandez et al. (2015) note that carbon sequestration, among other ecosystem services including groundwater depletion and movement corridors for wildlife, may be adversely impacted globally by land cover conversion of shrubland and scrubland ecosystems.

Shrublands and scrublands have borne the brunt of land use conversion in our state's efforts to pursue USSE's on a massive scale, while developed regions remain largely underutilized.



Hernandez et. al. 2015.

Number of photovoltaic (PV) and concentrating solar power (CSP) installations (planned, under construction, operating) by land cover type in California; represented in order of most installations to least for both technologies.

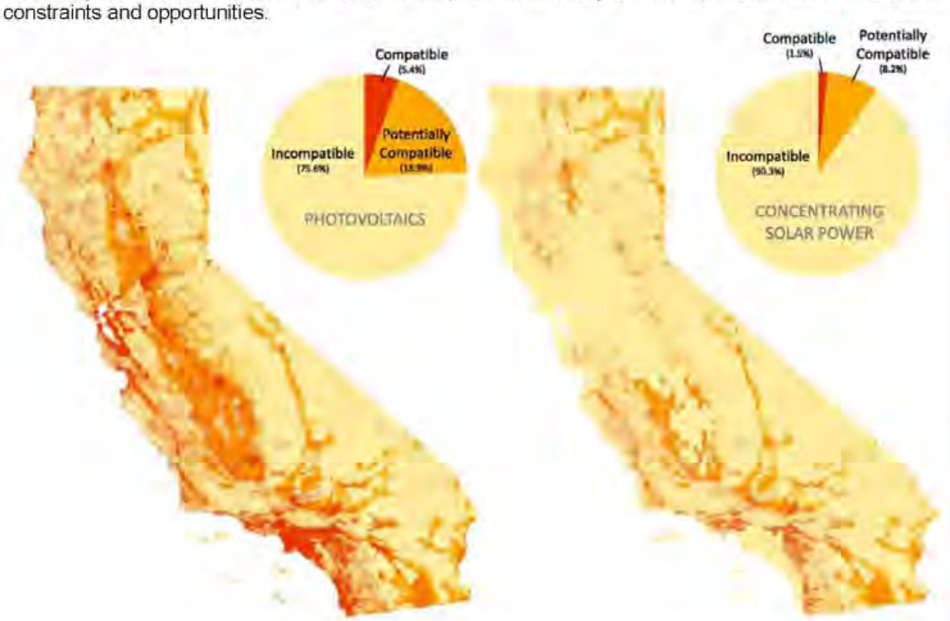
How do we, as policy and decision-makers, carry out the task of addressing the "how" aspect of transition to clean energy so that the desert's carbon sinks remain undisturbed and intact?

There are **planning tools** currently available that allow decision makers the opportunity to simultaneously develop solar installations on desert lands, while protecting conservation values including carbon sequestration all at once. This is the kind of pioneering work that establishes California as an environmental leader.

One such tool is the **Carnegie Energy and Environmental Compatibility [CEEC] model,** a multiple criteria model that quantifies each solar installation based on environmental and technical compatibility. The CEEC model is a decision support tool that develops a spatial environment and technical

31

compatibility index that outputs 3 tiers: Compatible, Potentially Compatible, and Incompatible. The model was designed for use in California and can identify environmentally low-conflict areas based on resource constraints and opportunities.



The state of California classified according to the CEEC Compatibility Index (Compatible, Potentially Compatible, Incompatible) and area (percentage) within each class for photovoltaic (PV) and concentrating solar power (CSP) technologies.

Hernandez et.al., 2015

A second tool of interest for decision-makers seeking to integrate the advancement of USSE's with conservation of our desert lands is a framework proposed by a group of researchers led by Dr. Rebecca R. Hernandez of UC Davis. **Techno-ecological synergies [TES]** engineers the mutually beneficial relationships between technological and ecological systems to bolster the sustainability of solar energy across a suite of environments including land, water, and built-up systems. The intent of applying the TES framework to solar energy technologies is an effort for "sustainable engineering" to minimize unintended consequences on nature as we rapidly advance USSE's on our natural and working lands.

The authors propose expansion of solar energy engineering principles to include both economic and ecological systems based on a synergistic relationship between technology and the environment. The outcome of TES produces products relevant to the technology end of development (PV module efficiency and grid reliability) *as well as* support for ecosystem services such as carbon sequestration and storage, water-use efficiency, and wildlife habitat. The research team offers 20 potential TES outcomes and discusses metrics and assessment methods to measure TES flows.

One example of a TES opportunity is optimizing land resources. The most degraded lands sites, for example EPA Superfund sites, could produce about 38% of total US energy consumption (based on 2015 assessment). At the same time, degraded lands function as substitutes, sparing undisturbed land with greater capacity for carbon sequestration. Moreover, the negative effects of land cover change and

32

disturbance such as release of GHG emissions, dust release, and soil-borne pathogens are reduced or eliminated.

Further examples of optimizing land resources include co-location of other renewable energy formats (such as wind turbines) adjacent to solar utility, with benefits compounded when this takes place on already degraded land. The number of potential beneficial outcomes for individual TES's ranges from 6-13; that is, there are substantial benefits to be gained by the synergistic framework proposed by this system.

While the commitments to transition to clean energy are moving rapidly, it may be necessary to make good use of policies to embed solar energy TESs into the economics of planning.

References

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XI. Conclusion

To fully realize the value of desert lands as part of our state's efforts to sequester atmospheric carbon, the desert must be recognized as a significant carbon sink – *and it needs to be left undisturbed*. Unlike other ecosystems, it has a unique time scale that would require hundreds to thousands of years to recover from disturbance. The highest capacity regions for desert carbon storage, including microphyll woodlands and desert bajadas, should be identified as the top priority regions for conservation. And the state must also place high importance on the "how" part of transitioning to clean energy by careful pre-planning and siting of renewables on already disturbed desert lands and developments. We only get to do this once, so it needs to be done right.

33

SAN BERNARDINO COUNTY

SAN BERNARDINO COUNTY
LAND USE SERVICES
PLANNING PROJECT NOTICE
15900 Smoke Tree Street, Hesperia, CA 92345

Referral Date:
August 07, 2017

ATTENTION PROPERTY OWNERS **Page 1 of 2**

The development proposal listed below has been filed with County Planning. Please comment in the space below. You may attach additional pages as necessary.

Your comments must be received by Planning **no later than August 21, 2017 to be sure that they are included in the final project action. However, comments will be taken up to the time of the project decision.** Please refer to this project by the Applicant's name and the Assessor Parcel Number indicated below. If you have no comment, a reply is not necessary. If you have any questions regarding this proposal, please contact **Planner, JOHN OQUENDO** at **(760) 995-8153**, by email at **John.Oquendo@lus.sbcounty.gov**, or mail your comments to the address above. If you wish, you may also FAX your comments to (760) 995-8167.

ASSESSOR PARCEL NUMBER:	**0452-021-05**	**(See map below for more information)**
PROJECT NUMBER:	**P201600569/CUP**	*** Multiple Parcel Associations ***
APPLICANT:	**99MT 8ME, LLC**	
LAND USE DISTRICT (ZONING):	**LV/FW**	
IN THE COMMUNITY OF:	**LUCERNE VALLEY/3RD/ SUPERVISORIAL DISTRICT**	
LOCATED AT:	**NORTHWEST CORNER OF BARSTOW RD AND GRANITE RD**	
PROPOSAL:	**Concurrent filing of two Conditional Use Permits to construct and operate a 300 megawatt (MW) photovoltaic solar energy facility with associated on-site energy storage component, and a 3,200 square foot (sf) operations and maintenance and 500 sf substation control building on two non-contiguous locations comprising 990 acres in Lucerne Valley. Site A (Siena East) is located upon 650 acres, and Site B (Siena West) is located upon 340 acres. Project coincides with California Public Utilities Commission proposal for the construction of the Calcite Substation at an offsite location, north of the project site, along State Route 247.**	

If you want to be notified of the project decision, please print your name clearly and legibly on this form and mail it to the address above along with a self-addressed, stamped envelope. All decisions are subject to an appeal period of ten (10) calendar days after an action is taken.

Comments (If you need additional space, please attach additional pages):

VICINITY MAP N

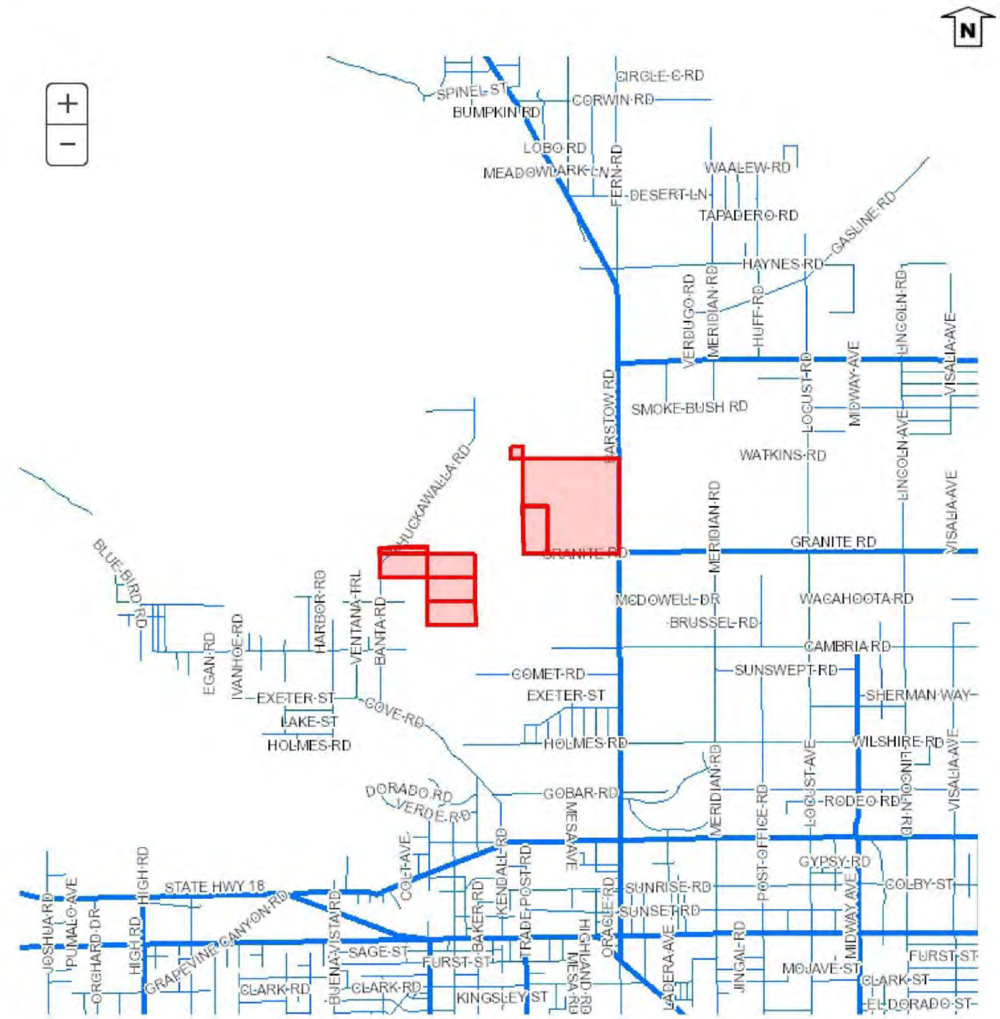
SIGNATURE **DATE** **AGENCY**

IF THIS DECISION IS CHALLENGED IN COURT, SUCH CHALLENGE MAY BE LIMITED TO ONLY THOSE ISSUES RAISED IN WRITING AND DELIVERED TO LAND USE SERVICES BEFORE THE PROJECT DECISION IS MADE.

IF A PUBLIC HEARING IS HELD ON THE PROPOSAL, YOU OR SOMEONE ELSE MUST HAVE RAISED THOSE ISSUES AT THE PUBLIC HEARING OR IN WRITTEN CORRESPONDENCE DELIVERED TO THE HEARING BODY AT, OR PRIOR TO, THE HEARING. DUE TO TIME CONSTRAINTS AND THE NUMBER OF PERSONS WISHING TO GIVE ORAL TESTIMONY, TIME RESTRICTIONS MAY BE PLACED ON ORAL TESTIMONY AT ANY PUBLIC HEARING ABOUT THIS PROPOSAL. YOU MAY WISH TO MAKE YOUR COMMENTS IN WRITING TO ASSURE THAT YOU ARE ABLE TO EXPRESS YOURSELF ADEQUATELY.

Page 2 of 2

PARCEL MAP



April 25, 2022

Via e-mail (Jim.Morrissey@lus.sbcounty.gov)
Mr. Jim Morrissey
Contract Planner
San Bernardino County Land Use
Planning Dept.
385 N. Arrowhead Ave.
San Bernardino, CA 92415-0110

Re: Project Notice (PROJ-2-22-00013) for a 1,932-Acre, 500 MW Utility-Scale Solar Facility in Lucerne Valley

Dear Mr. Morrissey:

According to 8Minute, the new Sienna Solar project ("Sienna 2") is merely a relocation of the original Sienna Solar project ("Sienna 1"), so it is supposedly grandfathered in past Policy 4.10's ban on new utility-scale projects in Lucerne Valley. Board of Supervisors Resolution No. 2019 -17 (which adopted Policy 4.10) states that utility-scale applications that had "been accepted as complete" may "be relocated to other sites under the same policies and regulations." But Sienna 2 differs so much in size, scope and configuration from Sienna 1 that the former cannot not be considered as a relocation or the latter. In point of fact, Sienna 1 is a new project explicitly barred by Policy 4.10, which prohibits new utility-scale renewable energy projects in Lucerne Valley.

At 1,932 acres, Sienna 1 would be a lot bigger than Sienna 1. 8Minute's attached figure shows a "Former Sienna Project" – meaning Sienna 1 – that, according to our calculations, comprises 1,390 acres. (And, as noted below, the project footprint of Sienna 2 is actually much bigger than 1,932 acres.)

Sienna 2 would have an output capacity of 500 MW, while Sienna 1 was planned to have an output of up to 450 MW.

The parcels making up Sienna 2 would also have a much different configuration than those comprising Sienna 1, and hence Sienna 2 would inflict more damage than Sienna 1 on the area's human and natural communities. Sienna 1 centered on two main assemblages of connected and contiguous parcels, while Sienna 2's parcels would be arrayed in a sprawling, roughly circular pattern that would effectively degrade a much larger area than would Sienna 1.

1

which would include the large interstitial area encircled by Sienna 2's parcels. Among other things, that interstitial area would have to be crisscrossed with transmission lines and connecting roads, and the land within it would become effectively off-limits to human and natural communities. Hence the true project footprint of Sienna 2 is much larger than 1,932 acres.

If a project that was pending when Policy 4.10 was adopted could be moved to a different location, greatly increased in size and scope, while being completely reconfigured, and still be grandfathered in past Policy 4.10, that would allow developers to make end-runs around Policy 4.10. That would go against everything that the RECE stands for, which makes protection of communities and the environment its first priority. RECE RE Goal 4 (and Objective 4.1) calls for a "new era" of sustainable energy production that "will be compatible with the natural environment and the integrity of unincorporated communities." The RECE's preamble to Goal 4 emphasizes the negative effects that renewable energy development can have on "plant and animal species and their habitats, paleontological resources, artifacts and relics with cultural or historic significance, or critical natural resources such as groundwater." The preamble also mentions that some desert soils are "particularly sensitive" and that there are local concerns "that dust from development may lead to health problems."

Our Board of Supervisors adopted Policy 4.10 because it determined that utility-scale wasn't compatible with Rural Living and Community Plan areas like Lucerne Valley. The only reason that grandfathering is allowed is because the Board of Supervisors didn't want to take away rights of developers who had utility-scale projects under review at the time that Policy 4.10 was adopted. These rights pertain to the projects <u>as described in their CUP applications</u>.

Thanks for the opportunity to comment on the proposed project.

Very truly yours,

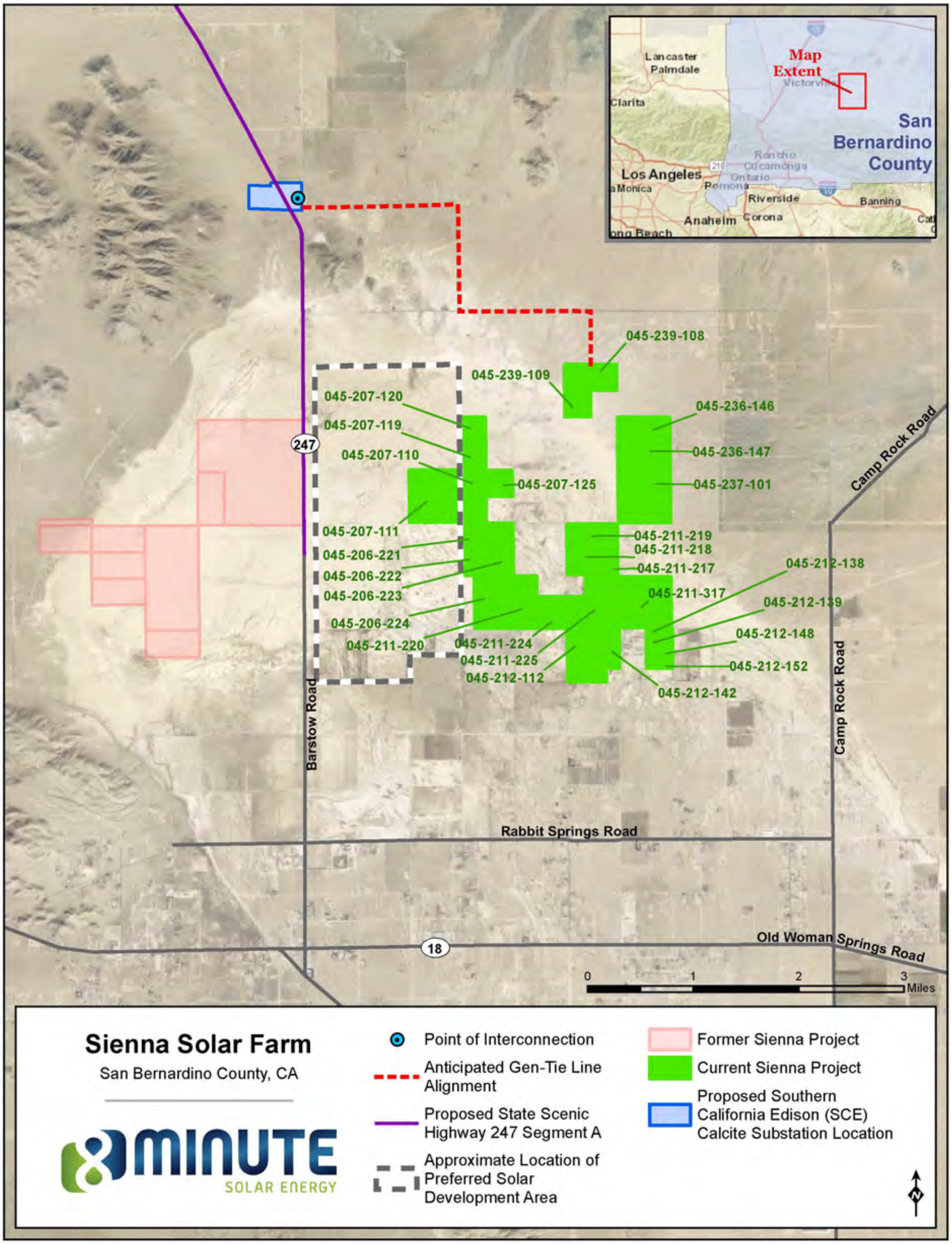
BRIAN HAMMER Analyst and Adjunct Professor (owner of home in Lucerne Valley)	SUSAN HAMMER (Owner of home in Lucerne Valley)
MORONGO BASIN CONSERVATION ASSOCIATION Steve Bardwell, President	MOJAVE COMMUNITIES CONSERVATION COLLABORATIVE Lorrie L. Steely, Founder

2

Attachment

cc: Board of Supervisors for
San Bernardino County

3


Map Extent
Lancaster
Palmdale
Clarita
Victorville
San Bernardino County
Los Angeles
Rancho Cucamonga
Ontario
Pomona
Riverside
Banning
Anaheim
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Camp Rock Road
Barstow Road
Rabbit Springs Road
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Old Woman Springs Road
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2
3
Miles
Sienna Solar Farm
San Bernardino County, CA
8MINUTE SOLAR ENERGY
Point of Interconnection
Anticipated Gen-Tie Line Alignment
Proposed State Scenic Highway 247 Segment A
Approximate Location of Preferred Solar Development Area
Former Sienna Project
Current Sienna Project
Proposed Southern California Edison (SCE) Calcite Substation Location

Letter O2

Morongo Basin Conservation Association (MBCA)

September 30, 2024

O2-1

Please refer to responses to comments O2-2 through O2-25 for detailed responses to each of the comments contained within this comment letter.

O2-2

Please refer to response to comment I1-1.

O2-3

The County acknowledges the general biodiversity of deserts. To the extent that the proposed project would impact biological resources refer to EIR Section 3.5 Biological Resources. As stated in this comment, the California desert ecosystem comprises approximately 26 million acres of land. The proposed project represents less than 0.00007131% of this area.

The majority of the project site is disturbed and does not represent intact/undisturbed desert land. With respect to the carbon sequestration benefit a solar generation vs. desert land, please refer to response to comment I9-4.

O2-4

The project evaluated in the Revised Draft EIR, is comprised of the same project characteristics (i.e., it is the same project), as was described in the Notice of Preparation (NOP) for the proposed project and EIR.

Please also refer to response to comment O3-2.

O2-5

Please refer to response to comment O3-2.

O2-6

Please refer to response to comment O3-2.

O2-7

This comment is an introductory comment in response to the Notice of Preparation and summarizes the proposed project characteristics. The comment does not address the adequacy of the EIR; therefore, no further response is necessary.

O2-8

Please refer to response to comment O3-2.

O2-9

As discussed in the EIR, residences within the vicinity surrounding the Sienna Project site are sparsely scattered, such that implementation of the Sienna Project would not divide an established community. Although the Sienna Project would cover a relatively large area (1,854 acres), the Project would maintain all existing access routes and would not result in the construction of new access routes or the elimination of existing area roadways that could have the potential to isolate existing uses or create a division between existing local uses. Therefore, impacts would be less than significant. (EIR page 3.11-23)

O2-10

The objectives listed in this comment are not included in the project objectives. Impacts to the community will be minimized with implementation of mitigation measures identified in the EIR (e.g. traffic, noise, air quality).

Energy generated by the proposed project will be brought into SCE's electrical grid and distributed accordingly. The merits and benefits of the proposed project will be evaluated and considered as part of the Planning Commission and Board of Supervisors' consideration whether or not to approve the project.

O2-11

Please refer to EIR Section 3.2 Aesthetics, which addresses potential visual impacts associated with the proposed project, including potential impacts to SR 247. Please also refer to response to comment I5-3.

O2-12

As indicated in the EIR, the project lighting will be subject to the County lighting ordnance. Specifically, EIR page 3.2-10 states:

> San Bernardino County Development Code
>
> **Section 83.07.040, Glare and Outdoor Lighting – Mountain and Desert Regions**
>
> Section 83.07.040 of the San Bernardino County Development Code establishes standards for outdoor lighting in the County's Mountain and Desert Regions. The Project site is located in the Desert Region. This section requires new permitted lighting for construction and operational lighting to be fully shielded to preclude light pollution or light trespass on adjacent property, other property within the line of sight (direct or reflected) of the light source, or members of the public who may be traveling on adjacent roadways or rights-of-way.
>
> **Section 84.29.040, Solar Energy Development Standards**
>
> Section 84.29.040 includes the following standards applicable to the Project:
>
> > b) Glare. Solar energy facilities shall be designed to preclude daytime glare on any abutting residential land use zoning district, residential parcel, or public right-of-way.
> >
> > c) Night Lighting. Outdoor lighting within a commercial solar energy generation facility shall comply with the provisions of Chapter 83.07 of this Development Code.
>
> **Lighting**
>
> **Construction.** Construction associated with the Sienna Project would generally occur between 7:00 AM and 7:00 PM, Monday through Saturday. However, if necessary and approved by the County, nighttime construction activities could occur, which may involve the use of temporary construction lighting equipment. This could result in substantial adverse nighttime lighting visual effects given the general lack of any significant night lighting at the Project site. As such, implementation of Mitigation Measure S-AES-2 would reduce potentially significant impacts associated with nighttime lighting during construction to a less than significant level.
>
> **Operation.** Nighttime illumination of the Project site during the operational phase could cause substantial visual contrast given the general absence of light in the existing landscape. This

could result in substantial adverse nighttime lighting visual effects given the general lack of any significant night lighting at the Project site. As such, implementation of Mitigation Measure S-AES-2 would reduce potentially significant impacts associated with nighttime lighting during operation to a less than significant level. (EIR page 3.2-26)

O2-13

Please refer to response to comment I5-3 and O2-12.

O2-14

As stated in Section 3.4, Air Quality of the EIR, ambient air quality for the project site can be determined from ambient air quality measurements conducted at air quality monitoring stations. Existing levels of ambient air quality and historical trends in the region are documented by measurements made by the MDAQMD, the air pollution regulatory agency in the air basin that maintains the air quality monitoring stations which process ambient air quality measurements.

MDAQMD currently operates six active air quality monitoring stations in the MDAB. The nearest monitoring station that monitors all the relevant criteria pollutants is the Victorville (14306 Park Avenue) monitoring station, which is approximately 31 miles west of the Project area. This station monitors O_3, $PM_{2.5}$, and NO_2 along with PM_{10}. EIR Table 3.4-2 indicates the number of days that each of the standards was exceeded at both monitoring station during the years 2019, 2020, and 2021. The data collected at the Victorville station indicates that the 8-hour O_3 state and federal standard was exceeded in 2019, 2020, and 2021. In addition, the state 1-hour O_3 was exceeded all three years. The PM_{10} federal standard was exceeded in 2019, 2020, and 2021. The federal $PM_{2.5}$ standard was exceeded in 2020 and 2021. No other federal or state standards were exceeded at these monitoring stations. This data provides a sufficient three-year baseline of ozone and airborne particulates per MDAQMD guidance and CEQA best practices. Air quality is evaluated on an air basin level, and thus the Victorville station provides the most relevant data for this portion of the air basin.

Due to the cumulative nature of air quality monitoring, the MDQAMD does not require site-specific baseline monitoring. Further, mitigation measures are developed by each air district addressing air quality impacts on a specific air basin-wide basis. Based on MDAQMD guidance, the project's compliance with existing District rules and regulations, as well as dust control measures included in Chapter 84.29, Renewable Energy Generation Facilities of the County Development Code are the most stringent available for controlling fugitive dust during project construction. These dust control measures include ceasing all clearing, grading, earth moving, and excavation activities when winds are greater than 20 miles per hour, or when dust plumes of 20 percent or greater opacity impact public roads, occupied structures, or neighboring property. The use of opacity (the extent to which the air is obscured by particulates) is the MDQAMD's method for monitoring compliance with its conditions since it allows for immediate compliance activities and corrective actions.

Since air quality attainment status is measured on a cumulative basin level, data from additional monitoring stations or additional baseline ambient air quality data would not substantially alter attainment status nor would it change the MDAQMD's established significance levels or the relationship of the project's expected fugitive dust emissions (which are calculated on a project specific basis) to those significance levels. As provided in the EIR, all construction emissions without control measures would be below the MDAQMD annual thresholds, with the exception of PM10 emissions, which would exceed the MDAQMD's annual threshold of 15 tons per year by 0.6 tons. However, the Sienna Project would be required to comply with MDAQMD Rule 403 and San Bernardino County Development Code Section 84.29.035 to control fugitive dust, along with San Bernardino County Development Code Section 83.01.040 to reduce exhaust emissions during construction. With implementation of the water control measures (for dust control), the PM10 emissions would not exceed

MDAQMD's threshold of 15 tons per year. Therefore, with adherence to MDAQMD Rule 403 and San Bernardino and San Bernardino County Development Code Section 84.29.035, all construction-related criteria pollutant emissions would not exceed the applicable MDAQMD thresholds.

O2-15

Please refer to response to comment O2-14.

O2-16

The various soils conditions identified in this comment are acknowledged. Dust control measures implemented during project construction would be applied accordingly in order to achieve the dust suppression requirements established by District rules and regulations and the dust control plan that is required for the proposed project.

O2-17

Please refer to response to comment I6-1 and O2-16.

O2-18

Regarding Golden Eagle, the EIR identifies Golden Eagle as having a "moderate to high potential" to occur within the Sienna project area (EIR page 3.5-10). No golden eagles were observed during biological field surveys and there is an absence of suitable nesting habitat on-site; however Desert scrub within the Sienna Project area provides suitable foraging habitat for this species. (EIR page 3.5-13). All electrical components on the Sienna Project site shall be either undergrounded or protected, resulting in minimal potential for avian electrocution. Additionally, based on the Avian Powerline Interaction Committee's (APLIC) 1996 report on power line electrocution in the U.S., avian electrocution risk is highest along distribution lines (generally less than 69 kV) where the distance between energized phases, ground wires, transformers, and other components of an electrical distribution system are less than the length or skin-to-skin contact distance of birds. The distance between energized components along transmission lines (>69 kV) is generally negligible to present avian electrocution risk. Therefore, no operational impacts to birds are anticipated along the proposed gen-tie line. Impacts are considered less than significant. (EIR page 3.5-22).

Regarding raven, please refer to response to comment S1-1. Mitigation Measure REC-1 has been added as recommended by CDFW in this comment. Mitigation Measure REC-1 requires that, a Raven Management Plan be prepared and implemented for the proposed project. (See Final EIR page 3.5-47).

O2-19

As indicated in this comment, the project site is not located within the Plan Area for the Apple Valley HCCP; therefore, the project is not subject to any provisions of the HCCP. However, as discussed in the EIR, The Sienna Project area is located within the boundaries of the Desert Renewable Energy Conservation Plan (DRECP), a joint collaboration between the California Energy Commission, BLM, USFWS, and CDFW. In preparation of the DRECP, habitat models were developed to assess impacts to listed species and inform Project planning and Project alternatives where there is a lack of adequate data on species distribution. The DRECP is currently only implemented on BLM lands. However, the habitat suitability and range models can provide valuable information on the predicted distribution of listed species within the Sienna Project area.

The CDFW BIOS website and the California Essential Habitat Connectivity Project: A Strategy for Conserving Connected California were reviewed for wildlife movement information. The Sienna

Project area is not located within an identified wildlife movement corridor or linkage (Appendix D1 of this EIR).

The Sienna Project area and surrounding area contain expanses of open habitat with little development, and the site lacks any significant barriers to local wildlife movement. High temperatures and lack of cover within disturbed areas of the Sienna Project area may deter wildlife from crossing directly. Little development is present within the Sienna Project area and wildlife would be expected to traverse the site during foraging and dispersal. Various species may travel between and among surrounding areas of low disturbance (predominantly present immediately to the north and west of the Sienna Project area). The most likely areas for wildlife movement in this portion of the Mojave Desert would be within larger drainages, uninterrupted spans of native vegetation (creosote scrub, Joshua tree woodland, etc.), or along the foothills of the Granite Mountains to the north and west. While the Sienna Project area does contain areas of relatively undisturbed native vegetation communities, habitats are largely fragmented on the site and would limit the value of the Sienna Project area as a significant wildlife movement corridor (Appendix D1 of this EIR). (EIR page 3.5-23)

However, development of the Sienna Project would not create a significant barrier for wildlife movement. The Sienna Project area does not occur within a corridor that links between or among larger habitat areas on a local or regional basis. In addition, the Sienna Project is not within any areas mapped as Essential Connectivity Areas by the California Essential Habitat Connectivity Project (Appendix D1 of this EIR). As such, impacts are be considered less than significant. (EIR page 3.5-48).

O2-20

The EIR does consider regional habitats and provide an evaluation of the biological resources both locally and regionally, including information contained in regional databases such as those listed in the EIR:

> Rincon Consultants, Inc. conducted literature review of several relevant databases that provide information about occurrences of special-status biological resources, including:
>
> - CDFW's California Natural Diversity Database (CNDDB);
> - CDFW's Biogeographic Information and Observation System (BIOS);
> - U.S. Fish and Wildlife Service's (USFWS) Critical Habitat Mapper;
> - USFWS' Information for Planning and Consultation (IPaC) query;
> - USFWS' National Wetlands Inventory (NWI);
> - U.S. Department of Agriculture (USDA), Natural Resource Conservation Service's (NRCS) Web Soil Survey;
> - Calflora's What Grows Here; and,
> - California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants of California.

Please refer to EIR Section 3.5 Biological Resources (including pages 3.5-4 and 3.5-5) and response to comment O2-19.

O2-21

Please refer to response to comment I5-5.

O2-22

The County prepared a CEQA Initial Study and concluded Section XVII Mandatory Findings of Significance as "Potentially Significant Impact" and therefore, required that an EIR be prepared for the proposed project addressing potential project impacts to biological, cultural, and air quality as well as cumulative impacts.

O2-23

While impacts to individual birds from collisions may be expected to occur over the life of the proposed project, the frequency and nature of collisions would not be expected to be significantly exacerbated due to the project, and no population-level impacts are anticipated. The scientific literature has not established that PV solar projects create a significant impact to water birds due to a "lake effect." As such, project impacts associated with bird collisions are considered less than significant.

O2-24

Please refer to response to comment O2-23.

O2-25

Please refer to response to comment O2-23.

O2-26

This comment refers to the findings that are required pursuant to the San Bernardino Development Code §85.06.040. The EIR acknowledges that the project will be subject to these provisions of the development code; however, the specific findings will be made by the County as part of consideration of approval of the proposed project.

O2-27

Comment noted.

David Mack

From:	Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent:	Monday, September 30, 2024 11:18 AM
To:	David Mack; Delanie Garlick
Subject:	FW: Sienna Solar RDEIR Comments

fyi

From: Chuck Bell <chuckb193@outlook.com>
Sent: Monday, September 30, 2024 10:44 AM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>; Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>; David Mack <david.mack@weareharris.com>
Cc: Wardlaw, Mark <Mark.Wardlaw@lus.sbcounty.gov>
Subject: Sienna Solar RDEIR Comments

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Please acknowledge receipt and let us know who is in charge of this project now.

LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION (LVEDA)

To: Jim Morrissey, Planner Jim.Morrissey@lus.sbcounty.gov
Land Use Services
385 N. Arrowhead Ave. First Floor
San Bernardino, CA 92415

From: Chuck Bell, Pres. chuckb193@outlook.com 760 964 3118
P. O. Box 193
Lucerne Valley, CA 92356

Date: 9/30/24

LVEDA's COMMENTS ON THE SIENNA RDEIR – AND PROJECT PARAMETERS:

FIRST DEIR:

As we previously informed the Planning Dept. – none of us on the distribution list received a notice of the DEIR in 2023 – therefore didn't make any comments on it. Apparently it was a County error. (From David Mack: *The original DEIR should have remained on the County website as well, and I believe that is being worked on. That was an oversight which is being corrected)*. If you didn't get any comments on it – it wasn't circulated. O3-1

It's our understanding that the current **R**DEIR covers the current project's full description and environmental analysis – including anything that was in the DEIR. Correct?

We incorporate our NOP comments by reference. O3-2

RECE:

1

Is the project subject to the County's Renewable Energy and Conservation Element? O3-2 Contd.

This from David Mack in e-mail: (bold/underlining is our emphasis). *You inquired about the original project location and size and the applicability of the RECE to the current Sienna Solar project description. The County has determined that the* ***project is not subject to the RECE****, based on the original date the project was deemed "complete".*

This from the RDEIR "Land Use and Planning":

Land Use and Zoning Designations The privately-owned Sienna Project site is designated as Resource Land Management (RLM) and Rural Living (RL) in the San Bernardino Countywide Plan and zoned "Lucerne Valley – Agriculture" (LV/AG) and "Lucerne Valley – Rural Living (5 Acre Minimum)" (LV/RL-5) (County of San Bernardino 2020a). Pursuant to Sections 82.03.040 and 82.04.040 of the San Bernardino County Development Code, the County allows for the development of renewable energy generation facilities on AG and RL land with County approval of a Conditional Use Permit (CUP). The Sienna Project is being designed in accordance with San Bernardino County's Solar Ordinance (an ordinance amending Development Code Chapter 84.29, Renewable Energy Generation Facilities) and the ***County's General Plan Renewable Energy and Conservation Element (San Bernardino County 2020a)****, which strives to preserve the character of the Project area and surrounding communities.* O3-3

Per the discrepancies above – is it or isn't it subject to RECE? ie: It isn't because the original project application was filed and 'accepted' prior to RECE? Or it is subject to RECE because the site transfer was done with RECE in place? Or is the project "designed in accordance with....RECE" even though technically it isn't subject to it? If it is subject to RECE – our review indicates that it doesn't comply with all of its stipulations.

ADDITIONAL ACREAGE AND MW'S FROM ORIGINAL PROJECT:

The Bd. of Sups'. resolution re: RECE amendment '4.10' allows transfers of grandfathered applications (those filed and accepted prior to the moratorium) to other locations within a community. The obvious intent was likely to keep moved project acreage/MWs/other parameters, etc. relatively consistent with the original application – not allowing expanded projects that significantly differ from the original (ie: this project's increased acreage and MWs). O3-4

The following (in blue) likely came from County Planning after we asked the Third Sup. Dist. about the project changes:

"The applicant worked with landowners in the vicinity of the current project location to relocate the project area based on the feedback and input received from the local stakeholders involved in the previous effort. (We aren't sure that really happened). *They also want to be sure to account for various potential constructability constraints and*

2

setbacks, e.g. hydrology, drainage, ecological resources, land use, existing infrastructure, visual resources, etc. to achieve the most optimal final design with the fewest impacts possible.

Since there was no action taken on the previous Project, they are able to propose any changes to the Project description provided it is thoroughly disclosed, assessed in the EIR and made available for public comment."

The underlined part of the response doesn't answer the core of the question – nor explain divergence from the BOS' likely intent. Were the changes allowed because the original project was grandfathered from RECE and the moratorium because of application acceptance dates – thereby OK to add elements – including battery storage? And OK to be added even with the transferred location coming after RECE was in place? This needs to be answered.

O3-4 Contd.

LIBRARY:

This from our NOP comments: *Why wasn't the NOP delivered to the Lucerne Valley library? Certainly more locally available there than in Hesperia and San Bernardino. And we expect our library to have a copy of the Draft EIR!* Apparently not. Not the DEIR nor this RDEIR – unless it was and we weren't notified.

O3-5

EROSION/BLOWING DIRT/PM 10 AND 2.5:

The County's poor record with previous projects in requiring 'real' mitigations for dirt/dust blow-off – plus developers lack of compliance with the few that were required – and MDAQMD's marginal monitoring - cannot happen again. As evidenced with the 2 projects in Lucerne Valley and Daggett Solar – sand can't be fully stabilized with water or chemical treatments. This project's clay-based soils have a better chance of temporary adhesion with water – but still will blow off when disturbed. Clay soils are easier to stabilize with water than sandy ground – however watering 3 times/day might gum up some of the project's soils making construction difficult.

The residents in and around the project site already suffer from non-attainment for PM, etc. They need more attention especially during construction. It's our understanding that there is a MDAQMD PM monitor in Lucerne Valley – maybe up near the cement and lime plants. If so – definitely closer that the one in Victorville. The EIR posed revegetation with native species. Very difficult and would take irrigation to get started. Page 369(?)

O3-6

The only real mitigation for dirt/dust/PM10 and 2.5 blowoff – affecting downwind residents – would be NO SOIL DISTURBANCE DURING TYPICAL WINDY MONTHS FROM NOVEMBER TO JUNE – however that's not always feasible. It's just a matter of not scheduling work during those typical wind events. Plus – since that ground is mostly flat – requiring only minimal levelling – not grading – disturb as little as possible at a time. Example: Work on 10-20 acre segments – stabilize it – then work another 20 –

3

etc. Again, water application is only a temporary fix. With clay soils – the only feasible solution to soil erosion and downwind health impacts – and for successful operation of the facility – is to apply at least 4" of gravel on surfaces that would be continuously disturbed. Without a gravel base – wet clay soils from rain or water application and ponding in this low part of the basin will make driving/walking/construction/etc. extremely muddy and difficult – with vehicles mired in muck. Gravel in critical locations is the solution for both erosion and the plant's operation – especially potions of the site directly upwind from residents.

The RDEIR was not clear how fugitive dust/PM is 'significant and unavoidable' during Calcite Substation construction – and not the solar plant itself. O3-6 Contd.

AESTHETICS:

With the Calcite substation adding to 'cumulative' significance – rightfully so – why not the Sienna project with its miles of transmission lines – tall structures (45' high battery storage building) – partial visibility from Hwy 247 (Barstow Rd.) which is in process to become a "state scenic highway". Plus glare/glint from the panels viewed from higher elevations such as most of Lucerne Valley south of Hwys 18 and 247. (ie: The glare from the two existing solar plants on Camprock Rd. – appearing as 'lakes' – as viewed from the valley floor). To what extent will that affect our viewshed? Little if any mention in the EIR – and should be "significant". O3-7

Determining scenic impacts based on Caltrans' remote – not local – "Vista Points" – too far away to even see the site - makes no sense in assessing the lost values for what is intended to be a state scenic highway – assuming the solar plant and substation don't kill the 'scenic' option for at least those segments that can be seen for miles. O3-8

At least viewed from Barstow Rd. - fixed panel tilted to the south would be less intrusive than east/west tracking especially in the afternoon. Nevertheless – still visible. Even with undergrounding power lines from a location on the project site to the proposed Calcite Substation – with towers on both sides of the road – it will negate the intent and value of a State-designated "Scenic Highway". O3-9

The miles of powerlines required to link all the project's dispersed sites will significantly add to said impacts. That is an issue we brought up with the developer due to all the non-project parcels in the middle. There would be less poles and lines if said parcels could be incorporated/consolidated. O3-10

WATER SOURCES:

Although on site ag. wells with sufficient water rights will suffice for the water source – alternatives mentioned include public, residential water systems which are unlikely choices plus have their own water rights issues. It didn't mention the Mojave Water Agency's Morongo Pipeline south of Hwys 18 and 247 which can provide up to 10 ac'/period? of non-potable State water for construction purposes. It's a better option O3-11 than the other alternatives but likely not necessary. The on-site groundwater's high TDS level is fine for soil stabilization – but would have to be treated/filtered for panel washing. There was no mention of 'sweeping' options used on other industrial scale sites – less water consumption. O3-11 Contd.

Estimates of the amount of water required for construction of previous solar projects – primarily for soil stabilization – have been a fraction of what was actually used or needed. The amount of water required for this one needs to be accurately documented and realistic. The FEIR needs to be honest and about construction water requirements. O3-12

GREENHOUSE GAS EMISSIONS:

Aside from the long-term net benefit of solar vs. fossil fuels re: GHG emissions: For the EIR to comply with its CEQA obligations – it must document the GHG emissions required for mining the materials (especially lithium) - manufacturing of the panels and all plant facilities – construction-related emissions – and how many years of plant operation will be required for it to become "GHG neutral". As an example – recent studies indicate that an electric car has to travel 60,000 miles before it becomes 'neutral' – compensating for the impacts of its manufacture, etc. O3-13

HAZARDS/BATTERIES:

Lithium batteries have a history of being hazardous under certain conditions. Battery storage must be located far away and downwind from residential dwellings – along with better protection requirements than listed in the EIR. Fire alarms must be included for warning residents. This will be an issue when we meet with Avantus and the residents. O3-14

CONSTRUCTION TRAFFIC/CIRCULATION:

LVEDA and the School District must be involved in the "Construction Traffic Mitigation Plan" for assistance and advice. We will expect a detailed Traffic Study and analysis of these project impacts. O3-15

This is critical content for an adequate EIR and rationale for approval: Will the construction equipment come from Barstow to the north? Or off Hwy 18 through town from the west. Or through town from Hwy 247 from the east? Same for the workers? Or a mix? And at what percentage? <u>What will be the main access route to the project site?</u> How much and what type of trucks equipment would be expected during a typical day – week – etc.? How much associated noise and vibration? How would it affect regional and local residents – both Elementary and High Schools – especially at times of their high traffic volumes? And impacts on local County roads and normal traffic? How would it affect the town's already congested Hwy 247/247 4 way stop? Number of vehicles/hour/day there? That intersection isn't wide enough even for local semitrucks without needing the opposing lane for turning movements – let alone the oversize rigs that this project could require. The Barstow Rd. (Hwy 247) and Rabbit Springs Rd. intersection will require certain safety measures (said intersection O3-16

5

deemed as "unacceptable condition" in the EIR). Where would right/left turn pockets be required – especially on Barstow Rd. at the primary project access - even if just temporary?

1 to 2 years of impacts are more than "temporary" – considered 'long-term' when factor in the inconvenience and safety hazards inflicted on the community. O3-16 Contd.

NOISE:

Nighttime construction noise was not well addressed in the RDEIR. It should not occur within a determined distance from any residence. Even daytime noise should be better mitigated with temporary or even permanent walls adjacent to residences. Said walls could significantly reduce levels even from operation – panel hum – tracking – etc. O3-17

DIVIDING AN ESTABLISHED COMMUNITY:

The project might not be 'dividing' Lucerne Valley nor a major established community – but it certainly is dividing and surrounding small enclaves of existing residences – therefore needing special attention as discussed in these comments. O3-18

CALCITE SUBSTATION:

The RDEIR correctly states that the substation is "inconsistent with County land-use plans" and thus a significant impact. What the RDEIR doesn't cover: The MW capacity of the substation as planned. Is it intended to just accommodate Sienna Solar's output? How much excess capacity would be available for other solar projects (See "Cumulative Impacts below)? Will it be designed for additional capacity increases? What effect would the increased power from Sienna Solar and the substation have on the Pisgah Lugo Transmission system and associated facilities (a potential and direct 'off-site' impact that CEQA requires to be analyzed)? O3-19

Bottom line: Is there sufficient transmission capacity from Calcite Substation to the Lugo Substation in Hesperia to accommodate it all? What would need to be upgraded in that segment if any? That's a critical part and consideration of all these potential projects aided and abetted by Sienna Solar. O3-20

These aren't just SCE or CPUC issues to be determined later. They need inclusion in the RDEIR. O3-21

CUMULATIVE IMPACTS:

<u>The RDEIR fails to document the scale of cumulative Impacts</u> associated with this project that have 'significant' effects and ramifications. Does this project alone warrant SCE's proposed Calcite substation? Does it need State Land's Stagecoach Solar to make the substation viable? Would this project's 'contribution' to the viability of the Calcite substation trigger the proposed (now on hold?) Calcite Solar project? Then how does O3-22

the proposed Ord Mt. Solar project fit in (now also on hold)? If some or all of those projects get approved and built – Lucerne Valley will be 'industrialized' – significant loss of its current rural, land-use integrity. Solar panels about everywhere – numerous powerlines across Barstow Rd. to the Calcite Substation, etc. etc. And of course that part of "Scenic 247"shot to hell. O3-22 Contd.

ALTERNATIVES:

Alternatives to this project and industrial solar in general taking up desert ground exist in many forms – ie: solar panels on the thousands of square miles of commercial parking lots in the western states – commercial and residential roof-tops – localized CCA's for communities – etc. And most of these utilizing local grids not requiring thousands of miles of transmission lines that sluff off a high percentage of MWs along the way. O3-23

DECOMMISSIONING:

What is the bond amount? It needs to cover not just the solar site itself – but also any work to repair any damage to and impacts on the residents. O3-24

LVEDA INVOLVEMENT:

NOTE: As stated above – LVEDA must be involved with the developer and affected residents related to the Traffic Plan – location of certain facilities and project aspects to 'be determined later' – erosion control measures – project alterations, etc. And before it goes to the Planning Commission. O3-25

7

Letter O3

Lucerne Valley Economic Development Association (LVEDA)

September 30, 2024

O3-1

The comment is correct. The Recirculated Draft EIR (July 2024) addresses the entirety of the proposed project as was addressed in the original Draft EIR (August 2023). As explained in Section 1 Introduction of the Recirculated Draft EIR, the Recirculated Draft EIR for the proposed Project has been prepared to inform the public of changes to the original Draft EIR. The major additions or changes include the following:

1. The environmental impacts associated with the proposed Calcite Substation will no longer incorporate by reference the information from the *Stagecoach Solar Project Draft EIR* (State Clearinghouse No. 2020100234) (California State Lands Commission 2021). The *Stagecoach Solar Project Draft EIR* was released for public review from October 22, 2021, to December 22, 2021. Since the end of the public review period for the *Stagecoach Solar Project Draft EIR*, the California State Lands Commission has not certified a Final EIR or made a decision to approve/reject the project.

   The County of San Bernardino will be the lead agency under CEQA for the proposed Calcite Substation. As such, the County will exercise its independent judgement and analysis of the potential impacts associated with the construction and operations of the proposed Calcite Substation.

2. The Project applicant has included an additional 12.3 miles of gen-tie alternatives to be analyzed, which were not previously analyzed in the original Draft EIR.

O3-2

As explained on EIR page 2-7, "Pursuant to Policy 4.10, a newly proposed utility oriented RE project is not an authorized use in RL Land Use Districts, unless an application for development of a renewable energy project has been accepted as complete in compliance with California Code Section 65943 before the effective date of the resolution. The County issued letters indicating that the CUP applications for the Sienna Project were accepted as complete on August 14, 2017 and February 27, 2018. The Sienna Project is not subject to Policy 4.10 as the application for development was accepted as complete by the County prior to the effective date of the resolution (February 28, 2019)."

Accordingly, the project is allowed in the RL District and is being designed in accordance with San Bernardino County's Solar Ordinance (an ordinance amending Development Code Chapter 84.29, Renewable Energy Generation Facilities) and the County's General Plan Renewable Energy and Conservation Element (San Bernardino County 2020), which strives to preserve the character of the Project area and surrounding communities. (EIR page 2-8).

O3-3

The proposed project application was accepted as complete on August 14, 2017, and is not subject to locational development restrictions established in the RECE; however, the proposed project is otherwise being designed in accordance with the Solar Ordinance and RECE.

O3-4

The proposed project Applicant was allowed to propose changes to the project, as originally proposed under Board of Supervisors Policy 4.10. Pursuant to County Resolution No. 2019-17, "Any application for development of a renewable energy generation project that has been accepted as complete in compliance with California Government Code Section 65943 before the effective date of this Resolution shall be processed in compliance with the policies and regulations in effect at the time the application was accepted as complete. ***These applications may be relocated to other sites under the same policies and regulations.***" The County issued letters indicating that the CUP applications for the Sienna Project were accepted as complete on August 14, 2017, and February 27, 2018, prior to the effective date of the Resolution. This provision does not prohibit the Applicant from making other changes to the project when relocating the project to another site. Further, the Sienna Project is in the same area as proposed in the initial application, within Lucerne Valley, and was relocated to address various site conditions and technical restraints with the goal of reducing potential impacts as compared to the original location. Thus, the Sienna Project is not subject to Policy 4.10.

O3-5

The Recirculated Draft EIR and the documents incorporated by reference in this EIR were made available for public review during regular business hours at the County of San Bernardino Land Use Services Department, 385 North Arrowhead Avenue, 1st Floor, San Bernardino CA 92415 and were made available for review online at: https://lus.sbcounty.gov/planning-home/environmental/desert-region/.

O3-6

Please refer to responses to comments L1 through L4, and I3-1.

O3-7

A detailed analysis of potential cumulative impacts of the proposed project is provided in EIR Section 3.2 Aesthetics. As noted in EIR Section 5 Cumulative Impacts, "While the proposed Calcite Substation would be located on an approximately 75-acre parcel, only a 7-acre portion would be developed. The Calcite Substation and its associated project components ~~This project component in and of itself,~~ in and of themselves would not contribute to a cumulatively considerable aesthetic impact due to its relatively small scale and area of disturbance, topography and distance from other planned solar projects, and that it would not involve large expanses of solar arrays." (EIR page 5-5). Please also refer to response to comment I5-3.

O3-8

Please refer to response to comment I5-3.

O3-9

Please refer to response to comment I5-3.

O3-10

Please refer to response to comment I5-3.

O3-11

This comment is noted; however, it was determined that adequate water supplies are available to serve the project, regardless of the availability of the source of water identified in this comment. Please refer to response to comment I3-2.

O3-12

Please refer to response to comment I3-2.

O3-13

Assessing impacts of manufacturing or production of facilities elsewhere is speculative. It is not known when, where, and how materials that would be used for the project will be manufactured. Additionally, under CEQA, a life cycle analysis is not required (Save the Plastic Bag Coalition v. City of Manhattan Beach [2011] 52 Cal. 4th 155.) Rather, under Section 15064.4 of the CEQA Guidelines, the determination of the significance of GHG emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project. Here, the County properly estimated and analyzed the direct and indirect GHG emissions reasonably related to the project using similar methods for quantification of criteria air pollutants and information from a combination of emission factors from various sources. The County is not required to consider indirect and uncertain consequences of the project.

O3-14

Please refer to response to comment I5-5.

O3-15

A detailed analysis of potential construction and operation impacts is provided in EIR Section 3.13 Transportation. Mitigation Measure S-TRA-1 Construction Traffic Management Plan, requires that prior to the start of construction, the Project Applicant shall submit a Construction Traffic Management Plan (CTMP) for review and approval to the San Bernardino County Department of Public Works Traffic Division. In review of the proposed CTMP, the Department of Public Works Traffic Division would consider other land uses (such as schools), so that the appropriate traffic control and management mechanisms are implemented.

O3-16

Potential traffic impacts associated with construction and operation of the proposed project are evaluated in EIR Section 3.13 Transportation. The majority of Project trips will be to/from the west and east on SR-18. Remaining Sienna Project trips are expected to be to/from SR-247 via northern and southern origins. Based upon existing traffic flow patterns, geographical location of Sienna Project area, location of lodging and/or employment bases, and previous traffic impact studies, these considerations resulted in a distribution of trip types for the Sienna Project throughout the study area, as follows:

- 50 percent to/from SR-18 (Old Woman Springs Road) west of SR-247
- 30 percent to/from SR-18 south of SR-247
- 15 percent to/from SR-247(see Appendix L of this EIR for details): (Barstow Road) north of Rabbit Springs Road
- 5 percent to/from SR-247 (Old Woman Springs Road) east of Granite Road

As provided in the EIR, the vast majority of project-related traffic would occur during construction. After the end of construction, project operation would result in minimal traffic. Construction of the proposed Sienna Project would last approximately 12 to 24 months, which is considered temporary. Further, the potential for automobile delay, as described by LOS or similar measures of vehicular capacity or traffic congestion, is not considered a significant impact on the environment pursuant to CEQA.

Please refer to EIR Chapter 3.13 and Appendix L of the EIR for more details.

O3-17

As provided in EIR Chapter 3.12, project construction activities would be subject to San Bernardino County policies and regulations. Heavy construction activities would normally occur on-site between the hours of 7:00 a.m. and 7:00 p.m., which is between the hours considered exempt from San Bernardino County Development Code noise regulations (7:00 a.m. and 7:00 p,m., except Sundays and Federal holidays). Although additional hours may also be necessary to make up schedule deficiencies or to complete critical construction activities, construction activities outside of those hours generally would be limited to activities that generate relatively low amounts of noise, such as refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning. These activities would not be expected to create a significant nighttime noise impact. Regardless, measure to reduce and/or minimize noise during construction, in addition to compliance with San Bernardino County policies and regulations, as required by EIR Mitigation Measure S-NOI-1 are restated below. Mitigation Measure S-NOI-1 states:

S-NOI-1 **Employ Noise-Reducing Measures During Construction.** The construction contractor shall employ measures to minimize and reduce construction noise. Noise reduction measures that will be implemented include, but are not limited to, the following:

- Electrically powered equipment instead of internal combustion equipment shall be used where feasible.
- Limit use of intensive excavating and earthmoving machinery to daytime hours.
- To the extent feasible, schedule construction activity during daytime working hours.
- Temporary noise barriers and/or blankets with a minimum height of eight feet shall be deployed when construction activities are within 100 feet of a sensitive receiver during nighttime or cumulative construction activities. The temporary noise barriers and/or blankets shall be constructed of material with a minimum weight of two pounds per square foot with no gaps or perforations and extend 25 feet from equipment activity area to ensure line of sight is blocked at sensitive receiver locations. Temporary noise barriers and/or blankets may be constructed of, but not limited to, 5/8-inch plywood, 5/8-inch oriented strand board, and hay bales.

O3-18

Comment noted. As provided in Chapter 3.11, the Sienna Project is located in a sparsely populated portion of unincorporated San Bernardino County. The nearest conglomerated community is the unincorporated community of Lucerne Valley, approximately 6 miles southwest of the Sienna Project site. Residences are sparsely scattered to the north, east, and south of the Sienna Project site. Although the Sienna Project would cover a relatively large area (1,854 acres), the Project would maintain all existing access routes and would not result in the construction of new access routes or the elimination of existing area roadways that could have the potential to isolate existing uses or create a division between existing local uses.

O3-19

The Calcite substation would have available capacity to accommodate electrical loads from other sources, in addition to the Sienna Project. Other projects which potentially could interconnect to the grid using the Calcite substation are discussed in Chapter 5, Cumulative Impacts, which analyzes the impacts of the Sienna Project in combination with other past, present, and future projects. The County understands that other projects in the area which potentially could connect to the Calcite substation have been placed on hold for many years by the respective project applicant and, thus, it is unknown at this time whether or when they might be developed. Regardless, the County has considered each of these projects in its cumulative impact analysis. Further, if those projects are carried forward, they would be subject to review under CEQA. The projects also are structurally, legally, and financially independent from each other. Finally. Upgrades to the Lugo-Pisgah No. 1 220 kV transmission line are proposed by SCE as a separate and distinct project and considered under Chapter 5, Cumulative Impacts.

O3-20

Please see response to comment O3-19.

O3-21

To the extent that development of other utility-scale solar projects is reasonably foreseeable, the potential cumulative impacts associated with these projects are addressed in EIR Section 5 Cumulative Impacts.

O3-22

As described in the EIR, "The proposed Sienna Solar and Storage Project (herein referred to as “Sienna Project” or “solar and energy storage Project”) and the proposed Calcite Substation together represent the proposed Project for environmental evaluation purposes under CEQA (CEQA Guidelines Section 15378). The Calcite Substation is a necessary infrastructure improvement to allow the proposed Sienna Solar and Energy Storage Project to connect to the grid. The Sienna Project is proposed by 99MT 8ME, LLC (Applicant) and the Calcite Substation Project is proposed by SCE. The Sienna Project will interconnect at the SCE Calcite Substation via a proposed overhead and/or underground 220-kV gen-tie line, in addition to other ancillary facilities utilizing private and potentially public Rights of Way (ROWs).” (EIR page 2-1)

Please refer to EIR Section 5 Cumulative Impacts, which addresses the potential impacts associated with reasonably foreseeable projects.

O3-23

This comment is generally referencing “distributed solar energy.” Distributed solar energy, by itself, would not meet the State’s mandated renewable energy goals. A portfolio of utility-scale renewable energy projects (e.g.s solar, wind, geothermal), are needed in order to achieve the State-mandated renewable energy goals and corresponding GHG reductions. Please refer to response to comment I1-1.

O3-24

The actual bond amount will be determined by the County as deemed appropriate and sufficient based on reclamation requirements for the proposed project. Specific identification of the bond amount is not a direct comment on the adequacy of the EIR; as such, no further response is required.

O3-25

Comment noted.

Ironworkers Local 433

International Association of Bridge, Structural & Ornamental Iron Workers A.F.L.-C.I.O.
Established 1929

252 WEST HILLCREST AVE. SAN BERNARDINO, CALIFORNIA 92408 PHONE: (909) 884-5500
louie@ironworkers433.org

LOUIE LOPEZ
Business Agent

Aron Liang
Planning Manager
Land Use Services Department
385 N. Arrowhead Ave.
San Bernardino, CA. 92415-0187
Phone: 909-387-0235
Email: Aron.Liang@lus.sbcounty.gov

October 4, 2024

Dear Aron,

I am writing in support of the Sienna Solar & Storage Project currently under consideration.

This project located in Lucerne Valley is good for the County and will provide stable, well-paying jobs, as well as much needed tax revenues to fund vital public services in our community. Not only would this project generate enough energy for over 250,000 homes, but as Business Agent and speaking on behalf of Ironworkers Local 433, approval of the Sienna Solar & Storage Project will also create local work that will help our Local 433 members provide for their families. O4-1

We need this project now to help ensure a thriving, future focused San Bernardino County. I urge you to approve the Sienna Solar & Storage Project.

Sincerely,

Louie Lopez
Business Agent
Ironworkers Local 433

LL/kl
OPEIU #537/AFL-CIO

Letter O4

Ironworkers Local 433

October 4, 2024

O4-1

The commenter's support of the proposed project is acknowledged.

David Mack

From: Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent: Monday, September 30, 2024 2:45 PM
To: David Mack; Delanie Garlick
Subject: FW: Sienna Solar's Industrial Solar Plant in Lucerne Valley

fyi

From: Ray Gagne' <jubileewaterco@gmail.com>
Sent: Monday, September 30, 2024 2:43 PM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>; Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>
Subject: Re: Sienna Solar's Industrial Solar Plant in Lucerne Valley

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Dear SB County,
I have Solar at my house. The panels are on the roof of my house. That is one good place solar panels should be installed. Also, on parking lots, commercial and industrial buildings. NOT in the High Desert where people have chosen to live to get away from the cities and polution. Please do not support building the Sienna Solar Farm in Lucerne Valley. There are other, more appropriate places to put industrial solar plants. Places like the already industrialized solar energy complexes near Lockart and Kramer Junction. I1-1
Thank you.

Raymond M. Gagne', Jr.
General Manager
Jubilee Water Company
Office: 760-248-7883
Cell: 760-885-8587

Letter I1

Raymond M. Gagne, Jr.

September 30, 2024

I1-1

This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

However, the following information is provided as the comment references alternative location and renewable distributed solar generation.

Alternative Location. As indicated on EIR page 7-2, the Sienna Project proponent does not have control of an alternate site. If control were viable, the proponent would have to re-initiate the application process as a new project. Similar to the proposed Sienna Project site, an alternate site would require environmental review once the proponent has prepared sufficient project description information. At present, the proponent does not have control of an alternate site. Furthermore, the incontiguous configuration of the Project location occurred due to difficulties in securing properties, and replicating an alternative site would likely be difficult to ascertain based upon this experience. It is unknown if the environmental impacts associated with this Alternative would be less than the proposed Sienna Project, because it would be speculative to evaluate an unsecured alternate site. This is primarily due to the fact that the Sienna Project proponent does not have control of an alternate site. Therefore, an alternative site was eliminated from further consideration in this EIR.

Renewable Distributed Solar Generation. Renewable Distributed Solar Generation is considered technically infeasible as a replacement alternative for industrial scale projects for a variety of reasons including, upper limits on integrating distributed generation into the electric grid, lack of electricity storage in most distributed generation systems, and continued dependency of buildings on grid-supplied power for reliability. In order to achieve the 525 MW goal of the project, thousands of acres of rooftops would need to be available in the County for solar use. Hundreds or thousands of installation locations across the County would be required, many of which would require additional discretionary actions and development review processing. Other factors contributing to the infeasibility of Renewable Distributed Solar Generation include:

- There would be difficulties with respect to building of the system within a timeframe that would be similar to the proposed project;
- Given the distributed nature of such a network of facilities, management and maintenance would not be as efficient, and total capital costs would likely be higher;
- The requirement to negotiate with a large number of individual property owners to permit placement of solar panels on rooftops which would likely add substantial approvals and time to meeting the stated renewable energy goals;
- The difficulty in ensuring proper maintenance of a large number of small solar installations;
- The lack of an effective electricity distribution system for large numbers of small electricity producers.

Furthermore, while renewable distributed solar generation alternative could avoid some of the significant, but mitigable impacts of the proposed project, it would likely result in similar, and in some cases greater impacts than the proposed project to other environmental issue areas.

David Mack

From: Feliciano, Michelle <Michelle.Feliciano@lus.sbcounty.gov>
Sent: Tuesday, October 1, 2024 12:18 PM
To: David Mack; Garlick, Delanie
Cc: Marquez, Nichollette; Wardlaw, Mark; O'Strander, Susan
Subject: FW: Comments on Draft EIR for Sienna Solar in Lucerne Valley -- Forwarded from bounced email.

FYI. We received this comment regarding Sienna Solar.

Regards,

Michelle Feliciano
Senior Land Use Coordinator
Land Use Services Department
Phone: 909-387-0150
Fax: 909-387-3223
385 N. Arrowhead Ave, First Floor
San Bernardino, CA, 92415-0187

SAN BERNARDINO COUNTY

Our job is to create a county in which those who reside and invest can prosper and achieve well-being.
www.SBCounty.gov

From: Linda Gommel <lvstorelg@lucernevalleymarket.com>
Sent: Tuesday, October 1, 2024 10:46 AM
To: Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>
Subject: Comments on Draft EIR for Sienna Solar in Lucerne Valley -- Forwarded from bounced email.

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I'm not an expert on all of the issues surrounding the gigantic solar field about to be built in Lucerne Valley. I've read Chuck Bell's encyclopedic response, and also Bill Lembrights. Both of them know much more than I do. I agree with everything they both said. I2-1

My own opinion is based on the aesthetics and the premise of solar energy like this. The State of California is all too willing to sacrifice the lifestyles of us little people to serve their agendas, which don't particularly impact themselves. Their choice of where to live and the level of enjoyment is not at issue. Only ours, and so it doesn't matter to them. I2-2

The desert is not just brown dirt. It's an entire, sometimes fragile, ecosystem, but that doesn't seem to matter when it interferes with the green agenda that brings in money, power, and control to the elites and their bureaucrat-buddies. I2-3

The green agenda is flawed and based on untruths about such things as the environment and climate change. I2-4

We residents of San Bernardino County rely on the good sense of our County government to protect us from the depredations of the looney left that use us and screw us.

Linda Gommel
Lucerne Valley Mkt & Hardware
32946 CA Hwy 18; P.O. Box 749
Lucerne Valley, CA 92356
760-2487311; Fax 760-2486324
Email: lvstorelg@lucernevalleymarket.com

Eternal Lives Matter!
Acts 2:38-40

1

Letter I2

Linda Gommel

October 1, 2024

I2-1

Comment noted.

I2-2

Comment noted.

I2-3

Comment noted. This comment references a broader policy (green agenda) and general implications associated with implementation of the policy; however, it does not raise a specific issue related to the EIR. With respect to the proposed project, biological impacts are addressed in EIR Section 3.5 Biological Resources.

I2-4

Comment noted.

David Mack

From:	Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent:	Tuesday, October 1, 2024 8:04 AM
To:	David Mack; Delanie Garlick
Subject:	FW: Public Comment on Project Notice PROJ-2-22-00013 (Sienna Solar Center)

fyi

From: Ondine Hollander <ondinehollander@gmail.com>
Sent: Monday, September 30, 2024 11:13 PM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>; Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>
Subject: Public Comment on Project Notice PROJ-2-22-00013 (Sienna Solar Center)

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September 30, 2024

Via e-mail (Aron.Liang@lus.sbcounty.gov, Nichollette.Marquez@lus.sbcounty.gov)
Mr. Aron Liang
Ms. Nicholette Marquez

Re: Project Notice (PROJ-2-22-00013) for a 1,932-Acre, 500 MW Utility- Scale Solar Facility in Lucerne Valley

Dear Mr. Liang and Ms. Marquez:

I am writing to express my concerns regarding the (EIR) for the proposed Sienna Solar Center in Lucerne Valley. While I support site-specific renewable energy initiatives, I believe it is crucial to address several potential environmental impacts associated with this industrial scale project.

1. **Windblown Dust**: Construction and operation of similar solar farms here in the high desert have led to increased year-round dust emissions. This poses health risks to local residents, degrades air quality, and creates safety hazards where dust obscures traffic lanes and intersections. The proposed dust control measures do not mitigate this impact. I3-1

2. **Demand on Local Aquifer**: Representatives from developer Avantus were not able to state the amount of water to be used for construction or maintenance. Similar projects in the high desert have used 3-5x the originally planned water, exacerbating existing water scarcity issues. It is vital to conduct a thorough assessment of the project's water usage and its potential effects on the aquifer's sustainability. I3-2

3. **Glare from Solar Panels**: Glare from solar panels of similar projects in the high desert impact nearby *and* distant residents and wildlife. Lucerne Valley is surrounded by highways, neighborhoods, and ranches on elevated hillsides and mountain slopes. These roads and residences will suffer daily glare from the solar panels. I3-3

I appreciate the opportunity to comment on this project and hope that these concerns will be carefully addressed and mitigated as the EIR process continues. I3-4

Thank you for your attention to these important issues.

Sincerely,
Kirsten 'Ondine' Hollander
Apple Valley Resident

1

Letter I3

Kirsten 'Ondine' Hollander

September 30, 2024

I3-1

Potential air quality impacts associated with construction and operation of the proposed project are addressed in EIR Section 3.4 Air Quality. As discussed in the EIR, "The Sienna Project would adhere to the MDAQMD Rule 403 (Fugitive Dust Control), in addition to complying with any applicable proposed control measures from the *Mojave Desert Planning Area Federal Particulate Matter (PM_{10}) Attainment Plan* (1995) and the MDAQMD *70 ppb Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area)* (2023)." (EIR page 3.4-15) Further, as shown in EIR Tables 3.4-6 and 3.4-7, the Sienna Project would not generate criteria pollutant emissions that would exceed MDAQMD's thresholds for ozone precursors (VOC and NO_X), CO, SOx, and $PM_{2.5}$. With incorporation of water control measures pursuant to MDAQMD Rule 403 and San Bernardino County Development Code Section 84.29.035, the Sienna Project would not exceed MDAQMD's threshold for PM_{10}." (EIR page 3.4-15).

The Sienna Project would not generate criteria pollutant emissions that would exceed MDAQMD's thresholds for ozone precursors (VOC and NO_X), CO, SOx, and $PM_{2.5}$. With incorporation of water control measures pursuant to MDAQMD Rule 403 and San Bernardino County Development Code Section 84.29.035, the Sienna Project would not exceed MDAQMD's threshold for PM_{10}. (EIR 3.4-17)

I3-2

As indicated in the EIR, "Construction of the Sienna Project would require approximately 228.6 acre-feet (AF) of water for dust suppression over the assumed 12- to 24-month[1] construction period. During the Sienna Project's 30-year lifetime, water demands would be associated with annual washing of the solar PV panels to maintain efficiency, potential wastewater associated with water treatment by a reverse osmosis deionization system, emergency fire suppression water (stored on-site), and potential operation of the Sienna Project's O&M building. The estimated operational water demand would be up to 50.36 AF for each year the Sienna Project is operational. According to the Water Supply Assessment (WSA) prepared for the Sienna Project (Appendix M of this EIR), the Sienna Project's amortized annual water demand is 61.28 AF per year." (EIR page 2-37)

I3-3

Please refer to response to comment O2-12 regarding glare and wildlife. A discussion of glare is provided under Impact 3.2-4 of the Recirculated Draft EIR. As noted in the discussion, PV panels are specifically designed to reduce reflection as reflected light cannot be converted into energy. Additionally, the project would be designed consistent with County Code Section 83.07.040, Glare and Outdoor Lighting, and County Code Section 84.29.040 which requires solar energy facilities to be designed to preclude daytime glare affected any abutting residential areas or public right-of-way.

[1] The construction period would occur over 12 to 24 months. The total water demand is assumed to be 225 acre-fee. A longer duration would result in a lower monthly demand. Water demands are analyzed for a 12-month period, as this provides a more conservative analysis than assuming a 24-month duration, which would reduce monthly water demands by approximately half (i.e., if sufficient water would be available for a 12-month period, then sufficient water would also be available for a 24-month period because the longer the phase duration, the lower the monthly water demands will be.

I3-4

Comment noted.

David Mack

From:	Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent:	Sunday, September 29, 2024 8:43 PM
To:	David Mack; Delanie Garlick
Subject:	Fw: Lucerne valley solar

From: Todd Jones <ztoddjones@yahoo.com>
Sent: Sunday, September 29, 2024 8:25:26 PM
To: Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>; Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Subject: Lucerne valley solar

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Please do not allow a massive solar farm to be built in the center of our town. Our community should not have to bear any more burdens for the cities to grow beyond their means. I4-1

1

Letter I4

Todd Jones

September 29, 2024

I4-1

Comment noted.

David Mack

From: Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent: Monday, September 30, 2024 11:20 AM
To: David Mack; Delanie Garlick
Subject: FW: Comments on Draft EIR for Sienna Solar in Lucerne Valley

fyi

From: Bill Lembright <billlembright@gmail.com>
Sent: Sunday, September 29, 2024 7:43 PM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>; Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>
Subject: Fwd: Comments on Draft EIR for Sienna Solar in Lucerne Valley

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Subject: Comments on Draft EIR for Sienna Solar in Lucerne Valley

Lucerne Valley is an economically severely disadvantaged community inhabited by numerous low income residents who are located here for the pristine beauty and affordability of this desert valley nestled between the surrounding San Bernardino, Granite, Sidewinder, Ord, and Rodman Mountain ranges. The water runoff from these mountains supplies a limited amount of groundwater to sustain us. I5-1

We came here to escape the pollution of cities and their industrialization! Now outsiders want to intrude in the home of our dreams destroying much of the beauty and simplicity we came here to enjoy. This 5 square mile project is smack dab in the middle of our currently beautiful community. We already have two smaller industrial solar projects in the southern end of the valley which have plagued our view, created dust storms, used four times the water they had planned to use, and caused considerable flood water damage to their neighbors. The proposed Sienna Solar is over eight times that size and right in the middle of our viewshed. I5-2

Lucerne Valley's State Highway 247 has been designated as a candidate to the State's Scenic Highway system. That prospect will be greatly diminished if this eyesore is permitted. I5-3

The proposed solar fields would disrupt numerous desert tortoises, golden eagles, kit foxes, and burrowing owls. Plus there are existing homes on all sides of the project whose view, groundwater, clean air, and quiet will be spoiled. It's doubtful any of the approvers of this project would allow it to be built near THEIR homes. I5-4

And lastly there is the danger of the large number of lithium storage batteries exploding under stress and endangering the surrounding residents. I5-5

Please deny the permit for this project which is inappropriate for a residential community. I5-6

There are regions far more appropriate such as the already industrialized solar energy complexes near Lockhart and Kramer Junction.

Thank you,

Bill Lembright, Lucerne Valley resident and solar energy generator at home and at Lucerne Valley Market and Hardware

1

Letter I5

Bill Lembright

September 29, 2024

I5-1

Comment noted. Please refer to responses to comments I3-2 and I6-1.

I5-2

Comment noted. Please refer to responses to comments I3-1 regarding dust. Regarding visual impacts, please refer to response to comment I5-3 and EIR Section 3.2 Aesthetics, which addresses potential visual impacts associated with the proposed project, including potential impacts to SR 247.

I5-3

The EIR states that, SR 247, which runs approximately one mile west and 2.5-miles south of the Sienna Project site, is eligible for California State Scenic Highway Designation (Caltrans 2018). The County of San Bernardino has also designated SR 247 in the Sienna Project vicinity as a Scenic Route (County of San Bernardino 2020a). (EIR page 3.2-8) Potential visual impacts of the project to SR 247 as it relates to a scenic highway are addressed on EIR page 3.2-15. Potential views to the Sienna Project site from the nearest vantage point from SR 247 would occur at a distance of one mile, looking east. Due to this distance, combined with intervening topography, as well as elevational differences, views of the Sienna Project would not substantially damage scenic resources in the surrounding vicinity.

I5-4

The issue areas generally referred to in this comment are addressed in EIR Sections 3.5 Biological Resources, 3.2 Aesthetics, 3.15 Utilities and Service Systems, 3.4 Air Quality, and 3.12 Noise and Vibration, respectively.

I5-5

Potential hazards associated with the Battery Energy Storage System (BESS) are addressed in EIR Section 3.9 Hazards. As discussed, the Sienna Project would include preventative measures, such as energy management systems and building management systems to reduce the potential for accidents to occur. State-of-the-art fire and safety systems would mitigate the thermal runaway event. The BESS containers would have a fire rating in conformance with NFPA and County standards and specialized fire suppression systems. The Sienna Project would utilize pre-engineered battery storage systems listed under UL 9540 or BESS tested in compliance with UL 9540A. CFC compliance requires a Failure Mode and Effects Analysis be performed and requires a test to ensure safe compatibility of the system's parts. This includes the UL 1973 standard, in which a battery manufacturer must prove that a failed cell inside will not cause a fire outside the system. The Sienna Project is also subject to the requirements of Chapter 12 of the CFC which requires that all BESS use an Energy Management System for monitoring and balancing cell voltages, currents and temperatures an HMBP will be prepared and implemented by the Project. The HMBP would be required to also include an emergency response plan which is designed to minimize hazards to humans and the environment from a sudden release of hazardous waste, fires, or explosions. This includes required emergency response training for the San Bernardino County Fire Department and staff. (EIR page 3.9-22)

I5-6

Comment noted.

David Mack

From:	dwm92307 <dwm92307@yahoo.com>
Sent:	Wednesday, September 25, 2024 1:18 PM
To:	David Mack
Subject:	Oppose Sienna Solar

I am writing in opposition to the Sienna solar project in Lucerne Valley California. This is a poorly sighted project. Any amount of water used to eliminate dust will instantly turn to mud that traps vehicles and boots on the ground. Once you water down that lake bed it will be inaccessible for days afterwards. The amount of water required for the access roads alone will deplete the local water table. Any water from existing Wells, aqueducts, or reservoirs cannot be spared for a failed attempt at dust mitigation. On to the topic of Wildlife, whose habitats will be destroyed. You're representative at the open house in Lucerne Valley said they only found one burrowing owl Den. I personally know of several more. The fissures on the lake bed are used by these owls for their homes. Also the berms on the sides of the roads provide easy digging for all sorts of Critters to build homes. Desert tortoise are prevalent in this area as well as kit foxes. The community of Lucerne Valley wants to keep its wildlife from unnecessary intrusions. Also the blight and ugliness that a solar project of this size brings to our community is unwelcome. There is a low value on property in this area already. This project will make it virtually worthless. I have lived in this community for 16 years, most folks have been here longer than me. We are not willing to give up our underground water resources or the beauty of our Outdoors for your project. I6-1

Dennis Morrison

Sent from my Galaxy

1

Letter I6

Dennis Morrison

September 25, 2024

I6-1

Regarding water use, a Water Supply Assessment was prepared for the proposed project (EIR Appendix M). Water supply for the Sienna Project would be obtained from locally produced groundwater using an on- or off-site well, or by purchasing treated water from a local purveyor and trucking it to the site. The water use and water supply assessment for the proposed project are summarized in EIR Section 3.15 Utilities and Service Systems. As shown in EIR Table 3.15-4, under all considered drought scenarios, including normal water year, single-dry water year, and multiple-dry year conditions, MWA total water supplies are sufficient to meet projected demands (EIR page 3.15-17). There is sufficient water supply available to meet the Sienna project's potential water demands under normal-year, single-dry-year, and multiple-dry-year conditions through horizon year 2055. Impacts are considered less than significant.

Regarding burrowing owl, based on the CNDDB occurrences, presence of suitable habitat, and the siting of two individual burrowing owls and an active burrow, the species is considered present within the Sienna project area and may occur for wintering or breeding throughout the Project area, wherever suitable burrows occur. The Sienna project has the potential to impact burrowing owl individuals if they are present on the site at the time of scheduled disturbance activities. However, implementation of Mitigation Measures S-BIO-2, S-BIO-4, and S-BIO-6 would reduce potentially significant impacts to burrowing owl to a less than significant level. (EIR page 3.5-31)

Regarding lighting, Nighttime illumination of the Project site during the operational phase could cause substantial visual contrast given the general absence of light in the existing landscape. This could result in substantial adverse nighttime lighting visual effects given the general lack of any significant night lighting at the Project site. As such, implementation of Mitigation Measure S-AES-2 would reduce potentially significant impacts associated with nighttime lighting during operation to a less than significant level.

David Mack

From: LINDA MORRISON <itzlinda@verizon.net>
Sent: Thursday, September 26, 2024 11:14 AM
To: David Mack
Subject: Sienna Solar Project

Oh no, another money grubbing unsightly, non conforming to the surroundings solar project. Our desert may appear "dead" to the outsiders who look down their noses on it but I ask you, do any of these wanna be dogooders actually live here? If they did, they would witness the occasional eagles, hawks, roadrunners, quail, rabbits and even tiny little creatures who call it home. That brings us to the property owners, many of whom struggled for countless years to be able to move out of the city into a beautiful almost untouched area for some peace and quiet, not to mention the unscarred, untouched beauty of what God created. Do not let Sienna Solar ruin what many living beings call home. This is just another sad invasion. NO on Sienna Solar! I7-1

1

Letter I7

Linda Morrison

September 26, 2024

I7-1

The potential impacts to species generally referred to in this comment are addressed in EIR Sections 3.5 Biological Resources.

David Mack

From: Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent: Monday, September 30, 2024 11:16 AM
To: David Mack; Delanie Garlick
Subject: FW: Solar Project in Lucerne valley ca

fyi

From: Bob Obrien <bobobrienbb@aol.com>
Sent: Sunday, September 29, 2024 9:17 PM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Subject: Solar Project in Lucerne valley ca

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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

Hello
My name is Bob obrien and a resident of Lucerne valley. I am not in favor of the Solar project. We are concerned for the animals that also call this home. In addition, our hwy 247 is a beautiful drive for everyone. Please consider another area for your Solar Project. I8-1

Thanks
Bob obrien

1

Letter I8

Bob O'Brien

September 29, 2024

I8-1

The issue areas generally referred to in this comment are addressed in EIR Sections 3.5 Biological Resources and 3.2 Aesthetics.

David Mack

From: Bill Peterson <expertappliancehd@outlook.com>
Sent: Monday, September 30, 2024 11:16 AM
To: David Mack
Cc: Delanie Garlick
Subject: Sienna Solar Project Lucerne Valley
Attachments: UC Riverside Study.pdf

Good Afternoon,

I am writing to oppose this project and any other industrial scale solar (intermittent energy) projects in the Mojave Desert. I have yet to hear I9-1
any logical evidence or reasoning that projects like this will save the environment. Even if they are placed on previously disturbed land, it will
halt the lands ability to heal and return to how God created it. Secondly, if the proposed substation gets built, it will only invite more projects I9-2
of this scale. Even with the current moratorium, there is nearby state land that could be exempted and/or the potential for the moratorium to
be lifted sometime in the furture.

Solar farms harm many plants and animals, including desert tortoises, Mojave fringe-toed lizards, ironwood trees, desert flowers, birds, I9-3
bats, and monarch butterflies.

A 2014 UC Riverside study (see attachment) concluded that the loss of caliche and organic matter in surface soil layers compromises the
value of solar energy. Here's and excerpt from page 1: "A concern not fully understood is the amount of carbon that a large-
scale solar technology can mitigate versus release by disturbing the land. Underneath desert ecosystems in the California deserts, vast a I9-4
mounts of carbon are stored as inorganic caliche, or calcium carbonate ($CaCO_3$). Both caliche and organic matter losses from land distu
rbance can compromise the value of solar energy as an alternative to fossil carbon burning by destroying the ability of these deserts to se
quester (capture) carbon and potentially release stored inorganic carbon into the atmosphere."

In June 2024, the Los Angeles Times reported that Avantus, was clearing thousands of Joshua trees in the Mojave Desert to make way for the
Aratina Solar Project. The project will generate electricity for coastal neighborhoods, but the land is home to endangered desert tortoises I9-5
and the poverty-stricken towns of Boron and Desert Lake are angry about the project.
https://www.latimes.com/environment/story/2024-05-31/solar-project-to-destroy-thousands-of-joshua-trees

Also, solar panels are darker than the ground they cover, so they absorb and emit a lot of heat, which can affect the climate. I9-6

Even "Big Tech" doesn't believe the premise...

https://www.technologyreview.com/2024/09/26/1104516/three-mile-island-microsoft/

https://www.ft.com/content/f073b54d-9290-49b4-8ee7-56b4fb3d8177

Thank you for taking the time to hear my concerns.

Bill P.
Resident of Lucerne Valley

Title
Carbon Balance in California Deserts: Impacts of Widespread Solar Power Generation

Permalink
https://escholarship.org/uc/item/5cn2d5q5

Authors
Allen, Michael F.
Jenerette, George D.
Santiago, Louis S.

Publication Date
2023-01-18

Peer reviewed

Energy Research and Development Division
FINAL PROJECT REPORT

CARBON BALANCE IN CALIFORNIA DESERTS: IMPACTS OF WIDESPREAD SOLAR POWER GENERATION

Prepared for: California Energy Commission
Prepared by: Center for Conservation Biology, University of California, Riverside.

NOVEMBER 2013
CEC-500-2013-063

Prepared by:

Primary Author(s):
Michael F. Allen
G. Darrel Jenerette
Louis S. Santiago

Center for Conservation Biology
University of California, Riverside
900 University Ave.
Riverside, CA 92521
www.ucr.edu

Contract Number: 500-11-033

Prepared for:

California Energy Commission

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PREFACE

The California Energy Commission Energy Research and Development Division supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

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ii

ABSTRACT

Large-scale solar development in desert ecosystems has the potential to generate electricity thereby reducing fossil carbon accumulation in the atmosphere. Large stores of carbon are buried as caliche, or calcium carbonate that is fragmented and exposed upon disturbance.

In this project, the researchers focused on developing techniques to measure baseline caliche carbon in areas proposed for development, developing models to assess organic and inorganic carbon sequestration, and to determine if stripping native vegetation can affect carbon exchange and create a loss of inorganic carbon.

To measure the amount of baseline caliche carbon, the researchers found that the complex soil layering makes ground penetrating radar of limited value to detecting caliche layers in southern California deserts.

The isotopic ratios of carbon and oxygen were measured to assess dynamics of inorganic carbon; these stable isotope ratios showed that in the surface layers of soil, caliche is dynamic as fractionation and exchange with modern ions are occurring. Finally, using sensors and flux towers, flux rates of carbon in soil and the atmosphere of an undisturbed desert vegetation setting were measured and then compared with those from a site with the vegetation removed. Using the actual concentration and flux values, caliche formation and weathering were modeled. It was determined that carbon is being cycled in complex ways including between organic and inorganic forms in desert shrublands, and that inorganic carbon may be lost from areas stripped of desert vegetation.

The authors concluded that protecting native riparian woodlands and vegetation types that have deep roots is important to guard buried inorganic soil carbon stocks and carbon sequestration capacity. Planting short-statured shrubs or sucullents in areas with solar panels to reduce erosion and protect soil carbon is also recommended. The researchers also recommend that solar developments be revegetated.

Keywords: Soil carbon, caliche, calcium carbonate, solar power, soil respiration, desert ecosystem, delta 13C, delta 18O, root dynamics, fungal dynamics, ground penetrating radar, soil isotopes, soil disturbance, soil ecology

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TABLE OF CONTENTS

iv

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Introduction

Large-scale solar development in desert ecosystems has the potential to generate electricity, reducing fossil carbon accumulation in the atmosphere, and in turn, lowering global warming rates. There remain, however, environmental concerns regarding this technology, including the associated disturbance of soil and vegetation covering square miles.

A concern not fully understood is the amount of carbon that a large-scale solar technology can mitigate versus release by disturbing the land. Underneath desert ecosystems in the California deserts, vast amounts of carbon are stored as inorganic caliche, or calcium carbonate ($CaCO_3$). Both caliche and organic matter losses from land disturbance can compromise the value of solar energy as an alternative to fossil carbon burning by destroying the ability of these deserts to sequester (capture) carbon and potentially release stored inorganic carbon into the atmosphere.

This research project compared carbon fluxes and natural sequestration of organic and inorganic carbon measurements in deserts that are proposed for solar electrical power development. The authors focused on developing techniques to measure baseline caliche carbon in areas proposed for development, developing newer assessment models which can be used to model organic and inorganic carbon sequestration, and determining if stripping native vegetation can affect carbon exchange and create a loss of inorganic carbon.

Measure Caliche Using Ground Penetrating Radar

One of the challenges is measuring the amount of caliche and how much carbon might be lost by removing vegetation and surface soil layers. Recent studies have used ground penetrating radar to distinguish depth and layering of caliche below the soil surface.

Test areas used a SIR-3000 system (Geophysical Survey Systems, Inc.), a DC-3000/1100 controller, and a 3101 (900 KHz) and a 5100 (1.2MHz) antenna that was manually moved across the soil surface. The researchers first tested the system to see if they could detect the shifting soil structure under desert ecosystems using a sand dune ecosystem. Then the unit was tested to detect caliche rocks buried in sand, and against road cuts with known caliche layers.

The researchers were able to detect shifting soil layers under sand, however, were unable to detect patches of caliche that were buried. The researchers were also unable to differentiate caliche from other soil/rock layering at field sites. This approach can provide a description of layering and differential moisture retention, but the complex layering of California desert soils make this approach problematic.

Isotopic Analysis of Organic and Inorganic Carbon

$CaCO_3$ formation has been modeled on a largely equilibrium geochemical basis using atmospheric carbon dioxide (CO_2) levels and precipitation as calcite saturation and the partial pressure of CO_2. But, several soil chemical and biological factors may affect caliche stability.

The goal in this project determined if the carbon and $\delta^{18}O$ in the near surface caliche layers and desert soils showed stable or if the ratios suggested that the exchange of carbon and oxygen is more dynamic than predicted by equilibrium models. To test this idea, the authors took caliche and soil and vegetation samples from multiple vegetation types, regions, and soil depths to determine the exchange rates of ^{13}C-^{12}C (from respired CO_2) and ^{18}O-^{16}O (from water) from the original deposition. These ratios are indicated as $\delta^{13}C$, and $\delta^{18}O$, respectively.

Soil carbon isotopic composition ($\delta^{13}C$, $\delta^{18}O$) was analyzed both as bulk fractions, and after fumigation with concentrated HCl to eliminate organic fractions.

Isotopic analyses are still being completed. But samples analyzed to date show distinct differences between $\delta^{13}C$ and $\delta^{18}O$ from patterns expected based on existing analyses (Table 1). Plant and soil organic matter tissue followed expected patterns, in that plants using a C3 photosynthetic pathway discriminated against ^{13}C and the soil reflected that discrimination. The individual plants with Crassulacean acid metabolism (CAM) photosynthesis showed less discrimination, as expected. The soil organic C under CAM plants was significantly less negative than under C3 plants, as expected.

The interesting result is that the caliche $\delta^{13}C$ varied between plants with different photosynthetic systems reflecting varied origins of C. The $\delta^{13}C$ also showed that fractionation beyond a physical fractionation had occurred. Both were still slightly negative, indicating that the ultimate source was plant-derived C. The different sites have different $\delta^{18}O$ signatures. The fragmented material shows modern signatures indicating that exchange has occurred, that fractionation has occurred, and that these layers are dynamic. If these are subject to exchange, then the CO_2 in $CaCO_3$ is potentially sensitive to loss.

Inorganic and Organic Carbon Fluxes in Desert Ecosystems

Data and models measuring estimating weathering and accumulation are inconclusive as to the impacts of vegetation disturbance on caliche stocks. Many models use atmospheric C (currently between 390 and 400ppm). But $\delta^{13}C$ data show that $CaCO_3$ is more dependent upon rhizosphere-respired CO_2 than atmospheric accumulation. In using rhizosphere-levels of CO_2, $CaCO_3$ precipitation should be significantly greater than atmospheric CO_2 levels. Thus, it is essential to get more accurate estimates of rhizosphere activity to accurately model soil C exchanges.

The goal was to provide a comparative measure of C fluxes and natural sequestration of organic and inorganic C in deserts that are proposed for solar electrical power development. Networked environmental observatories provide new approaches for understanding ecological dynamics through the dual capabilities of high temporal resolution and continuous observation. The researchers used CO_2 soil sensor networks and flux towers at Boyd Deep Canyon, part of the University of California Natural Reserve System (NRS), in a native desert shrubland, and a disturbed site where all vegetation was removed at the Coachella Valley Agricultural Experiment Station (CVARS). Coincident with continuous measurement of soil temperature, soil moisture, and soil CO_2, researchers modeled $CaCO_3$ concentrations. Finally, the researchers

2

looked for $CaCO_3$ or CaC_2O_4 crystal formation and dissolution using their soil observation systems with automated high-resolution minirhizotrons.

$CaCO_3$ is highly dynamic in response to root and mycorrhizosphere dynamics in the native ecosystem. $CaCO_3$ is also highly dynamic in the disturbed site, but the cycle is a largely inorganic one. Both are subject to CO_2 loss through respiration (Deep Canyon) or inorganic dissolution and diffusion. However, plants fix CO_2 in the vegetated desert, whereas any CO_2 lost in a flush with rainfall, is likely lost from the disturbed ecosystem. The researchers do not yet know the ultimate fate of the carbon in caliche, but these data show that the process is dynamic, and there is a potential for significant loss.

Conclusions

This research shows that caliche in the surface soil layers is not in equilibrium, but is dynamic. Caliche and organic matter losses compromise the value of solar energy as an alternative to fossil carbon burning by releasing stored inorganic carbon into the atmosphere and destroying the ability of the deserts to sequester carbon. The researchers recommend siting solar developments on previously disturbed lands. Desert riparian woodlands should especially be avoided for the protection of sequestered carbon, and their ability to increase that carbon sequestration. Their deep roots and microbial associations continue to sequester both organic and inorganic carbon. The researchers also recommend that solar developments be revegetated. Short-statured plants, such as cacti and shrubs continue to produce organic carbon, and also release CO_2 that increases the soil CO_2 concentrations, maintaining and increasing inorganic soil carbon sequestration.

CHAPTER 1: Introduction

Large-scale solar development in desert ecosystems has the potential to generate electricity, thereby reducing fossil carbon (C) accumulation in the atmosphere, and in turn, lessening the rates of global warming. But there remain environmental concerns around the technology applied and the siting evaluations remain. Careful decisions about the choice of technology used can make a solar installation an important tool in fighting climate change, or compromise the environmental goals for which these technologies are being supported (e.g., Hernandez et al. 2014).

One concern that is not understood is the carbon budget that a large-scale solar technology can mitigate versus release as a result of the altered land-use management. Underneath many desert ecosystems in California deserts, vast stores of carbon (C) are stored as inorganic caliche, or calcium carbonate ($CaCO_3$), of up to 8kg C/m^2 (Schlesinger 1985). Globally, there is nearly twice as much C in soils as the atmosphere, with a large fraction of that in inorganic forms, largely $CaCO_3$. Both caliche and organic matter losses can compromise the value of solar energy as an alternative to fossil C burning by destroying the ability of these deserts to sequester C and potentially releasing stored inorganic C into the atmosphere.

Most of the caliche in California deserts appears to have been formed in desert playas below weathering limestone or metamorphic limestone (marble, dolomite) mountains high in Ca. In deserts, during wet periods, likely mostly during the Pleistocene, there was more water, leaching the Ca and fixing $CaCO_3$ deep in the soil creating solid layers of caliche. Data and models measuring estimating weathering and accumulation are inconclusive as to the impacts of vegetation disturbance on existing caliche stocks. Many models use atmospheric C (currently approximately 400ppm). But $\delta^{13}C$ data show that $CaCO_3$ formation was more dependent upon rhizosphere-respired CO_2 than atmospheric accumulation (Schlesinger 1985) and in forest and agricultural ecosystems, rhizosphere CO_2 is far higher than atmospheric CO_2, making it essential to get more accurate estimates of rhizosphere activity to accurately model soil C exchanges (e.g., Allen et al., 2007). More recent data suggest that caliche is more dynamic than older modeling efforts reported. Caliche is known to degrade, especially on disturbed lands (Hirmas and Allen 2007) and $\delta^{13}C$ of caliche shows re-equilibration through time as vegetation changes (Knauth et al. 2003).

1.1 Electricity Generation Environmental Challenges: Carbon and Vegetation Removal

Deployment of solar installations in California deserts currently strips vegetation to eliminate shading and allow for building of either solar reflectors or solar photovoltaic cells. This results in a denuded site, the size of the deployment. Vegetation is removed and surface soils disturbed (Fig 1) In all California installations researchers observed "clean" sites with no vegetation is

4

maintained. The key question is: what are the impacts of removal of vegetation on the "stable" inorganic fraction, mostly CaCO3 in California deserts?

The research team proposes developing measurements and adapting models to measure stored inorganic C, organic C balances of differing vegetation types and changing soil temperature (T), moisture (✣), and atmospheric CO_2 levels to determine of there are particular vegetation types that should be protected from disturbance, or others that, from a perspective of C balance, are less sensitive.

1.2 Background State of Knowledge

Desert soil carbon (C) is comprised of stored inorganic C (as caliche), vegetation and soil organic C (as buried organic matter). But, little is known of C sequestration and release, especially under conditions of global and regional temperature increase. Solar power has the potential to dramatically reduce C release to the atmosphere by reducing fossil fuel burning for electrical generation. Understanding how different vegetation types turn both organic and inorganic C over, in the context of regional C budgets and CO_2 savings from solar power is the largest unknown question facing solar development in California.

Soil is the largest global terrestrial pool of Carbon (C) at 1500Gt compared with the atmosphere at 800Gt and plants at 600Gt, but is extremely dynamic and variable spatially. In contrast to the $50 g/m^2/y$ anthropogenic source of C and the sinks in desert soils range from 39 to 622g/m2/y. Even year-to-year variation is high, ranging from sequestration during wet periods to weathering and mineralization during dry. For all biomes there is little understanding of the longer-term allocation of net primary production (NPP) to and retention (sequestration) of soil C (e.g., Treseder et al. 2005, U.S. DOE 2010).

California's deserts have large amounts of CO_2, stored as caliche ($CaCO_3$). The amount of C in caliche, when accounted globally, may be equal to the entire C as CO_2 in the atmosphere and as much as 30 percent of global soil C. But the dynamics of inorganic C remains a huge gap in understanding stored C pools (e.g., Schlesinger 1985, Mielnick et al. 2005, Serrano-Ortiz et al. 2010). Most of the caliche in the state's deserts was formed during the ice ages, averaging 20,000 years ago, when vegetation was more productive. These deposits may have been stable since (Schlesinger 1985). Being stable, though, means that inputs equal exports. But $\delta^{13}C$ of caliche in Arizona can shift around indicating continuous exchange and equilibration through time (Knauth et al. 2003).

5

Figure 1: An example of a solar development showing the stripped vegetation to build and maintain the solar power unit.

1.3 Goals

This project provided a comparative measure of C fluxes and natural sequestration of organic and inorganic C in deserts that are proposed for solar electrical power development. Researchers focused on developing techniques to measure baseline caliche C as areas for development are proposed, developing newer assessment models which can be used to model organic C and inorganic C sequestration, and to determine if removal of native vegetation will alter the exchanges and lead to a loss of stored inorganic C.

Three goals were envisioned to explore developing carbon budgets for desert ecosystems likely to be impacted by placement of solar power generation systems.

1. Assess if caliche and root distribution can be determined using soil pits and ground-penetrating radar (GPR) to survey vegetation. This will provide a tool for an immediate assessment of the potential C lost to the atmosphere with perturbation.
2. Analyze $\delta^{13}C$ and $\delta^{18}O$ of inorganic C (caliche) and organic C (SOM) to determine the relationships between climate, vegetation, and soil C balance. These more accurate models can then be used to rapidly assess different vegetation types in different regions and their roles in C sequestration and weathering.
3. Measure C fixation, respiration and allocation for undisturbed native vegetation and a site where the vegetation has been removed, under variable climates. This will include determining the relationships between aboveground vegetation, climate, and rhizosphere CO_2 levels. From these relationships, model directionality and rates of caliche formation and weathering and C sequestration within soil organic matter can more accurately determined.

Together this information can be used to rapidly assess the impacts of solar electricity generation on different communities and ecosystems.

6

CHAPTER 2: Measuring Caliche Using Ground Penetration Radar (GPR)

One of the difficult issues is measuring the amount of caliche and how much C might be lost with removal of vegetation and surface soil layers. However, recent studies have used GPR to distinguish depth and layering of caliche below the soil surface. Wilson et al. (2005) used GPR to characterize caliche depth and fractures as a means to study CO_2 leakage through soil. GPR was previously used in the Yucatan to describe fractures and soil layers within limestone $CaCO_3$ (Estrada-Medina et al. 2010). A number of locations in different vegetation types were tested to determine the distribution of caliche depths, roots, and soil of soil pits. It is believe that this approach provided a rapid means of assessing potential C balance.

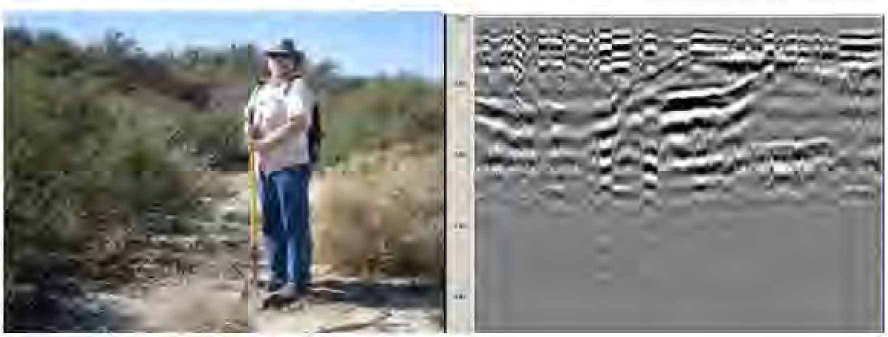
2.1 Methods

Evaluating test areas was undertaken using a SIR-3000 system (Geophysical Survey Systems, Inc.), a DC-3000/1100 controller, and a 3101 (900KHz) and a 5100 (1.2MHz) antenna that was manually moved across the soil surface. This approach is described in greater detail in Estrada-Medina et al. (2010). The system was tested first to see if the shifting soil structure under desert ecosystems using a sand dune ecosystem could be detected. The unit was then tested to detect caliche rocks within sand buried in sand, and against road cuts with known caliche layers.

2.2 Results

Researchers were able to detect shifting soil layers under sand (Figure 2), however, were unable to detect patches of caliche that they had buried. Researchers were also unable to differentiate caliche from other soil/rock layering at field sites.

Figure 2: A ground penetrating radar profile under a sand dune in the Coachella Valley.



2.3 Discussion

Ground Penetrating Radar is a useful tool for identifying coarse roots, pipes, and soil layers that are characterized by differential water content. The research team was able to differentiate layers in the soil, but not buried caliche rocks. Nor could they differentiate caliche layers from other soil layering.

GPR has been used to identify gaps dissolving in limestone rock (Wilson et al. 2005, Estrada Medina et al. 2010). But those were in locations where the rock formations were limestone, and the silicaceous material and organic matter accumulated as the $CaCO_3$ in the limestone dissolved. The caliche layers in California deserts studied were all embedded in a complex layered matrix of other consolidated and unconsolidated rock and soil layers. As such, while layers could be seen, the caliche from other layers, such as silicaceous or clay layers could not be differentiated. It might be that further work, especially under varying soil moisture conditions, might allow identification of these layers. Work will continue in this area.

8

CHAPTER 3: Isotopic Analysis of Organic and Inorganic Carbon

$CaCO_3$ formation has been modeled on a largely equilibrium geochemical basis using atmospheric CO_2 levels (e.g., Hirmas et al 2010) and precipitation as a function of calcite saturation and the partial pressure of CO_2. But, organic matter can alter the calcite formation (e.g., LeBron and Suarez (1998), and $CaCO_3$ as well as other Ca-organic acids such as Ca-oxalate is also a biological process, forming along roots and hyphae (e.g., Jurinak et al. 1986). To add complexity, recent papers posit that CO_2 loss and gain from calcite soils can occur on a diurnal basis with wetting and drying of soil (Roland et al. 2013). These numbers are not trivial. Roland et al. (2013) reported peak ventilation of 0.5 to 6.4@mol $CO_2\,m^{-2}s^{-1}$ from karst vegetation during the dry summers, and Mielnick et al. (2005) reported losses of up to 145g $C/m^2/y$.

Contrary to many modeling efforts, soil CO_2 levels are not in equilibrium with atmospheric levels, but are a result of respiration, and may be far higher than atmospheric CO_2. The researchers postulated that carbon in caliche is therefore dynamic. High soil CO_2 from plant and microbial respiration may drive CaCO3 under moist soil conditions enhancing C sequestration. As soil dries, that added $CaCO_3$ crystalizes and is deposited. Additional research is necessary to understand and quantify these exchanges (Serrano-Ortiz et al. 2010), as there are C exchanges in desert ecosystems that are not understood.

^{14}C data show that the caliche below the desert playas was formed more than 20,000 years ago (e.g., Schlesinger 1985). An analysis of $\delta^{18}O$ of those same buried layers shows that the caliche came from water from Pleistocene climates. Further, analysis of $\delta^{13}C$ shows that the C came from root and microbial respiration from C_3 vegetation that dominated during that period. Just as importantly, $\delta^{13}C$ of caliche in Arizona can shift around indicating continuous exchange and equilibration through time (Knauth et al. 2003).

The goal in this experiment was to determine if the $\delta^{13}C$ and $\delta^{18}O$ in the near surface caliche layers and desert soils were stable, or if the ratios suggested that the exchange of C and O is dynamic. To test this idea, researchers took caliche and soil and vegetation samples from multiple vegetation types, regions, and soil depths to determine the exchange rates of ^{13}C-^{12}C (from respired CO_2) and ^{18}O-^{16}O (from water) from the original deposition.

3.1 Methods

Soil carbon isotopic composition ($\delta^{13}C$) was determined by drying soils at 65°C until constant mass, followed by sieving and grinding in a ball mill (8000D, Spex Sample Prep, Stanmore, UK). To distinguish soil organic carbon from pedogeneic carbonates (caliche), soils were analyzed both as bulk fractions, and after fumigation with concentrated HCl for six hours (Harris et al. 2001). All samples were measured for $\delta^{13}C$ and $\delta^{18}O$ with a continuous flow isotope ratio mass spectrometer (Delta V Advantage, Thermo Scientific, Bremen, Germany) equipped with a Gas Bench (Thermo Scientific) in the Department of Earth Sciences, University of California, Riverside.

Plant carbon isotopic composition ($\delta^{13}C$) was measured on leaf and root samples that had been dried at 65°C until constant mass, and ground to a fine powder in a ball mill (8000D, Spex Sample Prep, Stanmore, UK). Samples were analyzed with a an elemental analyzer (ECS 4010, Costech Inc., Valencia, CA) interfaced with an isotope ratio mass spectrometer (Delta *V* Advantage; Thermo Scientific) at the University of California Facility for Isotope Ratio Mass Spectrometry (FIRMS), Riverside, California.

Plant oxygen isotopic composition ($\delta^{18}O$) was measured on the cellulose fraction, extracted from bulk plant samples through micro digestion with a mixture of acetic and nitric acid, based on the original method of Brendel et al. (2000), as modified for small samples by Evans and Schrag (2004) and Gaudinski et al. (2005). Samples were analyzed with a temperature conversion elemental analyzer (TC/EA, Thermo Scientific) interfaced with an isotope ratio mass spectrometer (Delta *V* Advantage; Thermo Scientific) at the University of California Facility for Isotope Ratio Mass Spectrometry (FIRMS), Riverside, California.

3.2 Results

Isotopic analyses are still being completed. But samples analyzed to date show distinct differences between $\delta^{13}C$ and $\delta^{18}O$ from patterns expected based on existing analyses (Table 1). Plant and soil organic matter tissue followed expected patterns, in that plants using a C3 photosynthetic pathway discriminated against ^{13}C and the soil reflected that discrimination. The individual plants with CAM photosynthesis showed less discrimination, as expected. The soil organic C under CAM plants was significantly less negative than under C3 plants, as expected.

The interesting result is that the caliche $\delta^{13}C$ was significantly less negative under C3 than CAM plants. Both were still slightly negative, indicating that the ultimate source was plant-derived C.

Table 1: $\delta^{13}C$ from C3 versus CAM plant tissue, soil organic matter, and caliche fragments
(mean standard deviation (SD), sample number analyzed to date, and p-value for a t-test comparing C3 and CAM-associated material)

parameter	C3	CAM	P value
Plant	-23.9 ‰, SD=1.16, n=24	-15.2 ‰, SD=2.1, n=32	$1.2X10^{-13}$
Soil	-24.1 ‰, SD=1.51, n=14	-21.7 ‰, SD=2.1, n=25	0.0007
Inorganic (caliche)	-2.8 ‰, SD=1.6, n=12	-5.7 ‰, SD=1.5, n=12	0.00013

The $\delta^{18}O$ samples for the plant tissue and soil organic matter, as well as some of the caliche samples are still being analyzed. Initial results are very interesting. The preliminary analyses suggest that different sites have different $\delta^{18}O$ signatures. Imperial Valley samples show an average $\delta^{18}O$ signature of -6.4 ‰ (SD1.3) with the western Coachella Valley of -5.1 ‰ (SD1.6). The Chuckwalla Valley averaged (-7.1 ‰ (SD 1.7) and the San Raphael site -8.2 ‰ (SD=0.5). In pairing the samples, larger caliche fragments had a $\delta^{18}O$ value of -6.8 ‰ (SD 1.1) whereas the

10

smaller fragments were -5.9 ‰ (SD 2.2). While not significantly different overall, a paired t-test showed a trend toward the smaller fragments having a less negative value ($p=0.15$). Additional samples are being analyzed.

3.3 Discussion

Because deserts have low precipitation inputs, cations such as Ca are rarely leached out of the soils. High cation levels tend to bind nutrients, such as HPO_4 and NO_3, creating $CaPO_4$ and $Ca(NO_3)_2$ making those nutrients unavailable to plants. But, roots and associated microorganisms respire CO_2, acidifying the soil in the presence of water (forming $HCO_3^- + H^+$) weathering $CaPO_4$, and increasing HPO_4 availability. But, with time, that Ca would re-bind new anions, except that roots and mycorrhizal fungi produce organic acids (oxalic, citric) that bind the Ca allowing for plant uptake of HPO_4.

Rhizosphere-respired CO_2 is dependent upon the vegetation composition and activity. Further, a large, but relatively unknown amount of CO_2 is fixed and stored as organic C in deserts, with estimates ranging from 60 to 600g/m²/y, but dependent upon the particular ecosystem. Desert plants have microbial associations including mycorrhizal fungi that respire CO_2, weathering $CaPO_4$ allowing uptake of P and increasing soil CO_2 as respiration (Jurinak et al. 1986, Knight et al. 1989). These organisms also produce organic acids that bind Ca sustaining P availability (Jurinak et al. 1986, Allen et al. 1996).

Atmospheric or respired CO_2 in the presence of water (H_2O) is converted to $HCO_3^- + H^+$ acidifying the soil. The HCO_3^- binds with Ca to form $CaCO_3 + H^+$. Under equilibrium conditions, the thermodynamics strongly favor $CaCO_3$ compared to CO_2 and Ca, but some CO_2 is continuously released under wetting and drying cycles. Moreover biological processes push ecosystems outside of equilibrium conditions. Some of the $CaCO_3$ is utilized by microorganisms making more CO_2. Some of this CO_2 can be re-fixed, but some is lost as soil respiration, potentially losing some of the C bound in $CaCO_3$. The amount lost is regulated by the amount of CO_2, Ca, and soil pH.

Researchers postulated that as caliche fragments in the upper layers are exposed to water and biological activity, the isotopic values ($\delta^{13}C$ and $\delta^{18}O$) will show exchange, indicating that the caliche itself is dynamic. If it is dynamic, CO_2 could be lost or gained depending upon the conditions of exposure. Thus, a first step is to look at the isotopic ratios of C and O.

A large number of samples were prepared and results still coming in. However, examination of the data completed show that the caliche in the exposed layers is dynamic. Several lines of evidence support this conclusion.

First, the difference between the soil organic matter and the caliche $\delta^{13}C$ is greater than that predicted simply by exposing caliche to water. If the atmosphere were the source of C, the $\delta^{13}C$ ratio should be highly positive. But all samples were negative, demonstrating a plant-derived source of C. The expected fractionation of ^{13}C in carbonate from CO_2 respired by plants or decomposers is +9.6 ‰ (Friedman and O'Neil 1977). If the caliche were derived from atmospheric C, a value greater than +9 ‰ would be expected. The caliche $\delta^{13}C$ was -2.8,

11

suggesting a source $\delta^{13}C$ of <-12.4‰ under C3 plants and -5.7‰ under CAM plants, or a $\delta^{13}C$ source of <-15.3‰. Some additional fractionation has occurred under C3 compared with under CAM plants, possibly more recycling, or the formation of different compounds in the source vegetation.

Second, the root systems of the C3 plants studied tend to be deep, supporting greater annual photosynthesis and more microbial biomass and activity per unit land surface than the CAM plants. The difference in $\delta^{13}C$ between C3 plant and caliche was 21.1‰ and 21.3‰ between the soils under C3 plants and caliche. The difference in $\delta^{13}C$ between CAM plant and caliche was 9.5‰. The soil organic matter under the CAM plants was more negative than the plant tissue, but the difference between soil organic C and caliche C was 16‰, still less than that between C3 soil organic C and caliche C.

Finally, the $\delta^{18}O$ data suggest that as caliche fragments into smaller fractions, the $\delta^{18}O$ becomes less negative, showing either some loss of ^{16}O or exchange of H_2O with local inputs. The $\delta^{18}O$ data also show that the caliche in the upper layers is representative of the current water samples. The southern regions and Deep Canyon have signatures that represent warmer water input (more summer rains) whereas the areas bordering the Mojave have cooler precipitation input signature. The San Raphael site has water from the Laguana Mountains, also showing a somewhat more negative signal.

This is also supported by a lack of relationship between $\delta^{13}C$ and $\delta^{18}O$. Schlesinger (1985) noted that in his Chuckwalla Valley samples, there was a significant relationship between the $\delta^{13}C$ and $\delta^{18}O$ indicating a seasonal pattern regulating pCO_2 and soil water, and $CaCO_3$ precipitation. However, no relationship between $\delta^{13}C$ and $\delta^{18}O$ was found. In the samples, $\delta^{18}O=0.08$ ($\delta^{13}C$) + 4.35, $r=0.07$, $r^2=0.005$. These data show either no seasonal pattern of precipitation, or that subsequent exchange has occurred.

Together, the $\delta^{13}C$ and $\delta^{18}O$ signatures indicate that the exposed and fragmented caliche is subject to exchange with modern C and O. If these are subject to exchange, then the CO_2 in $CaCO_3$ is potentially sensitive to loss. Understanding the larger exchanges is the subject of Chapter 4.

CHAPTER 4: Inorganic and Organic Carbon Fluxes in Desert Ecosystems

California deserts have vast stores of carbon (C) stored as inorganic caliche, or $CaCO_3$, of up to 8kg C/m^2 in some locations (Schlesinger 1985). Data and models measuring estimated weathering and accumulation are inconclusive as to the impacts of vegetation disturbance on caliche stocks. Many models use atmospheric C (currently between 390 and 400ppm). But initial $\delta^{13}C$ data show that $CaCO_3$ is more dependent upon rhizosphere-respired CO_2 than atmospheric accumulation (Schlesinger 1985) and even desert rhizosphere CO_2 is far higher than atmospheric CO_2. In using rhizosphere-levels of CO_2, $CaCO_3$ precipitation is significantly greater than atmospheric CO2 levels (LeBron and Suarez 1998). Thus, it is essential to get more accurate estimates of rhizosphere activity to accurately model soil C exchanges. More recent data suggest that caliche may be more dynamic than older equilibrium-based modeling efforts reported. Caliche is known to degrade, especially on disturbed lands (Hirmas and Allen 2007) and $\delta^{13}C$ of caliche shows re-equilibration may occur through time as vegetation changes (Knauth et al. 2003).

$CaCO_3$ formation has been modeled largely on an equilibrium geochemical basis using atmospheric CO_2 levels (e.g., Hirmas et al 2010) and precipitation as a function of calcite saturation and the partial pressure of CO_2. In its simplest form, under aqueous conditions, $CaCO_3$ precipitation is formed as:

$$2H_2O + 2CO_2 <-> 2H^+ + 2HCO_3^-$$

$$\mathbf{Ca_2^+ + 2HCO_3^- <-> CaCO_3 + H_2O + CO_2}$$

As water evaporates, the $CaCO_3$ crystallizes, and at the depth to water penetration, these crystals accumulate forming caliche layers.

As the soil erodes, these layers become exposed. Isotopic ratios (Cpt 3) show that exchange occurs. But, as Ca weathers out, re-precipitation occurs in the presence of HCO_3^-, under equilibrium conditions. However, equilibrium conditions rarely exist in nature. CO_2 levels and organic matter can alter the calcite formation (e.g., LeBron and Suarez 1998), and $CaCO_3$ as well as other Ca-organic acids such as Ca-oxalate is also a biological process, forming along roots and hyphae (e.g., Jurinak et al. 1986). The researchers postulated that carbon in caliche is therefore dynamic. High soil CO_2 from plant and microbial respiration may drive $CaCO_3$ supersaturation under moist soil conditions enhancing C sequestration. But with vegetation loss, the soil CO_2 levels drop, H_2O is no longer transpired, and $CaCO_3$ weathered. To add complexity, recent papers posit that CO_2 loss and gain from calcite soils can occur on a diurnal basis with wetting and drying of soil (Roland et al. 2013). These numbers are not trivial. Roland et al. (2013) reported peak ventilation of 6.4δmol $CO_2 \cdot m^{-2}s^{-1}$ from karst vegetation during the dry summers, and Mielnick et al. (2005) reported losses of up to 145g C/m^2/y. Additional research is needed to understand and quantify these exchanges (Serrano-Ortiz et al. 2010), as there are C exchanges in desert ecosystems that are not fully understood.

13

Rhizosphere-respired CO_2 is dependent upon the vegetation composition and activity. A large, but relatively unknown amount of CO_2 is fixed and stored as organic C in deserts, with estimates ranging from 60 to 600g/m^2/y, but dependent upon the particular ecosystem perturbed. Woody legumes, in particular, have roots and associated microbes more than 3m deep (Virginia et al. 1986), sequestering organic C where it is only slowly respired back to the atmosphere. Respired CO_2 in the presence of water (H_2O) and calcium (Ca) produces $CaCO_3$.

The goal was to provide a comparative measure of C fluxes and natural sequestration of organic and inorganic C in deserts that are proposed for solar electrical power development. Researchers focused on developing techniques to measure caliche C dynamics, and as areas for development are proposed, develop newer assessment models which can be used to model organic C and inorganic C sequestration, and determine if sites with vegetation removed have different exchanges and potential loss rates of inorganic C compared with undisturbed wildland desert ecosystems.

4.1 Methods: A Networked Environmental Observatory – Continuous Sensors, Manual Measurements, Experiments, and Soil Surveys

Networked environmental observatories provide new approaches for understanding ecological dynamics through the dual capabilities of high temporal resolution and continuous observations (Allen et al. 2007). The research team are currently running CO_2 sensor networks at Boyd Deep Canyon, part of the University of California Natural Reserve System (NRS), in a native desert shrubland, and the Coachella Valley Agricultural Experiment Station (CVARS). The goal was to compare the dynamics at Deep Canyon with a site where the vegetation was removed for the developing solar PV projects in the Salton Sea, led by Dr. Alfredo Martinez-Morales. The unique combination of natural resources and challenging environmental conditions at the Salton Sea require that a feasibility study be conducted to truly determine the potential of developing utility scale energy projects in the area. The Martinez-Morales project was not funded, and the disturbed lands have not yet been deployed. But, the environmental conditions of the PV deployment are mimicked nearby at the CVARS. The undisturbed vegetation is the same as Boyd Deep Canyon, and the soils of all three sites are Entisols consisting of alluvium derived from granite. The CVARS site has been cleared of vegetation for more than four years and is the same soil type as exists at Deep Canyon, the Martinez-Morales location, and across most of the Coachella and Imperial Valleys and provides comparable data to that of Salton Sea projects.

Each location is instrumented with replicated solid-state CO_2, soil temperature, and soil moisture sensors at 2, 8 and 16 cm soil depths. The CO_2 sensors are calibrated every six months after deployment to ensure the quality of the measurements. Soil CO_2 was measured using Vaisala soil CO_2 sensors (Vargas and Allen 2008, Kitajima et al. 2010). These provided accurate CO_2 inputs to caliche modeling in comparison with simply using atmospheric CO_2 values (Hirmas et al. 2010). From these data, soil respiration from the soil using a CO_2 gradient flux method based on concentrations of CO_2 in the soil profile (Vargas and Allen 2008) was calculated. Eddy Covariance (EC) was used for monitoring the fluxes of CO_2, H_2O, and energy

14

of whole ecosystems (Baldocchi 2003). A closed path eddy covariance model CPEC200 (Campbell Scientific, Logan Utah) was used to analyze CO_2 and H_2O vapor fluxes from the CVARS site. The eddy covariance data from Deep Canyon NRS are available from M. Goulden, UC Irvine.

Coincident with continuous measurement of soil temperature (T), soil moisture, and soil CO_2, we modeled $CaCO_3$ concentrations using the model of Hirmas et al. (2010).

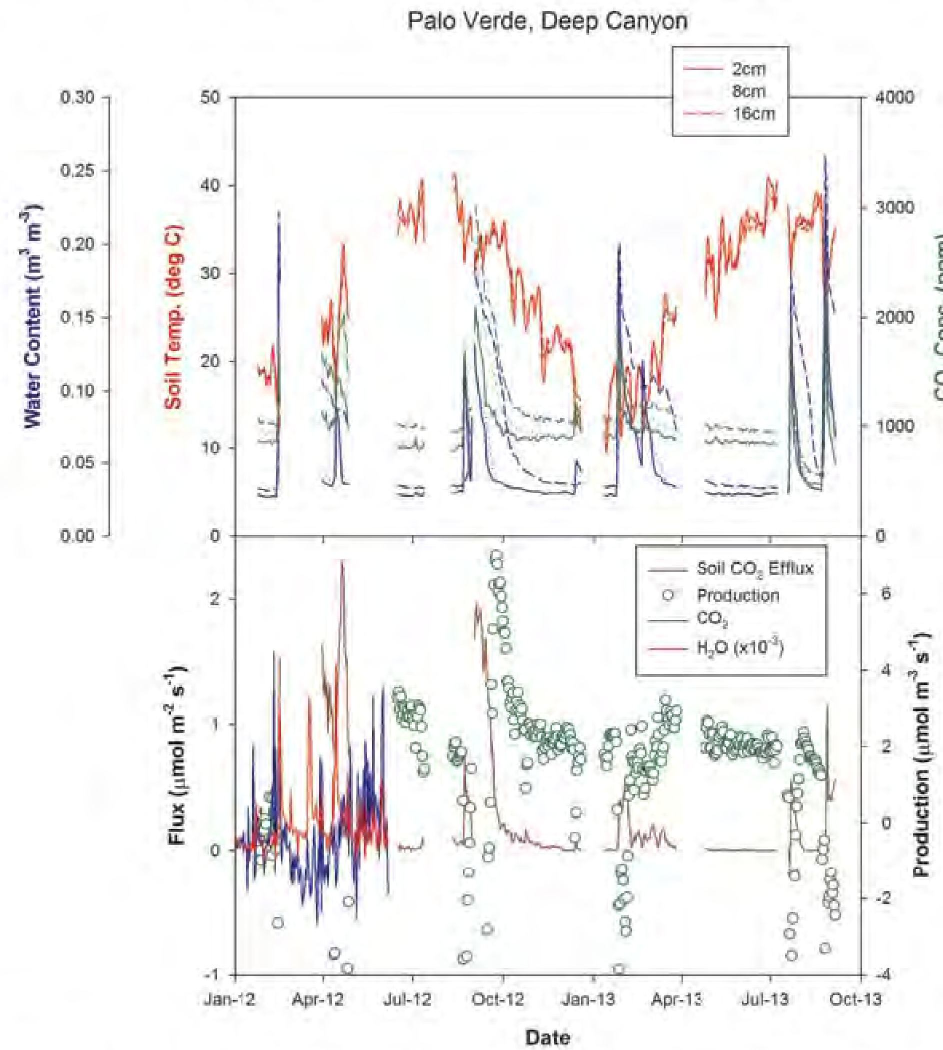
Finally, the researchers looked for $CaCO_3$ or CaC_2O_4 crystal formation and dissolution using the soil observation systems using an automated high-resolution minirhizotrons (Allen et al. 2007, Hernandez and Allen 2013, Allen and Kitajima 2013). These *in situ* microscopy systems allow us to track the fates of roots and fungal hyphae, and identify $CaCO_3$ crystals forming or disappearing in soil on hyphae or on soil particles.

4.2 Results

Soil ecosystems in undisturbed deserts are highly dynamic. With each precipitation event, there is rapid new root growth and fungal hyphal production. Hyphal growth of up to 2mm per day was observed, during spring warming following a precipitation event. Just as importantly, hyphal mortality can equal growth as the soil dries out.

Shortly following those precipitation events, soil CO_2 production can be very high and distributed well into the soil profile (Fig 3). The resulting soil CO_2 concentrations can be more than an order of magnitude higher than atmospheric CO_2 and the soil CO_2 concentrations measured during the dry period.

Figure 3: Soil CO2 dynamics in response to changing soil temperature and moisture under a Palo Verde (Cercidium microphyllum) tree at the Deep Canyon NRS



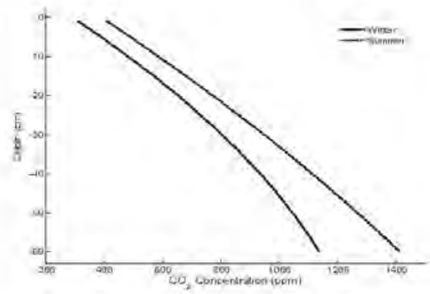
Similar patterns were observed under other vegetation units, including creosote bush (Larrea tridentata), fishhook barrel cactus (Ferocactus cylindraceus), and brittlebush (Encelia farinosa).

The modeled values (from Hirmas et al. 2010) for estimating soil CO_2 directly from atmosphere showed that the values ranged from 400ppm CO_2 to 600 ppm CO_2 at 16cm, and 1,100ppm CO_2

16

at 60cm during the winter, and 500ppm CO_2 (2cm) to 1,400ppm CO_2 at 60cm (Figure 4). These values are below the values that were measured at the undisturbed site (Figure 3). Current model projects the equilibrium $CaCO_3$ levels for measured CO_2, based on the measured Ca concentrations and other relevant parameters.

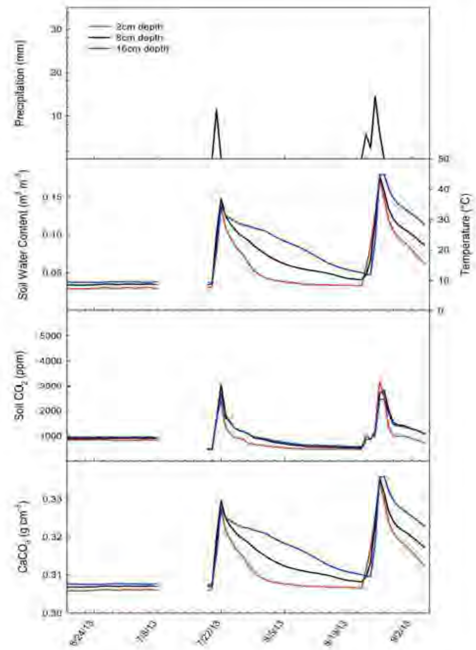
Figure 4: Modeled soil CO2 Using the model of Hirmas et al. (2010).



Additional soil analyses are underway for Deep Canyon, but the Ca concentrations in soil exceed 10 meq/l and organic C from to 30g/kg in shrub islands. This means that there is Ca available such that when soil moisture is high; respiration is also high, forming HCO_3^- and precipitating $CaCO_3$ from some of the high CO_2 concentrations. Indeed, with the high levels of CO_2, researchers saw the concentration of solution $CaCO_3$ dramatically increase (Figures 3, 5).

17

Figure 5: Solution $CaCO_3$ in response to precipitation events at the Boyd Deep Canyon NRS, under a Palo Verde tree. The high levels of Ca in soil coupled with the high soil moisture and high rate or respiration results in a high $CaCO_3$ formation. Subsequently, as the soil moisture declines, and respiration due to reduced fungal and root activity declines the $CaCO_3$ in solution declines.



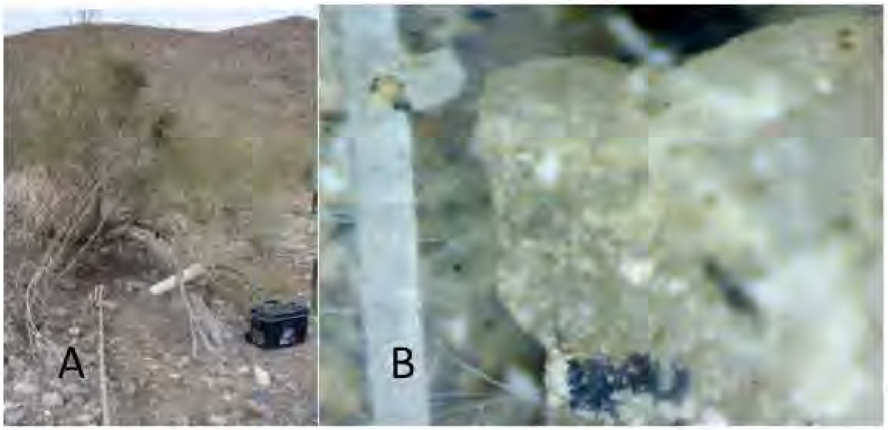
As arbuscular mycorrhizal fungal hyphae grow in response to soil water inputs, they respire CO_2 and provide nucleation centers, which attracts the Ca and resulting in $CaCO_3$ crystals along the hyphae (Fig 6) on the soil particles (Fig 7).

The soils from CVARS, devoid of vegetation, showed much different patterns. Importantly, organic carbon had largely decomposed, with only a small amount of recalcitrant C remaining. The total soil C was 3.2g/kg. The organic C was only 1.5g/kg where as the C as $CaCO_3$ was 2.4g/kg. (The 0.9g/kg difference is due to the different methods for determining organic and inorganic C). Thus, the percent of total C as $CaCO_3$ averaged 73 percent. This contrasts with the percent of Ca bound with CO_3 of less than one percent (0.78+/-0.08 SEM).

The dynamics of the CVARS-solar deployment simulation site soils is also different. Importantly, higher than atmospheric levels of soil CO_2 still occurred, even without organic C or plant root/microbial respiration following precipitation events (Figure 8).

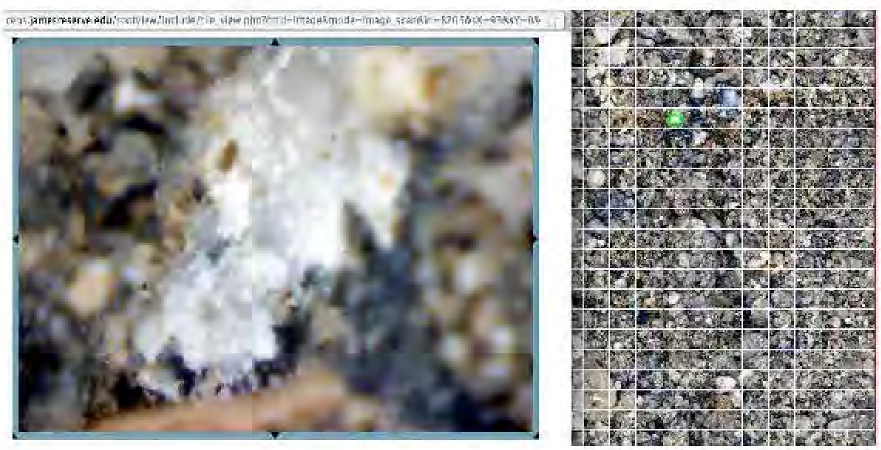
18

Figure 6: Palo Verde tree with AMR unit (A) and *In situ* arbuscular mycorrhizal fungal hyphae with $CaCO_3$ crystals forming at the hyphal-soil particle interface (B).



(From Deep Canyon NRS. The image is 3.01mm X 2.26mm, 100x)

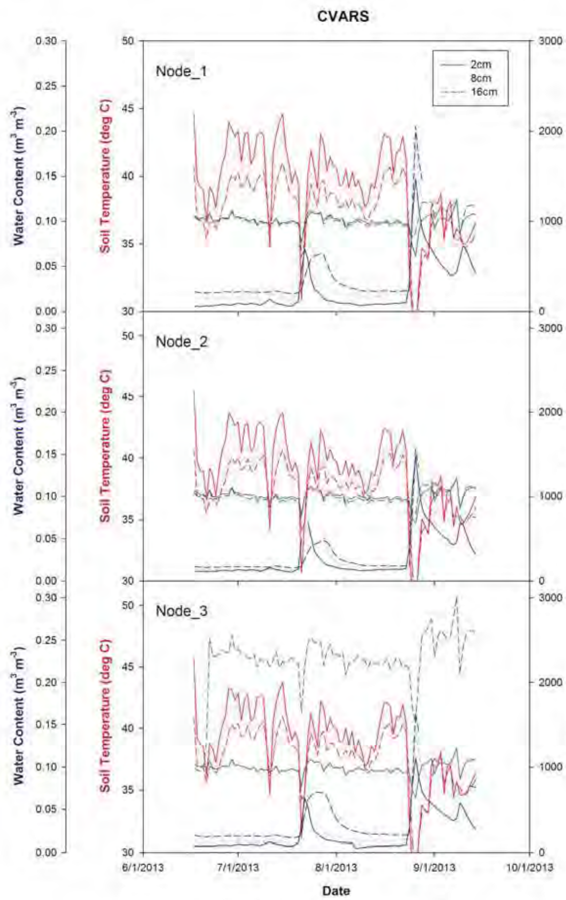
Figure 7: *In situ* $CaCO_3$ crystals formed along hyphae and on the surfaces of soil particles under Palo Verde trees at the Deep Canyon NRS



(These crystals were formed as soils dried out and persisted until the next rainfall event wherein most dissolved into solution. The image is 3.01mm X 2.26mm, 100x)

19

Figure 8: Concentration of CO2 in response to temperature and moisture inputs at the CVARS/Solar Installation simulation site.

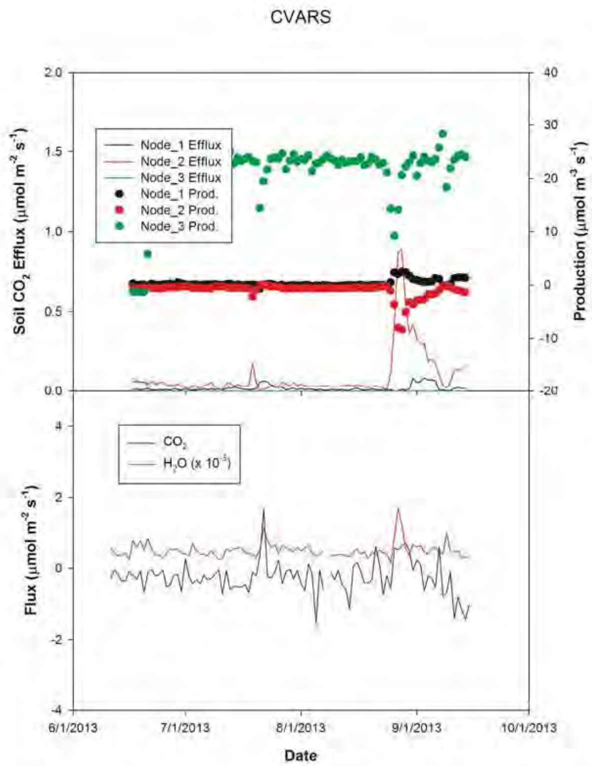


Note that as soil moisture jumps in response to a rainfall event, CO_2 concentration initially drops then increases above the dry baseline.

The fluxes of CO_2 also vary with rainfall events (Fig 9). Generally the fluxes oscillate around 0, to a generally slight uptake of CO_2 (negative flux) by these soils. As there are no plants, most of this uptake is likely a chemical reaction of soil moisture taking up atmospheric CO_2, forming HCO_3^- and potentially, even $CaCO_3$. However, with the rainfall events, there is a net drop in the CO_2 production rates, as CO_2 diffuses and is lost to the atmosphere (positive flux).

20

Figure 9: Fluxes of CO_2 and water vapor in response to rainfall events and production of CO_2 by soils with no vegetation (simulated solar installation).



Soil CO_2 production and efflux are calculated from changes across concentration boundaries in soil (production) and soil-atmosphere (efflux). Flux is derived from the eddy covariance measurements for water and CO_2. Note, the sign is gain or loss from the atmosphere, where positive number represents from soil to atmosphere, and negative from atmosphere to soil.

When the soils were examined using the Soil Observatory Network, automated minirhizotron observations showed a nearly sterile soil without particles of soil organic matter, or roots or fungal hyphae (Figure 10).

21

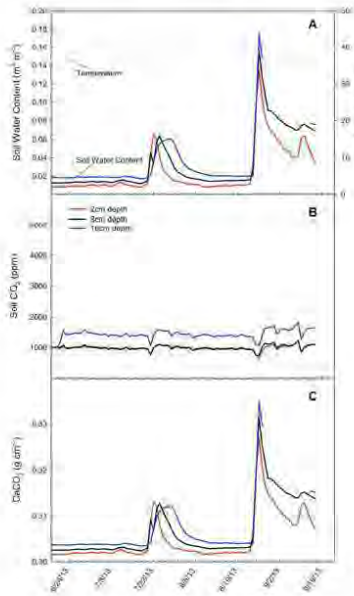
Figure 10: The CVARS solar-simulation site (A) and a hi-resolution in situ AMR image of the soil (3.01mm X 2.26mm, 100x image) showing soil particles.

Few pieces of organic matter, or fungi or roots were observed in the CVARS soil. No CaCO3 crystals were observed.

Based on the soil CO_2 and soil moisture data, $CaCO_3$ was formed with the rainfall event (Figure 11), but nearly equal to those from the Deep Canyon native vegetation site (Figure 5). However, no crystals were observed.

22

Figure 11: CaCO3 concentrations in response to rainfall events from the CVARS solar installation simulation site with no vegetation present.



Soil CO2 remained low in response to rainfall in contrast with Boyd Deep Canyon (Figure 5) but CaCO3 responses resemble those found at Boyd Deep Canyon.

4.3 Discussion

The data from the soil respiration, flux, soils, and $CaCO_3$ modeling all point to a suite of dynamic processes and one that, because of the large fluxes, is rarely if ever in equilibrium. At the natural area site (Boyd Deep Canyon NRS), Ca that is weathered from the dolomite outcroppings is abundant in the soil. It is cycled as $CaPO_4$ or $CaNO_3$, weathered by the respiration of plant roots and associated rhizosphere microorganisms. These organisms also produce organic acids that bind the Ca, such as CaC_2O_4, facilitating nutrient uptake. Other microorganisms then utilize the CaC_2O_4 (Morris and Allen 1994), thereby additionally increasing HCO_3^- and freeing Ca_2^+. During dry periods, found little root or microbial growth or respiration was found. With little H_2O, there is little respiration, or $CaCO_3$ in solution. However, crystals of $CaCO_3$ that precipitated on the surface of hyphae or other nucleation centers are seen.

With a large rainfall event, the $CaCO_3$ crystals dissolved and were solubilized. Organic C is mineralized and inorganic CO_2 released. There is a spike in aqueous $CaCO_3$, some of which is

23

leached deeper into the profile, and some of which forms a supersaturated solution, re-precipitating as the soil dries out.

The CVARS site chosen as a model for a solar installation site, as there has been no vegetation for greater than four years shows a different, albeit also dynamic pattern. Presumably, the processes reflect soil geochemistry with little or no input by biological processes. There, CO_2 is produced and lost to the atmosphere or fixed by Ca into $CaCO_3$ in small amounts based on day-night vapor pressure change. With a large event, $CaCO_3$ rapidly increases. But CO_2 is also released spiking soil respiration and loss of CO_2 to the atmosphere was measured. Some $CaCO_3$ was likely leached to deeper soil layers, but researchers observed no crystal formation, such as we found at Deep Canyon. However, $CaCO_3$ remains relatively high in the soils at CVARS, binding the majority of soil C.

The key point here is that $CaCO_3$ is highly dynamic in response to root and mycorrhizosphere dynamics in the native ecosystem. $CaCO_3$ is also highly dynamic in the disturbed site, but the cycle is a largely inorganic one. Both are subject to CO_2 loss through respiration (Deep Canyon) or inorganic dissolution and diffusion. However, plants fix CO_2 in the desert, whereas any CO_2 lost in a flush with rainfall, is likely lost from the system.

It is not yet known the ultimate fate of the C in caliche, but these data show that the process is dynamic, and there is a potential for significant loss.

CHAPTER 5: Conclusions

The research shows that caliche in the surface soil layers is not in equilibrium, but is dynamic. The isotopic ratios indicate that fractionation of $^{13}C/^{12}C$ has occurred, especially as the caliche in the upper soils weathers, and that $\delta^{18}O$ reflects local water sources. Carbon flux measurements show that high levels of CO_2 are generated within soil where native vegetation remains following rainfall during periods of maximum root and rhizosphere peaks. Arbuscular mycorrhizal fungi are particularly active, providing crystal seeds for $CaCO_3$ as soil dries out. Organic matter from plant and microbial residues is decomposed, mineralizing CO_2 along with Ca and nutrients from the plant tissue. With the next rainfall, the $CaCO_3$ dissolves. By repeated wetting, drying, root and microbial growth, caliche forms dissolves, and reforms.

However, in disturbed soils, there is little or no CO_2 from plant or microbial respiration. This is reflected in the lack of soil CO_2 response to a rainfall event. Nevertheless, CO_2 is generated and lost from the soil to the atmosphere, especially following a rainfall. With little organic matter, from aeolian deposition or recalcitrant C, much of the CO_2 likely comes from inorganic C, predominantly $CaCO_3$. With a rainfall, the modeling suggests that $CaCO_3$ is solubilized and CO_2 released to the atmosphere.

Researchers are not yet successful in distinguishing caliche layers in soil with ground penetrating radar (GPR). Researchers can distinguish layering, however in the California deserts, there are many depositional layers that, at this point, can only be distinguished by direct observation coupled with understanding the underlying and surrounding geology of a site.

5.1 Carbon in Desert Ecosystems and Vegetation Removal

Large-scale solar development in desert ecosystems has the potential to generate electricity, thereby reducing fossil carbon (C) accumulation in the atmosphere, and in turn, lessening the rates of global warming (e.g., Hernandez et al. 2014). However, both caliche and organic matter losses compromise the value of solar energy as an alternative to fossil C burning by releasing stored inorganic C into the atmosphere and destroying the ability of the deserts to sequester C. A number of concerns, including loss of inorganic C cycling have been raised with solar development, but the majority of concerns can be addressed with careful attention to siting the facilities and roads (e.g., Hernandez et al. 2014).

5.2 Research Needs

Three key study areas have been identified from this one-year study to better understand the dynamics of inorganic C in our desert ecosystems.

First, the pathways were characterized, however a longer-term study is required on multiple sites across the entire range of solar deployment area, to characterize the rates and time scales of C dynamics. The preliminary results indicate that caliche can weather at 5 percent per year. During a 20-year lifetime of a plant, that caliche exposed might well degrade, however, the actual field rates would be expected to be highly variable based on the specific weather of each individual year and the fragmentation of the caliche material. Averages mean little in the desert.

Second, the vertical redistribution of Ca in the field is needed. Modeling studies suggest that caliche is formed and weathered rapidly. Is the Ca released eroded or leached reforming deeper caliche, or does it remain in the soil, subject to repeated cycles and a net loss of CO_2?

Third, the impacts of multiple interacting changes on caliche weathering and formation are needed. Sites with little nitrogen (N) deposition were specifically chosen. N deposition as nitrate, and especially ammonium, will acidify the soils. N deposition is a product of transportation corridors, development, and industrial activity. These are all collateral impacts of desert development, whether for solar power or other human activity.

All of these areas need additional research. These should be undertaken by continued monitoring of sites that were established, continued modeling work, and incorporate newer field-based isotope measurement capacity.

5.3 Siting of Solar Power Plants and Power Corridors

Data shows that caliche is dynamic, and the processes of formation and weathering can occur within the time scales of solar unit deployments. Undisturbed vegetation produces $CaCO_3$ as long as Ca is present or coming in by wind or water erosion. But, CO_2 appears to be lost from $CaCO_3$ where the vegetation has been removed.

Siting solar developments on previously disturbed lands are recommended. Desert riparian woodlands should especially be avoided for the protection of sequestered, and their ability to increase that C sequestration. Their deep roots and microbial associations continue to sequester both organic and inorganic carbon.

It is also recommended that solar developments be revegetated. Short-statured plants, such as cacti and shrubs such as *Encelia farinosa* also respire CO_2, but continue to produce organic C and build up both organic and inorganic soil C. The modeling work under these shrubs is continuing, but these steps alone should provide the critical information to allow solar developments to produce needed, "green" energy and simultaneously reduce C loss and sustain buried inorganic and organic C.

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27

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Letter I9

Bill Peterson

September 30, 2024

I9-1

Comment noted.

I9-2

The development of the Calcite substation will accommodate other utility-scale solar projects. Reasonably foreseeable future projects are addressed in EIR Section 5 Cumulative Impacts.

I9-3

The potential impacts to species generally referred to in this comment are addressed in EIR Sections 3.5 Biological Resources.

I9-4

This comment is noted and is in reference to "a concern currently not fully understood" regarding the trade off or carbon exchange with respect to solar projects and lands that would be converted into the solar use. The paper is generally inconclusive regarding specific carbon exchange impacts of solar projects and does not specifically reference the proposed project. Because this comment does not raise a specific issue regarding the adequacy of the EIR, no further response is necessary.

I9-5

This comment does not raise a specific issue regarding the adequacy of the EIR, as such no further response is necessary.

I9-6

A heat island occurs when changes to the landscape cause areas to become warmer than surrounding areas. The key to understanding urban heat islands is the concept of albedo, which is how much light bounces off a surface versus how much is absorbed. For the proposed project, the amount of light that is absorbed or reflected is dependent on the angle of the light. As the angle of the sun changes, the solar panel would absorb more and more sunlight. At solar noon, the albedo of the solar panel is nearly 0 and all the sunlight is absorbed and converted into electric or heat energy.

However, bare ground and soil absorbs the same amount of sunlight regardless of the solar angle. Consequently, the bare ground around a solar panel would absorb more heat over the course of a day than the solar panel does. Therefore, development of the project would decrease surface temperatures and would not result in a heat island and impacts would be less than significant.

David Mack

From: Liang, Aron <Aron.Liang@lus.sbcounty.gov>
Sent: Monday, September 30, 2024 11:17 AM
To: David Mack; Delanie Garlick
Subject: FW: Comments on Draft EIR for Sienna Solar in Lucerne Valley

fyi

From: bryn risler <risler123@gmail.com>
Sent: Monday, September 30, 2024 10:39 AM
To: Liang, Aron <Aron.Liang@lus.sbcounty.gov>; Marquez, Nichollette <Nichollette.Marquez@lus.sbcounty.gov>
Subject: Comments on Draft EIR for Sienna Solar in Lucerne Valley

Some people who received this message don't often get email from risler123@gmail.com. Learn why this is important

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you can confirm the sender and know the content is safe.

As residents of Lucerne Valley for the last 50 years, we beg you, please deny this project which is inappropriate for our community. For the following reasons:

The environmental impact will leave lasting effects on our quality of life.

Our water tables have been dropping over the last years. In fact, we had to deepen our water well to 280 feet in 1996 after our original well was at 160 in 1976. We have limited water sources, relying on runoff water from the local mountains. With the droughts over the last years our water runoff has been limited. The proposed Sienna Solar is over eight times the size of the two smaller industrial solar projects that have already wreaked havoc on our community by creating dust storms, flood damage and excessive water usage.. I10-1

Lucerne Valley is an unincorporated severely economically disadvantaged community with many retired and low income residents. I10-2

Anytime the desert floor is disturbed, the wildlife and natural flora are harmed. The creosote bush that is hundreds of years old and protects the desert is mowed down and the community becomes a major dust bowl. The sand blows into our homes and creates visibility issues for travelers. As a nurse for 40 years I saw numerous accidents and devastation for our local residents due to these very dangerous dust storms. Hwy 247 has been closed numerous times for hours and sometimes days to the severe dust storms that are created. This project would cause these closures to become more frequent. I10-3

We enjoy our local wildlife. Coyotes, kit foxes, desert tortoises, quail, turkey vultures, hawks and golden eagles, burrowing owls and of course our delightful roadrunners. We protect them by voicing our concerns about protecting their habitat. The danger of lithium batteries causing damage to the local residents and wildlife are a great concern. I10-4

We want to live here safely. We raised our children here and have children living in the community today.
We do have solar on our property for our personal use. I10-5

Thank-you for considering our request for denial of this solar project. Lee and Bryn Risler, Lucerne Valley residents I10-6

1

Letter I10

Bryn Risler

September 30, 2024

I10-1

Please refer to response to comment I6-1.

I10-2

Comment noted.

I10-3

Please refer to response to comment I3-1.

I10-4

The potential impacts to species generally referred to in this comment are addressed in EIR Sections 3.5 Biological Resources.

I10-5

Comment noted.

I10-6

Comment noted.

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